AN ANALYSIS OF COLLEGE STUDENT'S PERCEIVED USAGE AND IMPORTANCE OF HIGH SPEED INTERNET: THE CASE OF METU STUDENTS

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ABSTRACT

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This study aims to find differences in the perceived usage and importance of the Internet within characteristics of students. METU undergraduate students having a proper Internet connection were defined as population, and asked to answer the online questionnaire about perceived usage and importance of the Internet. For 653 eligible answers, Factorial ANOVA and independent samples t-test were used to compare mean scores of dependent variables across three independent variables: gender, accommodation type and faculty.

Results indicate that although genders spent equal times on the Internet, their perceived usage and importance of the Internet differs. Females' perceived usage and importance of the Internet for academic works and instant messaging are more than males, whereas males are using Internet for seeking current information like news, sending content to interactive web services and playing

online games. This study also states that there is no evidence of a statistically significant difference for amount of the Internet usage between 3 accommodation types, METU Dormitories with high speed Internet connection, house with family or relatives, house with friends or alone. However, it is observed that students staying at METU Dormitories stated more instant messaging usage than that of staying at house with friends or alone. Between faculties, there is evidence that students from Faculty of Education are using Internet for academic course work more than the other faculties. Finally, students who are living in campus are more satisfied with the access speed to university local area network and Turkish National Research Network.

Keywords: High speed Internet, college students, academic study, Internet usage, perceived Internet importance

ÖZ

ÜNİVERSİTE ÖĞRENCİLERİNİN ALGILADIĞI YÜKSEK HIZLI İNTERNET KULLANIMI VE ÖNEMİ ANALİZİ: ODTÜ ÖĞRENCİLERİ DURUMU

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Bu çalışma, İnternet'in algılanan kullanımında ve öneminde, öğrencilerin karakteristik özellikleri arasındaki farklılıkları bulmayı amaçlamaktadır. Populasyon olarak sabit İnternet bağlantısı bulunan ODTÜ Lisans öğrencileri belirlenerek İnternet'in algılanan kullanımı ve önemi hakkında çevrimiçi anketi cevaplamaları istenmiştir. 653 nitelikli cevaba, cinsiyet, ikamet ve fakülte bağımsız değişkenlerinin bağımlı değişkenler içindeki ortalamalarını karşılaştırmak amacıyla Faktöryel ANOVA ve bağımsız örneklemli t-test uygulanmıştır.

Sonuçlar incelendiğinde, kızların ve erkeklerin İnternet'te eşit miktarda zaman harcamalarına rağmen, algılanan kullanımlarının ve önemlerinin farklı olduğu görülmüştür. Kızların İnternet'in akademik çalışmalar ve mesajlaşma uygulamaları için algılanan öneminin ve kullanımının erkeklerden fazla olduğu;

erkek öğrencilerin ise güncel haberlerin takibi, interaktif web servislerine içerik aktarılması ve çevrimiçi oyunlar oynanması konularında algılanan İnternet kullanımının, kızlardan yüksek olduğu görülmüştür. Yüksek hızlı ağ bağlantısına sahip ODTÜ Yurtları'nda, aile veya akrabalar ile, arkadaşlar ile veya yalnız olmak üzere belirlenen 3 ikamet çeşidi arasında, algılanan İnternet kullanım miktarları arasında farklılık bulunmamıştır. ODTÜ Yurtları'nda kalan öğrencilerin gerçek zamanlı mesajlaşma uygulamaları için algılanan İnternet kullanımının, arkadaşları ile veya yalnız evde ikamet eden öğrencilere göre yüksek olduğu tespit edilmiştir. Fakülteler arasında, Eğitim Fakültesi öğrencilerinin akademik çalışmalar için algılanan İnternet kullanımı diğer fakültelerden yüksek bulunmuştur. Son olarak, yerleşkede ikamet eden öğrencilerin Üniversite yerel alan ağına ve Türk Ulusal Araştırma Ağı'na bağlantı hızından yerleşke dışında ikamet edenlere göre daha memnun oldukları, ancak İnternet'e erişim hızı açısından istatistiksel olarak anlamlı bir fark olmadığı görülmüştür.

Anahtar Kelimeler: Yüksek hızlı İnternet, üniversite öğrencileri, akademik çalışma, İnternet kullanımı, algılanan İnternet önemi

To My Dear Wife…

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CHAPTER 1

INTRODUCTION

In this chapter, the background of the study, the statement of the problem, the purpose of the study, the significance of the study and the definitions of the terms will be presented.

1.1 Background of the Study

Internet usage is expanding rapidly in all over the world. Beyond the increase of usage, information technology, and therefore applications on it, has been developing rapidly. Internet, as an important example of information technology, have made considerable and dramatic impact on contemporary educational practice, like the web based learning where educators integrate the Internet into instructional practice to provide learners with distant, interactive, broad, individualized and inquiry-oriented learning activities, and to promote their knowledge construction and meaningful learning (Wu and Tsai, 2006). Students without Internet are considered as a problem which should be overcome. A research in Turkey at last quarter of 2005 done by CRC Research & Consultancy (TÜBİSAD, 2005) reveals that parents who are aware of computers and could not buy one for their child are sad about this and they are trying to overcome this problem.

Students are freely facing with Internet starting from college to university. According to Erikson's stages (Woolfolk, 1998, p.67-72), students in college years are in late adolescence and young adulthood, which means they are in the search for identity, in other words they are developing their identities until the twenties. Lanthier and Windham (2004) defines this time slot of students as they leave familiar peers and enter a new social environment characterized by greater freedom, academic challenges, and changing responsibilities.

In Turkey, TÜBİTAK - ULAKBİM (The Scientific and Technological Research Council of Turkey - The Turkish Academic Network and Information Center) is responsible for data connections between universities and academic research institutes. For this duty, ULAKBİM constructed ULAKNET, NREN (National Research and Education Network) of Turkey, and have been operating it since 1996. In addition to connecting national academic institutions to each other, ULAKNET also have high speed connections to other countries NRENs over the European Research Network Backbone, namely GEANT. ULAKNET also has Internet connection for the need of Internet usage of academic institutions. At the end of July 2008, ULAKNET connects totally 137 institutions including 99 universities of Turkey, military schools, war colleges, police colleges, and other academic institutions like Turkish Historical Society, National Library of Turkey, Turkish Atomic Energy Authority and Higher Education Council, with different high connection speeds and has totally 5 Gbps connection to GEANT backbone in addition to 3 Gbps connection to Turkish Internet backbone (ULAKBİM, 2008). ULAKBİM also responsible for obtaining academic contents and preparing research environments for Turkey like online libraries, journals, high performance computing laboratories, etc… Every year, TÜBİTAK invests high amount of money to accomplish these missions.

By means of students' learning activities and attracting candidates for recruiting, Universities also have been investing on high speed network and Internet infrastructure access in computer laboratories, study areas, and rooms of

dormitories. Every year, significant portion of budget have been reserved for information technologies investments, to install and maintain high capacity networks, high performance personal computers, high performance servers for researches. The Middle East Technical University, who is the leader of campus infrastructure across the country, has been implementing latest technological developments according to users requirements in order to create an environment in which research, creativity and students' self-development can be fostered. In terms of this, there are Internet accesses at dormitory rooms and open areas whose connection capacities are relatively too much higher than those available at houses, institutions, companies etc.

The Middle East Technical University constructed an infrastructure that supplies a gigabit per second speed bandwidth to all academic and administrative units in campus. This high-speed backbone, connected to ULAKNET with 1 Gbps. In addition to ULAKNETs' Internet connection, METU has also its own Internet connection which has a capacity of 100 Mbps.

1.2 Statement of the Problem

In the 2007 – 2008 academic year, about 15.000 undergraduate students registered at METU. With the graduate students, there are over 22.000 students. In the same academic year, METU dormitories were able to host 6.718 students. METU, as well as laboratories, connected the dormitory rooms to the backbone. With the help of this investment, students, who have a personal computer, are able to connect to the academic network and the Internet with relatively higher speeds than those available at houses, institutions, companies etc.

After connecting dormitory buildings to the campus backbone, many students applied for the Internet connection. At January 2006, there were totally 3584 registered students from dormitories, and currently there are 5329 registered students (Table 1.1). Some of this 33% increase can be explained by new

investments on infrastructure as new dormitory rooms connected to the backbone, but there is still a dramatical increase on demand to use the network at dormitories. University administration declared that next year there will be no dormitory rooms without proper Internet connection (ODTÜ Yurtlar Müdürlüğü, 2008). Currently, about 550 rooms do not have physical network connection, but there are wireless services for these rooms' residences. This trend shows that, each semester more students are willing to connect the network. On the other hand, there are almost 13.000 physically connected clients at METU backbone in addition to 15.000 registered different wireless clients from 13.000 unique users. For the usage of off-campus connections, dormitories network is also high enough: 50% of the all off-campus traffic in terms of bytes.

Table 1.1: Dormitory Capacities and Students Registered to DORM-NET

Dormitory Name	**2006**		**2008**	
	Capacity	**Registered**	**Capacity**	**Registered**
1st Dormitory	260 (2 Floors)	***146***	376	***355***
2nd Dormitory	180 (1 Floor)	***143***	180 (1 Floor)	***238***
3rd Dormitory	380	***199***	380	***333***
4th Dormitory	404	***207***	404	***231***
5th Dormitory	356	***NA***	356	***366***
6th Dormitory	354	***NA***	354	***NA***
7th Dormitory	356	***77***	356	***271***
8th Dormitory	396	***162***	396	***266***
9th Dormitory	90 (1 Floor)	***48***	398	***314***
Osman Yazıcı Dormitory	214	***181***	214	***225***
Faik Hızıroğlu Dormitory	168	***155***	168	***96***
İsa Demiray Dormitory	604	***543***	604	***502***
Faika Demiray Dormitory	628	***497***	628	***581***
Refika Aksoy Dormitory	640	***207***	640	***580***
Girls Guest House	316	***231***	316	***231***
EBİ Dormitory – 1	408	***374***	408	***426***
EBİ Dormitory – 2 (Parlar)	204	***207***	204	***145***
NCC Dormitory	415	***207***	415	***169***
Totals	**5843**	**3584**	**6617**	**5329**

For the usage of network, ULAKBİM declared an Acceptable Usage Policy, which informs about academic usage and restricts some commercial, illegal, inappropriate and unethical usage (ULAKBİM AUP, 2008). This policy is a must for institutions to be connected to ULAKNET. By this point of view, like some other universities, METU has prepared its own AUP and notified students and personnel (ODTÜ AUP, 2008). In addition, METU prepared a special policy for dormitory network and stipulated to sign it before connecting to the network (ODTÜ Yurtlar AUP, 2008). Within these regulations METU defines primary and secondary use for METU IT resources where primary usage belongs to instructional, educational, and for research activities; and secondary usage belongs to all personal and other types of usage. With the help of this definition, policies restricts the secondary usage in terms of this network is a research and an education network. On the other hand users, especially users from dormitories, need also personal usage, since they do not have any alternative Internet connection. Therefore, technical limitations like strictly restrict secondary usage couldn't be applied, but traffic has been monitored and users who have excessive usage of secondary usage are officially notified. However, users still are relatively free to use the Internet.

Lanthier and Windham's (2004) state that for students, the psychological implications of the freely available Internet access through high speed “always on” network in dormitories and laboratories is unclear; some research points out the positive benefits of the Internet use but the others highlight the negative impact of Internet addiction at these age level. A research on high speed Internet use on residence halls points out that the time spent on online chatting programs was negatively correlated with the ability to avoid Internet distractions and concentration on academic work; therefore making some strategies to help undergraduates for gaining control over high-speed Internet use to meet their academic goals is suggested (Matthews and Schrum, 2003).

Cheung and Huang (2005, p. 237-238) state about the Internet usage of students at Universities as:

> Many universities around the world are expanding their investment in information technology (IT), and specifically the Internet, and are actively promoting Internet use in university education (Al-Nuaimy, Zhang & Noble, 2001; Bargeron, Grudin, Gupta & Sanocki, 2002; Chandler, 2002; Chen & Paul, 2003; Dringus, 1999; Huang et al , 2004; Kinshuk, 2002; Owston, 2000; Pahl, 2003; Richardson, 2003; Rovai, 2001). Instructors are being requested to make their teaching materials and other supporting resources accessible through the Internet (Alavi, 1994; Barker, 2002; Coppola, Hiltz & Rotter, 2002; Lee, 2001; Topper, 2002). Students are encouraged to communicate with instructors, or with one another, via email. As universities promote Internet use, they need to understand their students' attitudes towards using it (Frank, Reich & Humphreys, 2003; Milliken & Barnes, 2002). Only when students are making use of the Internet to really benefit their learning is IT investment justified in terms of a university's scarce resources.

1.3 Purpose of the Study

Internet as a medium of instruction is indispensable. However, the answer of the question `what are the effects of free and uncontrolled Internet usage of students on universities? ` is still unknown. This study aims to find out whether there are differences in the perceived usage and importance of Internet applications with respect to residence, faculties, and gender.

By means of this purpose, the main research question is "Which characteristics are affecting perceived high speed Internet usage and importance of METU students?". Sub research questions are:

a. Does accommodation place affect perceived usage or importance of Internet applications?
b. Does accommodation place affect perceived amount of Internet usage?
c. Does accommodation place affect perceived satisfaction of access speeds?
d. Does faculty affect perceived usage or importance of Internet applications?
e. Does faculty affect perceived amount of Internet usage?
f. Does faculty affect perceived satisfaction of access speeds?
g. Does gender affect perceived usage or importance of Internet applications?
h. Does gender affect perceived amount of Internet usage?
i. Does gender affect perceived satisfaction of access speeds?

1.4 Significance of the Study

Students generally enter the universities at ages 17-18 and most of them stay with their families before starting undergraduate education. New university students enter a new society which represents freedom and academic challenges and this situation contradicts with family authorities. Within this transition period, they are also developing their identities since they are in late adolescence and young adulthood in terms of Erikson's stages (Woolfolk, 1998, p.67-72).

Relatively free and high speed Internet infrastructure especially in dormitories are presented by universities. On the other hand, the effects of this service should be investigated in terms of students' identity development and academic challenges. After the effects are clarified, further actions can be taken like improving the infrastructure, fostering students to use it, or taking necessary regulations on using.

With the help of this study, characteristics that affect METU students' perceived high speed Internet usage and importance will be explained. The results are expected to help understanding the effects of freely usable high speed Internet on students.

1.5 Definitions of Key Terms

Backbone : "A cable to which multiple nodes or workstations are attached." (FCIT, 2008)

Cable : Transmission medium of copper wire or optical fiber wrapped in a protective cover. (FCIT, 2008)

End User : Refers to the human executing applications on the workstation. (FCIT, 2008)

Ethernet : A network protocol invented by Xerox Corporation and developed jointly by Xerox, Intel and Digital Equipment Corporation. Ethernet networks use CSMA/CD and run over a variety of cable types at 10 Mbps (megabits per second). (FCIT, 2008)

Fast Ethernet : A new Ethernet standard that supports 100 Mbps using category 5 twisted pair or fiber optic cable. (FCIT, 2008)

Fiber Optic Cable : A cable, consisting of a center glass core surrounded by layers of plastic, that transmits data using light rather than electricity. It has the ability to carry more information over much longer distances. (FCIT, 2008)

Gigabit Ethernet : An Ethernet protocol that raises the transmission rates to 1 Gbps (gigabits per second). It is primarily used for a high speed backbone of a network. (FCIT, 2008)

Gigabyte (GB) : One billion bytes of information or one thousand megabytes. (FCIT, 2008)

Intranet : Network internal to an organization that uses Internet protocols. (FCIT, 2008)

Internet : A global network of networks used to exchange information using the TCP/IP protocol. It allows for electronic mail and the accessing ad retrieval of information from remote sources. (FCIT, 2008)

LAN (Local Area Network) : A network connecting computers in a relatively small area such as a building. (FCIT, 2008)

MAN (Metropolitan Area Network) : A network connecting computers over a large geographical area, such as a city or school district. (FCIT, 2008)

Modem (Modulator/Demodulator) : Devices that convert digital and analog signals. Modems allow computer data (digital) to be transmitted over voice-grade telephone lines (analog). (FCIT, 2008)

Network Interface Card (NIC) : A board that provides network communication capabilities to and from a computer. (FCIT, 2008)

Node : End point of a network connection. Nodes include any device attached to a network such as file servers, printers, or workstations. (FCIT, 2008)

Peer-to-Peer Network : A network in which resources and files are shared without a centralized management source. (FCIT, 2008)

Physical Topology : The physical layout of the network; how the cables are arranged; and how the computers are connected. (FCIT, 2008)

Point-to-Point : A direct link between two objects in a network. (FCIT, 2008)

Protocol : A formal description of a set of rules and conventions that govern how devices on a network exchange information. (FCIT, 2008)

Router : A device that routes information between interconnected networks. It can select the best path to route a message, as well as translate information from one network to another. (FCIT, 2008)

CHAPTER 2

REVIEW OF LITERATURE

In this chapter, literature review of how the Internet can be used in campus and in education is covered. Benefits, usage methods and disadvantages of the Internet in education and campus are stated.

2.1. The Internet on Campus

As the new technologies have been developed and found a place in our life, they are being tried to use for instructional purposes. Firstly, radio and television were utilized in order to improve the delivery speed of instruction. Although instructional television programming was not successful with respect to expectations, some programs like Sesame Street and Mr. Rogers had showed that well designed and targeted instruction can be very effective methods of delivering instruction to large groups (Ahern & Repman, 1994).

Today, the usage of Internet is increased in different parts of life with the growing technology of computer and computer networks. Since World Wide Web which is one of the basic services of the Internet had been improved, electronic resources including audio and visual materials have been easily accessible by everyone. These improvements offered new educational opportunities in teaching and learning, such as web-based learning, e-learning,

distance education, online libraries, etc., and these areas are used in different levels of education today.

2.1.1 History of the Internet

After the Soviet Union launched Sputnik, which was the Worlds' first artificial satellite, America established the Advanced Research Projects Agency (ARPA) at 1957 to exceed their existing technology. ARPA found a common protocol for communication of computers, called TCP/IP (Transmission Control Protocol / Internet Protocol) and established a network consisting of computers connected via telephone lines, called ARPANET (Internet History from ARPANET to Broadband, 2007).

With the help of innovations in computer and network technology, TCP/IP was implemented for communication of computers regardless of hardware types or locations. After this implementation, National Science Foundation (NSF) created its own network to connect subnetworks containing universities and research facilities and this networked formed the Internet. The Internet begun in 1983 by connecting some networks and flourished in years because of four main reasons: It is open anyone who wants to connect, it does not belong to anyone, it is decentralized, and has no stockholders (Schrum and Berenfeld, 1997, p 3-4).

With the Internet, numbers of electronic interaction formed, like e-mail, computer conferencing, list servers, file transfer protocol, gopher, newsgroups, video conferencing and finally World Wide Web (Schrum and Berenfeld, 1997, p5-10). Since 1995, there has been an interest in computer and the Internet to use them for instructional purposes for higher education and military (Reiser, 2006). Reiser (2006) stated that although there is an uncertainty about the extent of media usage in the schools, there has been a significant increase in the use of instructional media in a variety of settings, from business to higher education since 1995.

2.1.2 Usage of the Internet on Campus

After 1980's, computer literacy has become an important part of academic and professional life and universities have started to deal with computer skills of students. Many universities added computer literacy courses in curriculums to prepare students to their futures (Furst-Bowe & Boger, 1995). Meanwhile, universities started to invest on computers, networks, hardware and software for students and instructors to spread and promote Internet usage and technology (Jones et al., 2008; Cheung and Huang, 2005; Mackowiak, 1991). Hargis (2001, p.475) listed some reasons of why educators, administrators and parents should support the Internet in classrooms: "the recent increase in equity of access, the seemingly infinite resources it offers, the ability of students to become active participants in their own learning, self motivation, student inquiry, and assessing and improving student progress".

Cheung and Huang (2005)'s paper indicates that teaching materials and other supporting resources are requested to be available on the Internet and communication between students and instructors are fostered to be online. As cited in Yigit et al. (2000), web service is very powerful tool when it is used with effective learning and information retrieving purposes. In addition, successful integration of computers into the curriculum is essential and since students will be deal with computer knowledge and skills in the future, preparing students for their future in the society is major goal of education (Mackowiak, 1991).

2.2 Computer and Internet Usage in Education

The use of computer and the Internet, with properties like transferring real time audio, video in addition to text and graphics, forms many opportunities in all levels of education. Some of these opportunities are online education, e-learning, online libraries, etc. Suhail and Bargees (2006) defined the Internet as can be used for huge educational benefits for students like improving their studies by

gaining access to the latest information and material available, and establishing worldwide educational and academic links.

As new technologies become much simple in the support of instruction, distance education became synonymous with traditional courses in 1994. In addition, online learning programs had been composed of many instructional items with synchronous and asynchronous systems. Satellite, video, audio teleconferencing systems were begun to use as face-to-face interactions between instructors and students. This developing field is referred as online education (Ahem & Repman, 1994).

After the development of active World Wide Web sites and increasing capacity of the Internet, transmitting video, audio, text and graphics gave a huge capability for distance education. This growing was caused popularity for distance education and lots of courses suggested to be online (Hirumi & Bermudez, 1996). This development composed research areas for adapting models and theories of human learning and instructional design to improve the distance education programs.

Today, colleges, universities, companies and private citizens increasingly connect to the Internet. As a result of this situation, distance educators can find more possibilities to overcome time and distance to reach learners (Manochehri, 2008). Web based learning, which can also be referred as online learning and virtual classroom, is an easy way of delivering educational materials to the learners.

Manochehri (2008) conducted a study to examine the influence of learning styles on student satisfaction in two types of learning environments: conventional learning environment and web based learning environment. His findings indicated that student's satisfaction do not differ between two learning styles but differ between teaching styles: Under web based learning environment, the

students are more satisfied if they took the course from an instructor synchronously than from a asynchronous web based format.

Yigit et al. (2000) stated that online education is too different than traditional class environments even if it is used as a part of a course, instructor do not presents the information but guides and canalizes students. According to Yildirim (2007, p. 172), "students are not perceived as passive receivers of information; rather they are active participants in constructing their own meaning of the environment that they live in" and therefore instructors are facilitators of students in this endeavor of constructing their knowledge. These findings, which are consistent with the earlier findings, state the importance of instructor and also state that web based learning is not more successful than the traditional education styles, but it can be successful as higher as traditional education.

Multimedia instruction is an important factor to improve student motivation and learning interest (Nystul et al., 2007). Nystul et al. (2007) conducted a study on undergraduate students and their findings indicated a strong student support for the use of videos as an adjunct to learning. There are many findings in the literature which state that instruction with audio visual presentations, animations and other multimedia applications is better than instruction without of it in terms of learning (Remus et al., 2008; Beasley & Jarvis, 2007; Macaulay & Pantazi, 2006; Kumar, 2008).

Wu and Tsai (2006) stated that learners' attitudes toward the Internet may influence their motivation and interests toward learning to use the Internet, which in turn affect their performance in Web-based learning environments. Moreover, individuals with high Internet self-efficacy may display better performance in Web-based learning tasks. From the results of their study, they suggest to educators that some effective ways to improve students' independent control of using the Internet and their capacity of Internet-based communication and interaction in Internet-based environments have to be found.

With the advent of the Internet, libraries and academic content providers have started to be available via network or high capacity digital media like cd-roms and dvd-roms in addition to printed materials. These electronic collections are protected and served with different authentication methods against copyrights and illegal distributions but also designed to be easily accessible and searchable without being lost. Miller (2000) analyzed the electronic resources and academic libraries in a historical perspective and pointed the growing importance of electronic resources. Miller (2000) also stated that in order to met user needs libraries should be in a fully digital environment with an easily understandable and usable database interfaces.

Libraries are serving different user groups from students to academicians; therefore there are different needs of users, for example need of connecting from library versus connecting via dormitory or home. Lee (2008) stated that online catalog of libraries maintain parallel subcollection of different disciplines and allow searches on these.

Advances in Web 2.0 technology, helps to classify and serve the information in an easy way. Tags, interactions, comments are all features of web 2.0 technology and with the help of this technology, online resources can be more effective than ever (Glass & Spiegelman, 2008).

2.3 Some Disadvantages of Internet Usage

Computer and Internet usage in education has also disadvantages. One of them is that the amount of information available in the Internet is too much and unclassified. In addition to traditional dusty old books, the digital libraries, academic Web sites, organization sites, hobbyist sites, and blogs have taken place on the Internet. A researcher should know where to start and how to investigate the Internet, otherwise he can be lost in useless information (Yigit et al., 2000; Bruckman, 2005). Bruckman (2005) stated that it is necessary to help students for

understanding the art of research and the reliability of sources in the age of online information.

Another disadvantage is about usage of high speed academic networks. An article from Read (2004), concerned about usage at Internet2, the high-speed research network, which serves more than 200 colleges. Read stated that the network is home to a service for trading music and video files that is run by students at universities that belong to Internet2. This kind of file-sharing usage on academic network is also a problem of European and Turkish academic networks, namely GEANT, and ULAKNET. At the November 14, 2005, file sharing service on the academic network forbidden due to legal liability issues. On the other hand, this type of institutional behaviors bring another problem between students and institutions. Lane and Healy (2006) reviewed the development of the file sharing phenomena in terms of existing institutional responses, legal advice, media coverage, and research and government reports. They pointed the increasing music and video downloading usage on academic networks and students' behaviors against the institutions responses. In their point of view, responses should be legal, responsive and educative and they suggested that institutions should reevaluate their policies and methods surrounding to institution-student relationship. However institutions should be careful about the balance between creativity which is fostered by the Internet and the ethical responsibilities which should not be overshadowed by creative responses. Another opinion, which comes from Goth (2005), instead of restricting or locking down Internet usage, students should be forced to start thinking about being a responsible citizen.

Another disadvantage of computer and Internet usage is about resources in the Internet which may be classified as harmful. Suhail and Bargess (2006) suggested that parents should monitor use of the Internet of their young children and governmental restrictions should be taken into account to adopt some measures to restrict or sensor the pornography web sites with the help of Internet Service Providers (ISPs). Another suggestion is that with the help of academic and career

counseling, students should be encouraged or even required to get involved in meaningful and purposeful activities as they entered the door of colleges and universities (Huang, 2006).

Latest researches have shown that the Internet may be addicting (Griffiths et al., 1999; Niemz et al., 2005; Suhail & Barges, 2006). Because of increased interest in the addictive potential of the Internet in literature, many researches have been conducted about Internet addiction among college students. These studies indicate that free and readily available access to the Internet for students should be carefully analyzed especially for the students who are in identity and intimacy stages of Erikson's 8 stages (Niemz et al., 2005; Suhail &Barges, 2006, Huang, 2006; Wu & Tsai, 2006; Ye, 2005). Niemz et al.'s (2005) study also showed that male students were significantly more likely than females to be pathological Internet users (see Table 2.2).

Table 2.2: Gender Differences in Mean PIU Scores (Niemz et al., 2005)

	Mean	***SD***
MALE (n = 171)	2,6	2,7
FEMALE (n = 200)	1,5	2
TOTAL (n = 371)	2	2,5

2.4 Use of the Internet for Education in Turkey

In Turkey, the Middle East Technical University was the leading institution for connecting the Internet. First national wide area network connection was made to BITNET – EARN at 1987, NFS was applied at 1991 for connection, and finally first Internet connection was made over the RIPE (Holland) with X25 technology at 1992. A year later, another Internet connection was established via directly

Washington NFSNET with 64 Kbps access speed (Internet Archive, 2008). At 1994, METU established the first high performance computer, called super computer, which was in Top500 with the rank of 376 (Top500 Super Computing Sites, 2008). At 1996, Turkish Higher Education Council signed a protocol with TUBITAK and Turkish National Research Network, namely ULAKNET was established in order to disseminate Internet connection to universities and academic institutions (ULAKBIM, 2008b). Today, ULAKNET consists of 137 national education institutions with relatively high speed access rates.

Turkey has one of the worlds' largest universities, Anadolu University, where students are enrolled in distance education with Open Education System. The Anadolu University has 12 faculties 3 of which constitute the Open Education System and serves students in Turkey, Turkish communities in European Union, and Northern Cyprus. In 2005/2006 academic year, Anadolu University had almost 1.050.000 off-campus students (Latchem et al., 2006).

In terms of technology usage of instructors in higher education, Gurel et al. (2007) conducted a descriptive study at METU. Their findings indicated that instructors find information and communication technologies useful for education and they tend to use web based technologies and computers in addition to printed materials. On the other hand, although METU has fast and easily accessible Internet, only 81.4% of instructors are using Internet (Gurel et al., 2007). In addition, the study of Gurel et al. (2007) indicates that instructors' perceived importance of Internet use in education is generally positive.

Information and communication technologies are needed in the higher education and there is a belief that "the increases in the number of university students and in the number of students who wish to study in a university brings up the need use of opportunities provided by ICT facilities in the Universities" (Usluel et al., 2008, p. 264). Usluel et al. (2008) conducted a study for identifying the usage of ICT in Turkey universities. Their findings indicated that faculty members are

used ICT for communication, research through the Internet, publish course materials on the Internet and using ICT have positive effects for higher education. Usluel et al. (2008) also indicate that "ICT usage in classrooms should be more widespread, and faculty members should be supported both technically and educationally and the process should be institutionalized via the framework of the policies and strategies of universities" (Usluel et al., 2008, p. 270).

Online resources, including online libraries, are used for research in Turkey. Many universities and information centers, such as ULAKBIM Cahit Arf Information Center, provides opportunities to instructors and students for accessing online libraries. Dilek-Kayaoglu (2008) actualized a survey on use of electronic journals by faculty at Istanbul University. Her findings indicated that electronic versions of journals are chosen to be used if both printed and electronic resources are exist by more than 90% of the respondents. In addition she gave another example of a survey which is based on the use of e-databases at Ankara University and had been actualized in 2002 with a sample of 3800 researchers at Ankara University. The main findings of this research indicated that 88% of faculty members use e-databases.

For primary and secondary schools in Turkey, World Bank and Turkish Government signed the Basic Education Program Loan Agreement at June 1998. In the agreement, in order to increase the quality of basic education, information technology classrooms started to be established at schools (MNE Statistics, 2002). In addition, Turkish Ministry of National Education has started to connect high schools to the Internet since 2003 by signing a protocol with the Turk Telecom (Ministry of National Education, 2008). Until the end of 2007, nearly 29.000 schools were connected to the Internet by adsl technology and with this investment, 99% of high school students and 93% of primary school students were connected to the Internet. Other schools which are not yet connected are planned to be connected via satellite or renewing regional telephony

infrastructures which means within a few year, almost all schools and students will be connected to the Internet.

In addition to these investments for basic education in Turkey, most teachers can not use Information and Communication Technology in order to promote students attainment in areas across the curriculum (Yildirim, 2007). According to Yıldırım's findings, there are some factors which are harmful to technology integration in classes like overcrowded classes, inadequate inservice training, lack of support, and inflexible curriculum. In terms of investments of Ministry of National Education to increase the quality of basic education by using ICT in schools, Yıldırım (Yıldırım, 2007, p. 174) warned that "the first phase ICT policies and activities of the project should be reviewed and assessed vigilantly, before leading up to the second phase".

2.5 Summary

The Internet was originally designed to facilitate research activities. Undoubtedly, the Internet is a huge information resource for educators, learners, and all citizens. In addition to text and graphics, the Internet also provides real time audio and visual transfers of materials all of which can be used for educational benefits. By gaining access to the latest information and materials available on the Internet, students can improve themselves and can establish educational and academic connections. There are many useful applications where educators integrate the Internet with latest technology for instructional purposes. Web based learning, online learning, online academic resources, academic blogs and forums are some of the examples of them.

Universities at different countries have increased the investment to availability of high speed Internet for students (Lanthier and Windham, 2004; Suhail and Bargees, 2006; Matthews and Schrum, 2003). There are some researches in the literature about students' attitudes toward to the Internet, their expectations and

usage characteristics (Matthews and Schrum, 2003; Wu ans Tsai, 2006; Fusilier et al., 2005; Lanthier and Windham, 2004; Shuail and Bargees, 2006). Findings are useful especially for producing strategies to foster the students' academic usage, self motivation and to lower distractions.

Turkish universities also have high speed connections for students available at dormitory rooms, computer laboratories and residence halls. In the literature, it seems that there is a need for research about students' Internet usage and their expectations in order to produce strategies to foster the academic usage of the Internet, increase the locus of control for academic effort, and decreasing Internet distractions.

CHAPTER 3

METHODOLOGY

With the help of research questions mentioned at Chapter 1, survey design was used in this study. In addition to two main aspects: a selection process which consists of the rules and the operations by which some members of the population are included in the sample; and an estimation process for computing the sample statistics, the overall design of the survey includes other important aspects called survey objectives: The definition of the survey variables; the methods of observation; the methods of analysis; the utilization of survey results; the desired precision (Fraenkel and Wallen, 2006, p. 396-412). In terms of survey design approach, this chapter presents overall design of the study; population, sample and participants; data collection instrument; data collection procedures; data analysis; and finally limitations and assumptions.

3.1 Overall Design of the Study

The aim of this study is to investigate the role of computer and the network infrastructure at Middle East Technical University in terms of students' academic achievement and to investigate if there are differences in the perceived usage and importance of Internet applications with respect to residence, faculties, and gender.

Survey design was used in this study. The population is selected as METU students who have Internet connected computer. Population is mainly divided into two groups, campus users and off-campus users of METU. A questionnaire consists of two main parts, demographics and students' perceived ideas.

Under the assumption that the important characteristics are distributed either uniformly or randomly, this survey based on model sampling, more precisely haphazard or fortuitous sampling. Because of the fact that all questionnaires should obey the ethical rules and ethical rules of METU Ethics Commission include voluntarism as a must, haphazard sampling is used. Since the target population is Internet users of METU students, in order to reach more participants, prepared questionnaire was published on a governmental web site and announced as a 5 minute online-questionnaire to students.

Outcomes of variables in questionnaire are in numbers, so data was analyzed quantitatively. Descriptive statistics, which were defined as "the methodology developed for organization and summarization of the data" (Anderson and Sclove, 1981, p16), are obtained. Then statistical inferences are obtained, in order to draw conclusions about the target population.

3.2 Population, Sample and Participants

The target population of this study is METU undergraduate students who have a computer and Internet access where he/she accommodates from 5 faculties: Faculty of Architecture, Faculty of Arts and Science, Faculty of Economic and Administrative Sciences, Faculty of Education, and Faculty of Engineering. By this definition, undergraduate students from these 5 faculties can be mainly divided into two groups: Students who stay at METU Dormitories and stay at off-campus. In addition, since this study involves with the self-controlled Internet usage of students, off-campus group can be divided into two groups: Students who stay alone or with friends and students who stay with parents or relatives.

Voluntarism based online questionnaire is applied in the survey. Since announcements had to be made to all students of METU, questionnaire includes all faculties and graduate programs. Therefore each student was able to declare own program and data was avoided from wrong answers. Gosling et al. (2004) stated that Internet samples are not diverse because the Web is dominated by a rather narrow segment of society, and thus Internet samples may overrepresent such demographics. On the other hand, target population of this study is Internet users from METU students, therefore faculty, gender and accommodation representations in the sample are considered to be enough.

During the time that questionnaire was online, 777 responses submitted. However, 11 of them are eliminated. The method of elimination and reasons are explained at Chapter 3.4: Data Collection Procedures. Finally, 766 eligible participants submitted the questionnaire, 8 of them did not answered the faculty question and 653 of them come from target population. Therefore sample consists of 653 participants. Answers of students from other faculties and graduate programs are not analyzed in this study.

As shown in Table 3.1, from the 653 participants, 51.5% is from Faculty of Engineering.

Table 3.1: Distribution of Participants in terms of Faculties.

Faculty of Students	Frequency	Percent
Faculty of Architecture	43	6,6
Faculty of Arts and Sciences	98	15,0
Faculty of Economic and Administrative Sciences	65	10,0
Faculty of Education	111	17,0
Faculty of Engineering	336	51,5
Total	**653**	**100,0**

As shown in Table 3.2, 649 participants declared their gender and 64.4% of them are male.

Table 3.2: Gender of Participants

Gender of Students	Frequency	Valid Percent
Male	418	64,4
Female	231	35,6
Total	649	100,0
Missing	4	
Total	**653**	

All of the students responded the year of birth question. As Table 3.3 illustrated, most of them are at age between 17 and 24.

Table 3.3: Birth Year of Participants

Birth Year of Students	Frequency	Percent
1971	1	,2
1974	1	,2
1977	3	,5
1980	2	,3
1981	12	1,8
1982	12	1,8
1983	18	2,8
1984	48	7,4
1985	86	13,2
1986	106	16,2
1987	87	13,3
1988	127	19,4
1989	118	18,1
1990	30	4,6
1991	2	,3
Total	**653**	**100,0**

644 participants declared their academic semester. Since questionnaire applied at fall semester, odd semesters are higher than even ones. In addition, the most of the participants are from prep school. These results can be shown at Table 3.4.

Table 3.4: Academic Semester of Participants

Academic Semester	**Frequency**	**Valid Percent**
0	113	17,5
1	62	9,6
2	92	14,3
3	41	6,4
4	85	13,2
5	9	1,4
6	81	12,6
7	14	2,2
8	84	13,0
9	5	,8
10	35	5,4
11	3	,5
12	5	,8
13	2	,3
14	8	1,2
15	1	,2
16	4	,6
Total	**644**	**100,0**
Missing	9	
Total	**653**	

All participants declared where they stay during the academic semester. 55.3 percents of the participants stay at METU Dormitories. On the other hand, 29.6% of them are staying with their families or relatives. Table 3.5 illustrates the results.

Table 3.5: Accommodation of Participants During Academic Semesters

Accommodation During School Time	Frequency	Percent
At house with family	180	27,6
At house with friends or alone	93	14,2
At house of relatives	13	2,0
At METU Dormitories	361	55,3
Other Dormitories	6	,9
Total	**653**	**100,0**

As shown in Table 3.6, 54.7% of participants, who responded the type of computer question, have a laptop computer and 17.6% of them have both laptop and desktop computers. Totally, 72.3% of participants have a laptop computer.

Table 3.6: Participants Type of Computer

Type of Computer	Frequency	Valid Percent
Desktop PC	179	27,7
Notebook	354	54,7
Both	114	17,6
Total	647	100,0
Missing	6	
Total	**653**	

Table 3.7 shows the Internet connection types of participants. 311 participants declared that they are connected to the METU-NET from dormitory room Ethernet cable and 35 of them are connected to the METU-NET from METU Wireless LAN. Totally, 346 students declared that they are connecting to METU-NET from where they stay. This results conflict with results shown at Table 3.5 where 361 students declared they are staying at METU Dormitories. 12

participants who do not know the connection type may be staying at dormitories, however even if so, there are still 3 conflicting answer.

Table 3.7: Internet Connection Type of Participants

Internet Connection Type	Frequency	Valid Percent
Ethernet (Dormitory Room)	311	47,7
METU Wireless LAN	35	5,4
ADSL Modem (Wired/Wireless)	279	42,8
Cable Modem	11	1,7
Dial Up Modem 56K	4	,6
I don't know	12	1,8
Total	**652**	**100,0**
Missing	1	
Total	**653**	

Table 3.8 and Table 3.9 shows that, participants are connecting to the Internet 7 days of week and mostly between 2 - 10 hours in a day.

Table 3.8: Distribution of Frequency of Internet Usage (Days in a Week)

Days in a week	Frequency	Valid Percent
1 Day	14	2,2
2 Days	4	,6
3 Days	3	,5
4 Days	8	1,2
5 Days	25	3,9
6 Days	25	3,9
7 Days	570	87,8
Total	**649**	**100,0**
Missing	4	
Total	**653**	

Table 3.9: Distribution of Frequency of Internet Usage (Hours in a Day)

Hours in a Day	Frequency	Valid Percent
1 Hour	33	5,1
2 Hours	81	12,5
3 Hours	104	16,0
4 Hours	61	9,4
5 Hours	75	11,6
6 Hours	73	11,2
7 Hours	29	4,5
8 Hours	50	7,7
9 Hours	12	1,8
10 Hours	60	9,2
11 Hours	1	,2
12 Hours	16	2,5
13 Hours	2	,3
14 Hours	9	1,4
15 Hours	17	2,6
16 Hours	3	,5
18 Hours	3	,5
20 Hours	3	,5
23 Hours	17	2,6
Total	**649**	**100,0**
Missing	4	
Total	**653**	

Participants were asked to declare their perceived usage and importance about 16 Internet applications. Results can be seen from Graph 3.1 and Graph 3.2. For the perceived usages, top scores are “Seeking information about hobbies”, “Seeking current information like news, sports, etc.”, “Email” and “Instant messaging usage”. Shopping has the least usage score with 1.6. For perceived importance of the Internet applications, followings are found to be important respectively: “E-mail”, “Seeking information about hobbies”, “Academic course work”, “Academic Research”, and “Seeking current information like news, sports, etc.”.

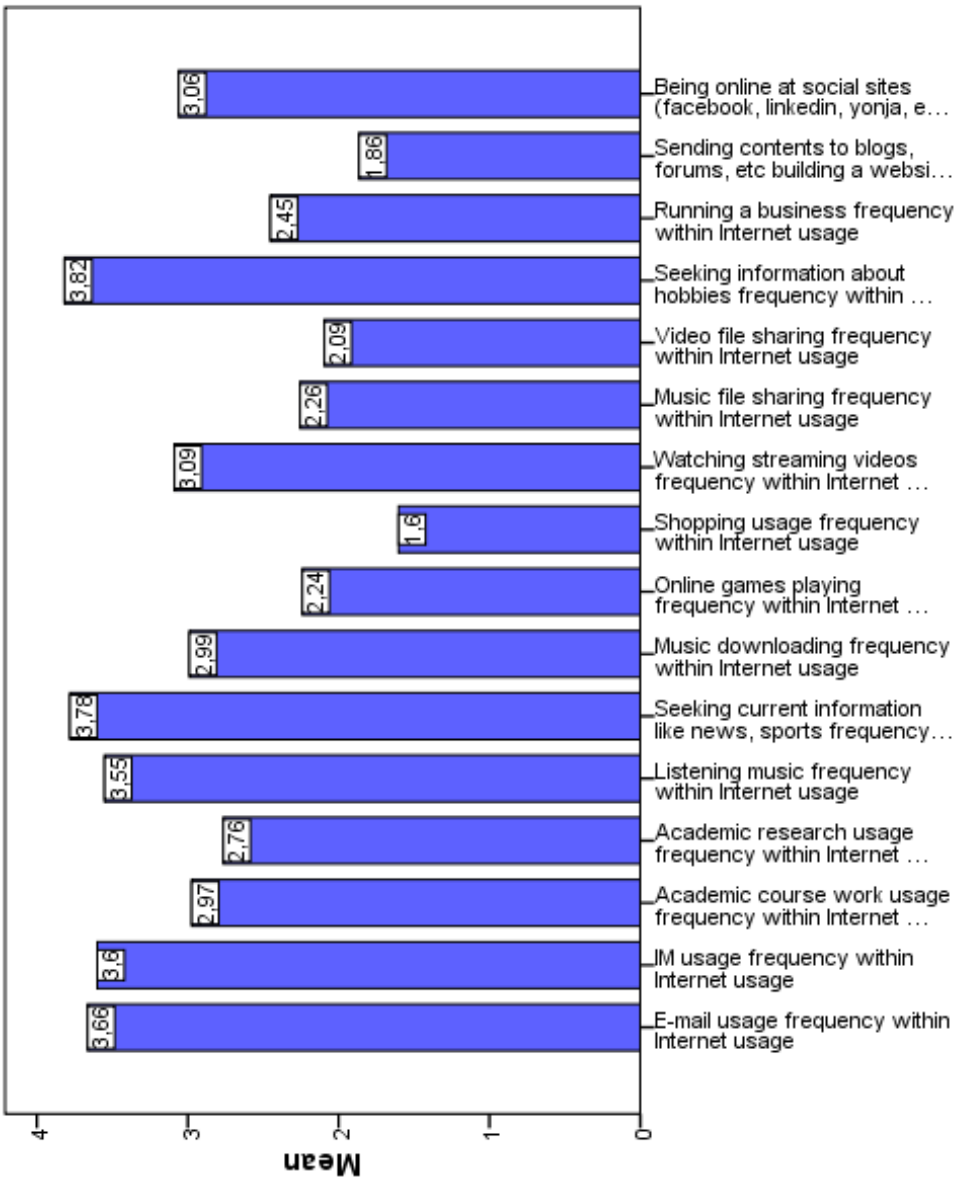

Figure 3.1 : Usage of Internet Applications

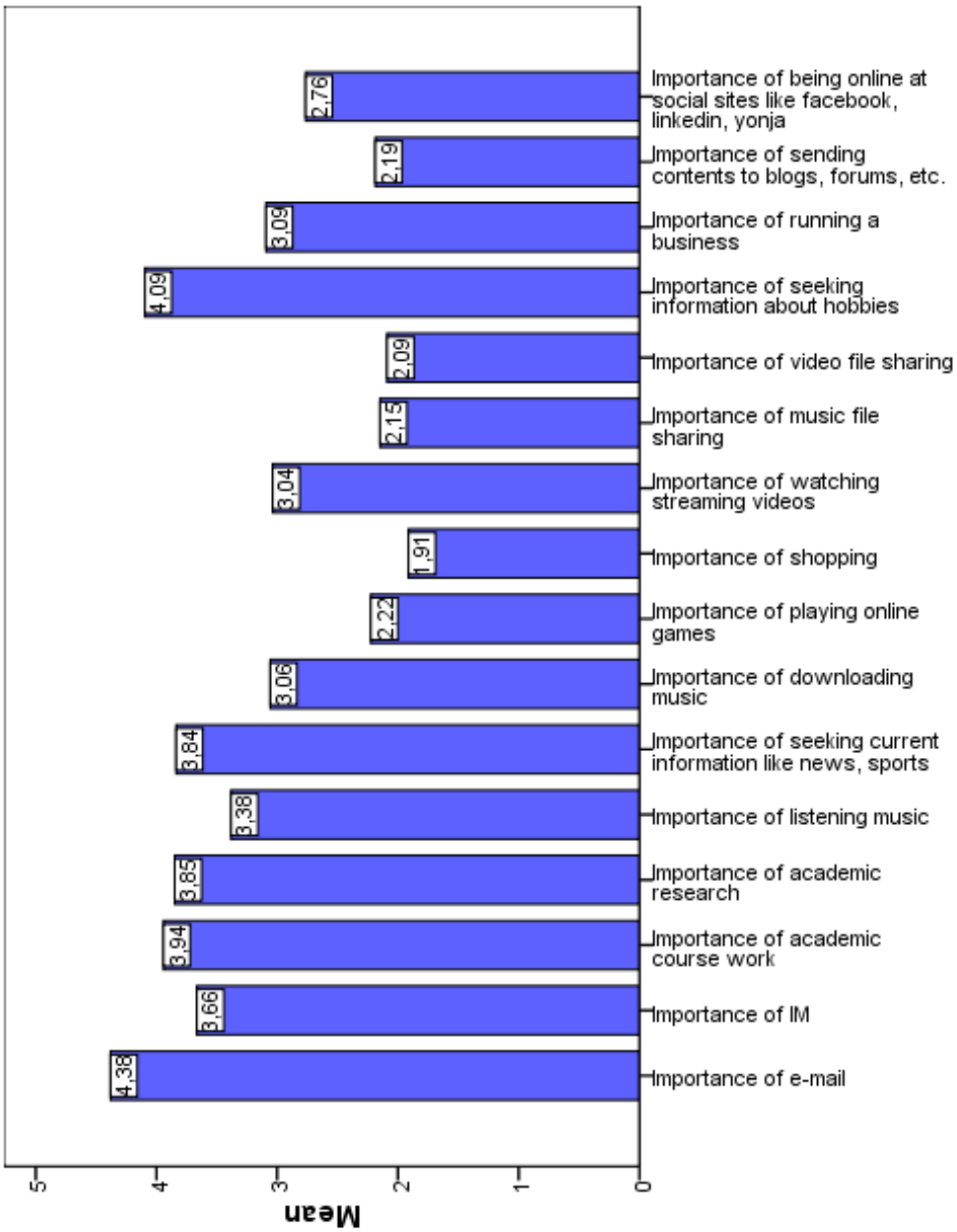

Figure 3.2 : Importance of Internet Applications

3.3 Data Collection Instrument

For data collection, a 52 items questionnaire was designed. The questionnaire was designed in 5 sections, all of which are presented in this chapter. During the development, Mathews and Schrum's (2003) “Internet Use Survey” was inspired. Most of the items at sections 3, 4 and 5 of questionnaire were translated from parts of sections 2 and 4 of “Internet Use Survey”. Due to rare usage of wireless handheld devices, researcher eliminated the “Transferring on-line information to wireless handheld device” item from Internet applications which was used in both sections 3 and 4. In addition, researcher added the “Being online at social sites (facebook, linkedin, yonja, etc)” item to Internet applications. Section 2 of the questionnaire was added to find out students ideas about infrastructure of both METU and ULAKBİM.

3.3.1 Section 1 : Demographics

In this section, totally 9 questions were asked to the participants. Items in this section aim to gather information about participants’ gender, age, academic status and Internet usage. Items at this section are:

1. Gender of Students
2. Birth Year of Students
3. Faculty of Students
4. Students Academic Semester
5. Students Accommodation During School Time
6. Students Computer Type
7. Internet Connection Type
8. Frequency of Internet Connection (Days in a Week)
9. Frequency of Internet Connection (Hours in a Day)

3.3.2 Section 2 : Satisfaction with Networking Infrastructure

This section consists of 3 items with 5-point Likert-type scale and aims to find students satisfaction about currents infrastructure. Items at this section are:

1. Students' Satisfaction with Connection Speed to the Internet
2. Students Satisfaction with Connection Speed to the METU Network Backbone
3. Students Satisfaction with Connection Speed to the National / International Academic Network

3.3.3 Section 3 : Perceived Usage of Internet Applications

In section 3, participants were asked to select usage frequency of listed 16 items Internet applications. Answers were in 5-point Likert-scale. This section is mostly translated from "Current Media Use" section of Mathews and Schrum's (2003) survey. Items at this section are:

1. E-mail usage frequency within Internet usage
2. IM usage frequency within Internet usage
3. Academic course work usage frequency within Internet usage
4. Academic research usage frequency within Internet usage
5. Listening music frequency within Internet usage
6. Seeking current information like news, sports frequency within Internet usage
7. Music downloading frequency within Internet usage
8. Online games playing frequency within Internet usage
9. Shopping usage frequency within Internet usage
10. Watching streaming videos frequency within Internet usage
11. Music file sharing frequency within Internet usage
12. Video file sharing frequency within Internet usage

13. Seeking information about hobbies frequency within Internet usage
14. Running a business frequency within Internet usage
15. Sending contents to blogs, forums, etc building a website frequency within Internet usage
16. Being online at social sites (facebook, linkedin, yonja, etc) frequency within Internet usage

For reliability analysis of this section, Cronbach Alpha value is calculated as 0.713. As shown in Table 3.10, deletion of any item cannot increase the value.

Table 3.10: Inter-item Cronbach Alpha Values for Section 3

Item	**Cronbach's Alpha if Item Deleted**
E-mail usage frequency within Internet usage	,706
IM usage frequency within Internet usage	,705
Academic course work usage frequency within Internet usage	,713
Academic research usage frequency within Internet usage	,712
Listening music frequency within Internet usage	,687
Seeking current information like news, sports frequency within Internet usage	,706
Music downloading frequency within Internet usage	,683
Online games playing frequency within Internet usage	,706
Shopping usage frequency within Internet usage	,699
Watching streaming videos frequency within Internet usage	,694
Music file sharing frequency within Internet usage	,671
Video file sharing frequency within Internet usage	,675
Seeking information about hobbies frequency within Internet usage	,700
Running a business frequency within Internet usage	,708
Sending contents to blogs, forums, etc building a website frequency within Internet usage	,707
Being online at social sites (facebook, linkedin, yonja, etc) frequency within Internet usage	,709

3.3.4 Section 4 : Perceived Importance of Internet Applications

In Section 4, participants were asked to select perceived importance level of Internet applications. This section is mostly translated from “Current Media Use” section of Mathews and Schrum's (2003) survey. Items at this section are:

1. Importance of e-mail
2. Importance of IM
3. Importance of academic course work
4. Importance of academic research
5. Importance of listening music
6. Importance of seeking current information like news, sports
7. Importance of downloading music
8. Importance of playing online games
9. Importance of shopping
10. Importance of watching streaming videos
11. Importance of music file sharing
12. Importance of video file sharing
13. Importance of seeking information about hobbies
14. Importance of running a business
15. Importance of sending contents to blogs, forums, etc.
16. Importance of being online at social sites like facebook, linkedin, yonja

For reliability analysis of this section, Cronbach Alpha value is calculated as 0.764. As shown in Table 3.11, deletion of any item can not increase the value.

Table 3.11: Inter-item Cronbach Alpha Values for Section 3

Item	Cronbach's Alpha if Item Deleted
Importance of e-mail	0,761
Importance of IM	0,758
Importance of academic course work	0,761
Importance of academic research	0,759
Importance of listening music	0,751
Importance of seeking current information like news, sports	0,756
Importance of downloading music	0,745
Importance of playing online games	0,760
Importance of shopping	0,751
Importance of watching streaming videos	0,746
Importance of music file sharing	0,730
Importance of video file sharing	0,738
Importance of seeking information about hobbies	0,751
Importance of running a business	0,759
Importance of sending contents to blogs, forums, etc.	0,756
Importance of being online at social sites like facebook, linkedin, yonja	0,758

3.3.5 Section 5 : Internet and Academics

This final section tries to find out Internet and academic usage tendency of participants. There are 8 items and all have categorical data which participants can select the appropriate one. Items are:

1. Percentage of the time students spend on the Internet for personal deeds
2. Percentage of the time students spend on the Internet for academic work
3. Percentage of the time students spend on the Internet for personal hobbies
4. Being able to use the Internet contributes to academic improvement
5. No difficulty using Internet applications
6. The things that students like to do on the Internet distract and slow down their academic improvement

7. Students can concentrate on academic work without being distracted by Internet activities when online
8. Usage of online resources

3.4 Data Collection Procedures

The studies on humans at METU have to be declared and approved. This study was also approved by the Human Researches Ethical Committee under Applied Ethic Research Center at METU. Committee analyzed the questionnaire, information form, the voluntarism policy and they approved the study.

Questionnaire applied via Internet environment which needs careful consideration about some issues from data reliability and consistency to confidential information. Reips (2002b) grouped these issues into 10 areas with five of which are actions to be taken when developing an Internet-based experiment as utilizing dropout as a dependent variable, the use of dropout to detect motivational confounding, placement of questions for personal information, using a collection of techniques, using Internet-based tools. Other five groups are errors to be avoided. These are about: unprotected directories, public access to confidential data, revealing the experiment's structure, ignoring the Internet's technical variance, and improper use of form elements. As explained in this part of study, all of these issues were considered and obeyed when designing the survey.

Survey was conducted on the Internet under controlled conditions. Questionnaire was coded with PHP and MySQL database on a Linux system. First page includes information which was approved by METU Human Researches Ethical Committee and voluntarism policy. Questionnaire was coded with a session mechanism, so that nobody could be able to reach the questions without accepting the policy or submit the answers directly without getting the questions page. Whole system was checked against web attacks and vulnerabilities and there was no vulnerability observed. In addition, an intrusion detection system

and a firewall were configured to detect and protect the questionnaire from attacks during data collection period. After completing and testing the web site, a domain name of odtuanket.ulakbim.gov.tr has taken from ULAKBİM and server was configured to publish the questionnaire.

Firstly, questionnaire was announced at www.hoccam.com which is a social networking web portal and 9700 METU students are members of it. Since there is an interactive environment with students, when researcher informed them, students asked questions directly, and some of them informed their friends to fill out the questionnaire. In addition, responses were mostly verified, since most of the participants leaved a message that they completed the questionnaire, and the submission time stamps were verified. This verification procedure is suggested at Kraut et al.'s paper (2004) for improving and assessing quality of data. Then, an announcement were prepared for METU Web Page and announced, some mail groups were called to fill the questionnaire. From 766 eligible responses, 69% of them came from referrer addresses. Table 3.12 shows the referrer addresses.

Table 3.12: Referrer Addresses of Participants

Referrer Address	Frequency	Percentage
www.hoccam.com	370	70,21
duyuru.metu.edu.tr	126	23,91
www.google.com	3	0,57
cow.ceng.metu.edu.tr	1	0,19
E-mail clients	27	5,12
Total	**527**	**100**

Questionnaire was available between 18th May 2008 and 28th July 2008. During this time, totally 777 results were submitted. Multiple submissions and dropouts were eliminated by techniques as Birnbaum suggested (2004). All results

recorded to the database with the incoming IP address, whether using a web proxy or not, time stamp and a unique identifier. In addition, on the server, access and error logs of the domain name "odtuanket.ulakbim.gov.tr" were separately saved. These logs were used for verification of participants by analyzing referrer addresses, duplicate IP addresses, and time period of completing the questionnaire. With the information at the database, 8 duplicate submissions were detected. These submissions were as resubmission of the submitted answers within 1 or 2 minutes and inserted with clicking back button and submitting again. This low number of multiple submission overlaps with Reips' findings (2002) which indicated that multiple submissions are rare in Web experiments. In addition, 3 responses with all missing values are observed. These 11 records were eliminated. Beside of these, no attack or misuse of web page was detected from whole logs including intrusion detection and firewall systems. All of these procedures are called as systematic data mining techniques and are necessary to identify and eliminate records with anomalous data patterns (Kraut et al., 2004).

3.5 Data Analysis Procedures

Data was collected online at MySQL database and a PHP page was developed to see descriptive statistics for each item real time with the help of PHP-STAT PEAR module. Frequency tables, verification of data and transformation from MySQL to SPSS were also conducted with PHP. For statistical analysis of collected data, SPSS were used.

First of all, Cronbach's Alpha values for section 3 and 4 were calculated. In order to analyze the data, mean scores needed to be compared. Therefore independent samples t-Tests, one way Analysis of Variance (ANOVA) tests and Factorial ANOVA tests were used during data analysis.

In order to compare differences between two means of different groups for determining if the difference is significant or not, T-test can be used. There are

three types of t-tests: Single-Sample T-test, Independent-Samples T-test and paired Samples T-test. Single sample T-test is useful for comparing the mean score of one sample to a fixed estimate, like 0. Paired-samples t-test, namely t-test for dependent means, compared two groups which are related to each other. However, independent-samples t-test compares means of two different, independent groups. In this study, when a variable which is consisting of two independent groups needed to be analyzed, for example participants answer to usage questions needed to be analyzed in terms of gender (male and female) groups, independent samples t-test was used.

Apart from t-tests, Analysis of Variance test can be used to compare three or more groups. One way ANOVA (or single factor ANOVA) is used to test if several means are equal to each other across one dependent variable (Neter et all, 1993, p651-655). In this study, one way ANOVA was used when this condition met. Assumptions of one way ANOVA are normality of the population, independent observations within each treatment, and equality of variances. Factorial ANOVA allows comparing mean score of one variable across more than one variable. Different from Multivariate Analysis of Variance, Factorial ANOVA is used to compare mean score of a variable across independent variables. In this study, factorial ANOVA was used to compare mean scores of dependent variables across three independent variables: gender, accommodation type and faculty. Factorial ANOVA has same assumptions as one way ANOVA.

3.6 Limitations and Assumptions of the Study

For this study, followings are assumed:

1. Participants of this study responded the questionnaire honestly.
2. Participants are coming from normally distributed population.
3. Participants answered the questionnaire without affected by anything. Observations are independent.

Followings are limitations of this study:

1. This study is limited to the data collected from the students from haphazard sampling.
2. Because of voluntarism rule, there may exist biases of participants.
3. Because of data collection method, participants were not controlled when completing the questionnaire. This may brings some environmental effects.
4. Pilot study couldn't be performed. Therefore, reliability analysis was able to be conducted after data collected.
5. This study is limited to METU students who are using the Internet properly. Results of this study cannot be generalized to Turkey.

CHAPTER 4

FINDINGS

The aim of this study is investigating characteristics that affect METU students' perceived high speed Internet usage and importance. By means of this aim, differences in the perceived usage and importance of Internet applications with respect to residence, faculties, and gender were tried to be find out.

This chapter presents the findings of the study from questionnaire. First section summarizes the general characteristics and weekly and daily Internet usage characteristics of participants. In the second section, findings about participants' satisfaction with access speeds to the Internet, METU network backbone and National Research Network in terms of participants' independent characteristics are presented. Third and fourth sections are about participants' perceived usage and importance of 16 Internet applications. The last section of this chapter presents participants ideas about different type of Internet usage in addition to academic usage.

4.1 Characteristics of the Sample

653 eligible responses were analyzed. Frequency tables and percentage distribution within each category of characteristics variables were illustrated at Chapter 3.2. In this section, three fixed factors of participants' which are

independent variables are summarized. Then for each fixed factor, effects on usage frequencies are investigated with Analysis of Variance.

4.1.1 Students' General Characteristics

As can be seen from column total of male participants at Table 4.1, 64.4% of the sample is male. From all male participants, 65.1% of them are from Faculty of Engineering. In terms of male distribution within faculties, 81.9% of participants from Faculty of Engineering are male. Secondly, 61.5% of the participants from Faculty of Economics and Administrative Sciences are male.

The highest responses of female participants in terms of faculties are from Faculty of Arts and Science with 26.8%. Secondly, 26% of female participants are from Faculty of Engineering. In terms of gender distribution within faculties, Faculty of Architecture has the highest female respondents with 69.8% and secondly 63.3% of participants from Faculty of Arts and Science are female.

Table 4.1: Cross Table of Gender versus Faculty of Students

		Male	Female	Total
Faculty of Architecture	Count	13	30	43
	% within Faculty	30,2%	69,8%	100,0%
	% within Gender	3,1%	13,0%	6,6%
	% of Total	2,0%	4,6%	6,6%
Faculty of Arts and Sciences	Count	36	62	98
	% within Faculty	36,7%	63,3%	100,0%
	% within Gender	8,6%	26,8%	15,1%
	% of Total	5,5%	9,6%	15,1%
Faculty of Economic and Administrative Sciences	Count	40	25	65
	% within Faculty	61,5%	38,5%	100,0%
	% within Gender	9,6%	10,8%	10,0%
	% of Total	6,2%	3,9%	10,0%
Faculty of Education	Count	57	54	111
	% within Faculty	51,4%	48,6%	100,0%
	% within Gender	13,6%	23,4%	17,1%
	% of Total	8,8%	8,3%	17,1%
Faculty of Engineering	Count	272	60	332
	% within Faculty	81,9%	18,1%	100,0%
	% within Gender	65,1%	26,0%	51,2%
	% of Total	41,9%	9,2%	51,2%
Total	Count	418	231	649
	% within Faculty	64,4%	35,6%	100,0%
	% within Gender	100,0%	100,0%	100,0%
	% of Total	64,4%	35,6%	100,0%

Since one of the aims of the study is to investigate the effects of students' self-controlled Internet usage, answers of participants staying at house of relatives are combined to answers of participants staying at house with family. In addition for the same reason, answers of participants staying at other dormitories are combined with participants staying at house with friends or alone. Combined results are given at Table 4.2 with cross table of gender versus accommodation type. As a result, 29.6% of participants are staying at house with family, 15.3% are staying at house with friends or alone and 55.2% of participants are staying at METU Dormitories.

For male participants, 53.3% were staying at METU Dormitories and 28.2% were staying at house with family. Female participants have also same order but with different percentages, 58.4% of female participants were staying at METU Dormitories and 29.6% are staying at house with family.

Table 4.2: Cross Table of Gender versus Accommodation Type

		Male	**Female**	**Total**
At house with family	Count	118	74	192
	% within Accommodation	61,5%	38,5%	100,0%
	% within Gender	28,2%	32,0%	29,6%
	% of Total	18,2%	11,4%	29,6%
At house with friends or alone	Count	77	22	99
	% within Accommodation	77,8%	22,2%	100,0%
	% within Gender	18,4%	9,5%	15,3%
	% of Total	11,9%	3,4%	15,3%
At METU Dormitories	Count	223	135	358
	% within Accommodation	62,3%	37,7%	100,0%
	% within Gender	53,3%	58,4%	55,2%
	% of Total	34,4%	20,8%	55,2%
Total	Count	418	231	649
	% within Accommodation	64,4%	35,6%	100,0%
	% within Gender	100,0%	100,0%	100,0%
	% of Total	64,4%	35,6%	100,0%

As can be seen at Table 4.3, METU Dormitories are mostly preferred by participants from Faculty of Economic and Administrative Sciences (66.2%). Participants from Faculty of Architecture have least percentage of staying at house with friends or alone. First two faculties of participants who are staying at house with family are Faculty of Engineering 34.2% and Faculty of Architecture.

Table 4.3: Cross Table of Accommodation versus Faculty

		At house with family	At house with friends or alone	At METU Dormitories	Total
Faculty of Architecture	Count	14	5	24	43
	% within Faculty	32,6%	11,6%	55,8%	100,0%
	% within	7,3%	5,1%	6,6%	6,6%
	% of Total	2,1%	,8%	3,7%	6,6%
Faculty of Arts and Sciences	Count	28	19	51	98
	% within Faculty	28,6%	19,4%	52,0%	100,0%
	% within	14,5%	19,2%	14,1%	15,0%
	% of Total	4,3%	2,9%	7,8%	15,0%
Faculty of Economic and Administrative Sciences	Count	11	11	43	65
	% within Faculty	16,9%	16,9%	66,2%	100,0%
	% within	5,7%	11,1%	11,9%	10,0%
	% of Total	1,7%	1,7%	6,6%	10,0%
Faculty of Education	Count	25	22	64	111
	% within Faculty	22,5%	19,8%	57,7%	100,0%
	% within	13,0%	22,2%	17,7%	17,0%
	% of Total	3,8%	3,4%	9,8%	17,0%
Faculty of Engineering	Count	115	42	179	336
	% within Faculty	34,2%	12,5%	53,3%	100,0%
	% within	59,6%	42,4%	49,6%	51,5%
	% of Total	17,6%	6,4%	27,4%	51,5%
Total	Count	193	99	361	653
	% within Faculty	29,6%	15,2%	55,3%	100,0%
	% within	100,0%	100,0%	100,0%	100,0%
	% of Total	29,6%	15,2%	55,3%	100,0%

4.1.2 Usage Characteristics

For the usage density of participants, as shown in Table 3.8, it can be said that 87.8% of them are connecting the Internet all days of a week. It is observed that mean score of frequency of Internet connection in terms of days in a week is 6.67 with 1.096 standard deviation. In terms of hours in a day, participants declared that they are connecting to the Internet between 2 hours and 10 hours. The mean score of frequency of hours in a day is 6,22 hours with 4,569 standard deviation.

For three fixed factors, namely gender, accommodation and faculty of participants, hypotheses are constructed to find out if there is any significant difference within factors. Hypotheses for usage characteristics are:

- There is no effect of gender on Internet usage mean scores in terms of days in a week
- There is no effect of gender on Internet usage mean scores in terms of hours in a day
- There is no effect of accommodation types on Internet usage mean scores in terms of days in a week
- There is no effect of accommodation types on Internet usage mean scores in terms of hours in a day
- There is no effect of faculties on Internet usage mean scores in terms of days in a week
- There is no effect of faculties on Internet usage mean scores in terms of hours in a day

To find out students purposes for using the Internet, three questions were asked to participants that percentage of time that they spend on the Internet for three main headings: personal deeds, personal hobbies, and academic work. Percentage scale consists of 6 categories which are numbered as 1 for less than 10%, 2 for between 10% and 30%, 3 for between 30% and 50%, 4 for between 50% and 70%, 5 for between 70% and 90%, 6 for higher than 90%. From the results, the mean scores of time percentage categories for personal deeds is 3.58 with 1.1310 standard deviation; for personal hobbies is 3.39 with 1.332 standard deviation; and for academic work is 2.28 with standard deviation 1.148. For three fixed factors (gender, accommodation and faculty), hypotheses are constructed to find out if there is any significant difference within factors. Hypotheses for usage characteristics are:

- There is no effect of gender on time spent on the Internet for personal deeds.
- There is no effect of gender on time spent on the Internet for personal hobbies.
- There is no effect of gender on time spent on the Internet for academic work.
- There is no effect of accommodation type on time spent on the Internet for personal deeds.
- There is no effect of accommodation type on time spent on the Internet for personal hobbies.
- There is no effect of accommodation type on time spent on the Internet for academic work.
- There is no effect of faculty on time spent on the Internet for personal deeds.
- There is no effect of faculty on time spent on the Internet for personal hobbies
- There is no effect of faculty on time spent on the Internet for academic work.

In order to test these hypotheses, Independent Samples test was used for gender types, since there are two groups in gender and Analysis of Variance was constructed for accommodation types and faculties since there are more than two groups in accommodation types and faculties.

4.1.2.1 Gender Effects on Usage Density

The mean score of Internet usage in terms of days in a week is 6.70 with 1.062 standard deviation for male participants which are higher than female participants with 6.64 mean score with 1.102 standard deviation. Also for hourly frequency, male participants have higher mean score (6.34 with Std. Dev =4.842) than female participants (6.00 with Std. Dev. = 4.031). Independent samples test was

conducted to test hypotheses if there is any effect of gender on Internet usage mean scores in terms of days in a week and hours in a day. Table 4.4 summarizes the results of the test. Levene's test for equality of variances resulted significant for Internet usage hours in a day, therefore for this test equal variances are not assumed. From the test result, it is concluded that hypotheses which say "Participants Internet usage mean scores is equal within gender types for daily and weekly Internet usage" cannot be rejected with alpha = 0.05.

Table 4.4: Independent Samples T-Test for Usage Density in terms of Gender

	Levene's Test for Equality of Variances		t-test for Equality of Means				
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Internet Usage (Days in a Week)	1,084 (*:Equal variances assumed)	,298*	,622	643	,534	,055	,088
Internet Usage (Hours in a Day)	4,329 (**: Equal variances not assumed)	,038**	,958	547,857	,338	,342	,357

4.1.2.2 Effects of Accommodation Types on Usage Density

For accommodation types where participants are staying during the academic semesters, mean scores and standard deviations of Internet usage are given at Table 4.5. To find out if there is a significant effect of accommodation types in terms of Internet usage, ANOVA was constructed. Table 4.6 illustrates the results of ANOVA, and from the test results since p-values are greater than 0.05, it is

concluded that hypotheses which are implying "There is no effect of accommodation types on Internet usage mean scores" in terms of both weekly usage and daily usage cannot be rejected.

Table 4.5: Descriptive Statistics of Usage Characteristics in terms of Accommodation

	Accommodation	Statistic		Std. Error
Internet Connection (Days in a Week)	At house with family	Mean	6,79	,056
		Std. Dev.	,768	
	At house with friends or alone	Mean	6,66	,115
		Std. Dev.	1,135	
	At METU Dormitories	Mean	6,62	,064
		Std. Dev.	1,218	
Internet Connection (Hours in a Day)	At house with family	Mean	5,68	,306
		Std. Dev.	4,235	
	At house with friends or alone	Mean	6,30	,444
		Std. Dev.	4,376	
	At METU Dormitories	Mean	6,49	,252
		Std. Dev.	4,778	

Table 4.6: Analysis of Variance for Internet Connection in terms of Accommodation

		Sum of Squares	df	Mean Square	F	Sig.
Internet Connection (Days in a Week)	Between Groups	3,982	2	1,991	1,662	,191
	Within Groups	773,793	646	1,198		
	Total	777,775	648			
Internet Connection (Hours in a Day)	Between Groups	85,073	2	42,536	2,044	,130
	Within Groups	13440,976	646	20,806		
	Total	13526,049	648			

4.1.2.3 Effects of Faculties on Usage Density

Mean scores and standard deviations of Internet usage in terms of faculties are given at Table 4.7. To find out if there is a significant effect of faculties on Internet usage in terms of both daily and weekly usage, ANOVA was constructed. Table 4.8 illustrates the results of ANOVA, and from the test results since p-values are greater than 0.05, it is concluded that hypotheses which are implying “There is no effect of faculties on Internet usage mean scores” in terms of both weekly usage and daily usage can not be rejected.

Table 4.7: Descriptive Statistics of Usage Characteristics in terms of Faculties

	Faculty of Students	Statistic		Std. Error
Internet Connection (Days in a Week)	Faculty of Architecture	Mean	6,88	,070
		Std. Dev.	,453	
	Faculty of Arts and Sciences	Mean	6,47	,145
		Std. Dev.	1,430	
	Faculty of Economic and Administrative Sciences	Mean	6,61	,131
		Std. Dev.	1,048	
	Faculty of Education	Mean	6,74	,099
		Std. Dev.	1,038	
	Faculty of Engineering	Mean	6,69	,058
		Std. Dev.	1,058	
Internet Connection (Hours in a Day)	Faculty of Architecture	Mean	6,57	,729
		Std. Dev.	4,727	
	Faculty of Arts and Sciences	Mean	5,16	,372
		Std. Dev.	3,665	
	Faculty of Economic and Administrative Sciences	Mean	6,14	,565
		Std. Dev.	4,521	
	Faculty of Education	Mean	6,39	,402
		Std. Dev.	4,221	
	Faculty of Engineering	Mean	6,44	,267
		Std. Dev.	4,881	

Table 4.8: Analysis of Variance for Internet Connection in terms of Faculties

		Sum of Squares	df	Mean Square	F	Sig.
Internet Connection (Days in a Week)	Between Groups	6,232	4	1,558	1,301	,268
	Within Groups	771,543	644	1,198		
	Total	777,775	648			
Internet Connection (Hours in a Day)	Between Groups	130,934	4	32,734	1,574	,180
	Within Groups	13395,115	644	20,800		
	Total	13526,049	648			

4.1.2.4 Gender Effects on Usage Purpose

The mean scores of time spent on the Internet for personal deeds are 3.41 (Std. Dev. = 1.292) for male and 3.92 (Std. Dev. = 1.281) for female; for academic works are 2.04 (Std. Dev. = 1.007) for male and 2.69 (Std. Dev. = 1.260) for female; and 3.39 for both male (Std. Dev. = 1.292) and female (Std. Dev. = 1.404).

Independent samples test was conducted to test hypotheses if there is any effect of gender on time spent on the Internet mean scores for personal deeds, academic works and personal hobbies. Table 4.9 summarizes the results of the test. Levene's test for equality of variances resulted significant for academic work, therefore for this test equal variances are not assumed. From the test result, it is observed that there is an effect of gender on time spent on the Internet for personal deeds and for academic work for alpha = 0.05. Therefore followings can be concluded:

- Female participants spent more time on the Internet for personal deeds

than male participants.

- Female participants spent more time on the Internet for academic work than male participants.

Table 4.9: Independent Samples T-Test for Usage Purposes in terms of Gender

	Levene's Test for Equality of Variances		t-test for Equality of Means			
	F	**Sig.**	**t**	**df**	**Sig. (2-tailed)**	**Mean Difference**
For personal deeds	,587	,444	-4,777	637	,000	-,510
			-4,790	463,551	,000	-,510
For academic work	29,431	,000	-7,113	637	,000	-,650
	Equal variances not assumed		-6,663	381,628	,000	-,650
For personal hobbies	2,678	,102	,019	635	,985	,002
			,018	429,126	,985	,002

4.1.2.5 Effects of Faculties on Usage Purpose

Mean scores and standard deviations of usage purposes in terms of faculties are given at Table 4.10. To find out if there is a significant effect of faculties on time spent on the Internet mean scores for personal deeds, academic works and personal hobbies, ANOVA was constructed. Table 4.11 illustrates the results of ANOVA. For the alpha = 0.05, followings are significant:

- Effect of faculty on time spent on the Internet for personal deeds is significant with p-value=0.001
- Effect of faculty on time spent on the Internet for academic work is

significant with p-value=0.000

From the Post Hoc pairwise mean difference test, it can be concluded that for time spent on the Internet for personal needs, mean score of participants from Faculty of Engineering is significantly less than participants from Faculty of Arts and Sciences (mean difference (i, j) = -0.558, Tukey p-value = 0.002) and Faculty of Economics and Administrative Sciences (mean difference (i, j) = -0.485, Tukey p-value = 0.049).

From the Post Hoc pairwise mean difference test, it can be concluded that for time spent on the Internet for academic works, mean score of participants from Faculty of Engineering is significantly less than participants from Faculty of Architecture (mean difference (i, j) = -0.649, Tukey p-value = 0.003), from Faculty of Arts and Sciences (mean difference (i, j) = -0.385, Tukey p-value = 0.024) and Faculty of Education (mean difference (i, j) = -0.842, Tukey p-value = 0.000).

Table 4.10: Descriptive Statistics of Usage Purposes in terms of Faculties

		Mean	Std. Dev.	Std. Error
For personal deeds	Faculty of Architecture	3,52	1,348	,208
	Faculty of Arts and Sciences	3,98	1,322	,135
	Faculty of Economic and Administrative Sciences	3,91	1,123	,140
	Faculty of Education	3,55	1,261	,120
	Faculty of Engineering	3,42	1,324	,073
	Total	3,58	1,310	,052
For academic work	Faculty of Architecture	2,64	1,303	,201
	Faculty of Arts and Sciences	2,38	1,196	,123
	Faculty of Economic and Administrative Sciences	2,38	1,279	,160
	Faculty of Education	2,84	1,138	,108
	Faculty of Engineering	1,99	,997	,055
	Total	2,28	1,148	,045
For personal hobbies	Faculty of Architecture	3,31	1,352	,209
	Faculty of Arts and Sciences	3,47	1,391	,142
	Faculty of Economic and Administrative Sciences	3,44	1,377	,173
	Faculty of Education	3,12	1,253	,120
	Faculty of Engineering	3,45	1,325	,073
	Total	3,39	1,332	,053

Table 4.11: Analysis of Variance for Usage Purposes in terms of Faculties

		Sum of Squares	df	Mean Square	F	Sig.
For personal deeds	Between Groups	30,692	4	7,673	4,570	**,001***
	Within Groups	1069,596	637	1,679		
	Total	1100,288	641			
For academic work	Between Groups	68,158	4	17,039	13,98	**,000***
	Within Groups	776,043	637	1,218		
	Total	844,201	641			
For personal hobbies	Between Groups	10,418	4	2,604	1,472	,209
	Within Groups	1123,706	635	1,770		
	Total	1134,123	639			

4.1.2.6 Effect of Accommodation on Usage Purposes

In order to find out if there is a significant effect of accommodation type on time spent on the Internet mean scores for personal deeds, academic works and personal hobbies, ANOVA was constructed. Table 4.12 illustrates the results of ANOVA. From the results it can be concluded that for the alpha = 0.05, there is no significant effect of accommodation on usage purposes.

Table 4.12: Analysis of Variance for Usage Purposes in terms of Accommodation

		Sum of Squares	df	Mean Square	F	Sig.
For personal needs	Between Groups	,907	2	,454	,264	,768
	Within Groups	1099,381	639	1,720		
	Total	1100,288	641			
For academic work	Between Groups	4,157	2	2,079	1,581	,207
	Within Groups	840,044	639	1,315		
	Total	844,201	641			
For personal hobbies	Between Groups	3,769	2	1,884	1,062	,346
	Within Groups	1130,355	637	1,774		
	Total	1134,123	639			

4.2 Satisfaction with Network Infrastructure

Participants' ideas were asked about if they are satisfied with access speeds to the Internet, METU Backbone and National Research Network, namely ULAKNET. As summarized in Table 4.13, mean scores of participants satisfaction can be ordered as ULAKNET with lowest mean score 3.22, Internet with 3.35 mean score and METU-NET with the highest mean score of 3.54. In addition, modes of satisfaction with access speeds to the Internet and METU-NET are 4, mode of ULAKNET is 3.

Table 4.13: Descriptive Statistics for Students Satisfaction with Network Infrastructure

	Internet	METU-NET	ULAKNET
Valid	648	641	637
Missing	5	12	16
Mean	3,35	3,54	3,22
Mode	4	4	3

In detail, as can be seen at Table 4.14, 50% of participants declared that they are fairly satisfied or very satisfied with access speed to the Internet. For access speed to METU-NET, 57.4% of participants declared fairly or very satisfied. On the other hand, 40.5% of participants declared fairly or very satisfied with access speed to ULAKNET.

Table 4.14: Participants Satisfaction Percentages with Network Infrastructure

		Frequency	Percent
Internet	Not at all satisfied	43	6,6
	Not very satisfied	86	13,3
	Neutral	195	30,1
	Fairly Satisfied	246	38,0
	Very Satisfied	78	12,0
	Total	648	100,0
METU-NET	Not at all satisfied	50	7,8
	Not very satisfied	55	8,6
	Neutral	168	26,2
	Fairly Satisfied	232	36,2
	Very Satisfied	136	21,2
	Total	641	100,0
ULAKNET	Not at all satisfied	48	7,5
	Not very satisfied	92	14,4
	Neutral	239	37,5
	Fairly Satisfied	191	30,0
	Very Satisfied	67	10,5
	Total	637	100,0

For three characteristics of participants which are gender, accommodation type and faculty, Factorial ANOVA is used to answer the question: Is there any main effects or interactions between three independent variables and participants satisfaction with access speeds? The main emphasis is not only on interactions between fixed variables of participants, but also on main effects of fixed variables. Therefore for participants' satisfaction with each infrastructure type, following hypotheses are constructed:

- There is no main effect of gender
- There is no main effect of accommodation type

- There is no main effect of faculty
- There is no effect of interaction between gender and accommodation
- There is no effect of interaction between gender and faculty
- There is no effect of interaction between faculty and accommodation
- There is no effect of interaction between gender, faculty and accommodation

To analyze these hypotheses, 2 (gender) x 5 (faculty) x 3 (accommodation) Factorial ANOVA was constructed for each infrastructure type. In addition, to find which group of factor is different than the others for significant factors which have more than two groups, pairwise (I, j) mean differences are tested with Post Hoc Tukey test based on observed means.

4.2.1 Effects of Characteristics on Satisfaction with Access Speed to the Internet

Under the hypotheses that participants satisfaction with Access Speed to the Internet is not vary by gender, accommodation, faculty or any combination of them, Factorial ANOVA was constructed and results were summarized at Table 4.15. For the alpha = 0.05, followings are significant:

- Main effect of gender is significant with p-value=0.020
- Interaction effect of gender and accommodation type is significant with p-value=0.013

Mean scores of satisfaction with Access Speed to the Internet are 3.287 for male participants and 3.622 for female participants. The mean difference (i, j) 0.335 is significant with p-value=0.020. Therefore it can be concluded that female participants are significantly more satisfied with Access Speed to the Internet than male participants.

Pairwise differences between subgroups of gender and accommodation indicate that, female participants staying at METU Dormitories have highest satisfaction rate with 3.745 and male participants from METU Dormitories have lowest satisfaction rate with 2.945. From this result, followings can be concluded:

- Female participants are significantly more satisfied with Access Speed to the Internet than male participants.
- At METU Dormitories, female participants are more satisfied with access speed of Internet than male participants, whereas participants from other accommodation types declared nearly equal answers. The effects of gender and accommodation types are not additive, which means that the relative effect of the male across accommodation is different from that of female.

Table 4.15: Effects of Characteristics on Satisfaction with Access Speed to the Internet

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	5,773	1	5,773	5,448	**,020***
Faculty	1,881	4	,470	,444	,777
Accommodation	3,997	2	1,999	1,886	,153
Gender * Faculty	3,369	4	,842	,795	,529
Gender * Accommodation	9,324	2	4,662	4,400	**,013***
Faculty * Accommodation	3,763	8	,470	,444	,895
Gender * Faculty * Accommodation	9,722	8	1,215	1,147	,330
Error	650,563	614	1,060		
Total	7990,000	644			
Corrected Total	731,857	643			

a. R Squared = .111 (Adjusted R Squared = .069)

4.2.2 Effects of Characteristics on Satisfaction with Access Speed to METU-NET

Under the hypotheses that participants satisfaction with access speed to METU-NET is not vary by gender, accommodation, faculty or any combination of them, Factorial ANOVA was constructed and results were summarized at Table 4.16. For the alpha = 0.05, following is significant:

- Main effect of accommodation is significant with p-value=0.000

Mean scores of satisfaction with access speed to METU-NET are 3.269 for participants staying at house with family, 2.849 for participants staying at house with friends or alone, and 3.751 for participants staying at METU Dormitories. From the Post Hoc pairwise mean difference test, it can be concluded that participants from METU Dormitories are significantly more satisfied with access speed to METU-NET than participants staying at house with friends or alone (mean difference (i, j) = 0.60, Tukey p-value = 0.000) and participants staying at house with family (mean difference (i, j) = 0.54, Tukey p-value = 0.000).

Table 4.16: Effects of Characteristics on Satisfaction with Access Speed to METU Network Backbone

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	1,746	1	1,746	1,482	,224
Faculty	8,508	4	2,127	1,806	,126
Accommodation	32,120	2	16,060	13,638	**,000***
Gender * Faculty	2,411	4	,603	,512	,727
Gender * Accommodation	3,692	2	1,846	1,568	,209
Faculty * Accommodation	17,001	8	2,125	1,805	,073
Gender * Faculty * Accommodation	9,639	8	1,205	1,023	,417
Error	714,787	607	1,178		
Total	8824,000	637			
Corrected Total	834,148	636			

a. R Squared = .143 (Adjusted R Squared = .102)

4.2.3 Effects of Characteristics on Satisfaction with Access Speed to ULAKNET

Under the hypotheses that participants satisfaction with access speed to ULAKNET is not vary by gender, accommodation, faculty or any combination of them, Factorial ANOVA was constructed and results were summarized at Table 4.17. For the alpha = 0.05, followings are significant:

- Main effect of gender is significant with p-value=0.000
- Main effect of accommodation is significant with p-value=0.024

Mean scores of satisfaction with access speed to ULAKNET in terms of gender are 2.835 for male participants and 3.386 for female participants. The mean difference (i, j) 0.550 is significant with p-value=0.000. Therefore it can be

concluded that female participants are significantly more satisfied with access speed to ULAKNET than male participants.

Means scores in terms of accommodation types are 3.104 for participants staying at house with family, 2.890 for participants staying at house with friends or alone, and 3.337 for participants staying at METU Dormitories. From the Post Hoc pairwise mean difference LSD test, participants staying at METU Dormitories declared significantly different answers from participants staying at house with family (p-value = 0.033). Therefore it can be concluded that participants staying at METU Dormitories are significantly more satisfied with access speed to ULAKNET than participants staying at a house with family.

Table 4.17: Effects of Characteristics on Satisfaction with Connection Speed to National/International Academic Network

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	15,324	1	15,324	14,546	**,000***
Faculty	4,112	4	1,028	,976	,420
Accommodation	7,876	2	3,938	3,738	**,024***
Gender * Faculty	2,247	4	,562	,533	,711
Gender * Accommodation	,748	2	,374	,355	,701
Faculty * Accommodation	14,828	8	1,853	1,759	,082
Gender * Faculty * Accommodation	5,781	8	,723	,686	,704
Error	635,241	603	1,053		
Total	7246,000	633			
Corrected Total	710,209	632			
a. R Squared = .106 (Adjusted R Squared = .063)					

4.3 Effects of Characteristics on Perceived Internet Applications Usage

For three characteristics of participants which are gender, accommodation type and faculty, Factorial ANOVA is used to answer the question: Is there any main effects or interactions between three independent variables and participants perceived usage of Internet applications? The main emphasis is not only on interactions between fixed variables of participants, but also on main effects of fixed variables. Therefore for participants' perceived usage with each Internet applications, following hypotheses are constructed:

- There is no main effect of gender
- There is no main effect of accommodation type
- There is no main effect of faculty
- There is no effect of interaction between gender and accommodation
- There is no effect of interaction between gender and faculty
- There is no effect of interaction between faculty and accommodation
- There is no effect of interaction between gender, faculty and accommodation

To analyze these hypotheses, 2 (gender) x 5 (faculty) x 3 (accommodation) Factorial ANOVA was constructed for each Internet application. In addition, to find which group of factor is different than the others for significant factors which have more than two groups, pairwise (I, j) mean differences are tested with Post Hoc Tukey test based on observed means.

4.3.1 Effects of Characteristics on Perceived E-mail Usage

Under the hypotheses that participants perceived e-mail usage is not vary by gender, accommodation, faculty or any combination of them, Factorial ANOVA was constructed and results were summarized at Table 4.18. For the alpha = 0.05, following is significant:

- Main effect of faculty is significant with p-value=0.001

From the Post Hoc pairwise mean difference test, participants from Faculty of Education declared usage significantly more than participants from Faculty of Engineering (mean difference (i-j) = 0.70, Tukey p-value = 0.000). Therefore it can be concluded that perceived e-mail usage of participants from Faculty of Education are significantly more than participants from Faculty of Engineering.

Table 4.18: Factorial ANOVA for Perceived E-mail Usage

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Gender	1,354	1	1,354	,978	,323
Faculty	26,598	4	6,649	4,802	**,001***
Accommodation	,262	2	,131	,095	,910
Gender * Faculty	7,267	4	1,817	1,312	,264
Gender * Accommodation	1,917	2	,959	,692	,501
Faculty * Accommodation	3,627	8	,453	,327	,956
Gender * Faculty * Accommodation	5,683	8	,710	,513	,847
Error	852,943	616	1,385		
Total	9609,000	646			
Corrected Total	936,107	645			

a. R Squared = ,089 (Adjusted R Squared = ,046)

4.3.2 Effects of Characteristics on Perceived Instant Messaging Usage

Under the hypotheses that participants perceived instant messaging usage is not vary by gender, accommodation, faculty or any combination of them, Factorial ANOVA was constructed and results were summarized at Table 4.19. For the alpha = 0.05, followings are significant:

- Main effect of gender is significant with p-value=0.001
- Main effect of accommodation is significant with p-value=0.005
- Interaction effect of gender and faculty is significant with p-value=0.048

Mean scores of perceived instant messaging usage are 3.152 for male participants and 3.754 for female participants. The mean difference (i, j) 0.602 is significant with p-value=0.001. Therefore it can be concluded that perceived instant messaging usage of female participants are significantly more than male participants.

From the Post Hoc pairwise mean difference test, it can be concluded that perceived instant messaging usage of participants from METU Dormitories are significantly more than participants staying at house with friends or alone (mean difference (i, j) = 0.56, Tukey p-value = 0.000).

Mean scores of male participants from Faculty of Architecture and Faculty of Arts and Science have the minimum values (2.958 and 2.865). On the other hand, mean scores of female participants from these faculties are higher than other faculties. Since the interaction effect of gender and faculty significant, it can be said that the relative effect of males across faculty is different from that of females.

Table 4.19: Factorial ANOVA for Perceived Instant Messaging Usage

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	17,966	1	17,966	10,910	**,001***
Faculty	4,288	4	1,072	,651	,626
Accommodation	17,586	2	8,793	5,339	**,005***
Gender * Faculty	15,862	4	3,965	2,408	**,048***
Gender * Accommodation	,863	2	,431	,262	,770
Faculty * Accommodation	8,317	8	1,040	,631	,752
Gender * Faculty * Accommodation	17,409	8	2,176	1,321	,230
Error	1011,134	614	1,647		
Total	9499,000	644			
Corrected Total	1119,607	643			
a. R Squared = ,097 (Adjusted R Squared = ,054)					

4.3.3 Effects of Characteristics on Perceived Academic Course Work

Under the hypotheses that participants perceived academic course work usage is not vary by gender, accommodation, faculty or any combination of them, Factorial ANOVA was constructed and results were summarized at Table 4.20. For the alpha = 0.05, followings are significant:

- Main effect of gender is significant with p-value=0.003
- Main effect of faculty is significant with p-value=0.011

Mean scores of perceived usage are 2.794 for male participants and 3.232 for female participants. The mean difference (i, j) 0.438 is significant with p-value=0.003. Therefore it can be concluded that perceived academic course work usage of female participants are significantly more than male participants.

From the Post Hoc pairwise mean difference test, it can be concluded that perceived academic course work usage of participants from Faculty of Education are significantly more than participants from Faculty of Arts and Science (mean difference (i, j) = 0.58, Tukey p-value = 0.001) and from Faculty of Engineering (mean difference (i, j) = 0.73, Tukey p-value = 0.000).

Table 4.20: Factorial ANOVA for Perceived Academic Course Work

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	9,876	1	9,876	8,674	**,003***
Faculty	14,953	4	3,738	3,283	**,011***
Accommodation	2,146	2	1,073	,943	,390
Gender * Faculty	4,517	4	1,129	,992	,411
Gender * Accommodation	,088	2	,044	,039	,962
Faculty * Accommodation	4,968	8	,621	,545	,822
Gender * Faculty * Accommodation	10,152	8	1,269	1,114	,351
Error	699,101	614	1,139		
Total	6483,000	644			
Corrected Total	788,551	643			
a. R Squared = ,113 (Adjusted R Squared = ,072)					

4.3.4 Effects of Characteristics on Perceived Academic Research Usage

Under the hypotheses that participants perceived academic research usage is not vary by gender, accommodation, faculty or any combination of them, Factorial ANOVA was constructed and results were summarized at Table 4.21. For the alpha = 0.05, followings are significant:

- Main effect of gender is significant with p-value=0.012

- Main effect of faculty is significant with p-value=0.004

Mean scores of perceived usage are 2.642 for male participants and 3.030 for female participants. The mean difference (i, j) 0.389 is significant with p-value=0.012. Therefore it can be concluded that perceived academic research usage of female participants are significantly more than male participants.

From the Post Hoc pairwise mean difference test, it can be concluded that perceived academic research usage of participants from Faculty of Education are significantly more than participants from Faculty of Arts and Science (mean difference (i, j) = 0.43, Tukey p-value = 0.043) and from Faculty of Engineering (mean difference (i, j) = 0.80, Tukey p-value = 0.000). In addition, perceived academic research usage of participants from Faculty of Arts and Science are significantly more than participants from Faculty of Engineering (mean difference (i, j) = 0.37, Tukey p-value = 0.032).

Table 4.21: Factorial ANOVA for Perceived Academic Research Usage

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	7,760	1	7,760	6,323	**,012***
Faculty	19,249	4	4,812	3,921	**,004***
Accommodation	2,459	2	1,229	1,002	,368
Gender * Faculty	6,660	4	1,665	1,357	,248
Gender * Accommodation	,186	2	,093	,076	,927
Faculty * Accommodation	1,531	8	,191	,156	,996
Gender * Faculty * Accommodation	11,891	8	1,486	1,211	,290
Error	748,664	610	1,227		
Total	5751,000	640			
Corrected Total	850,311	639			
a. R Squared = ,120 (Adjusted R Squared = ,078)					

4.3.5 Effects of Characteristics on Perceived Listening Music Usage

Under the hypotheses that participants perceived listening music is not vary by gender, accommodation, faculty or any combination of them, Factorial ANOVA was constructed and results were summarized at Table 4.22. For the alpha = 0.05, following is significant:

- Main effect of gender is significant with p-value=0.014

Mean scores of perceived usage are 3.444 for male participants and 3.901 for female participants. The mean difference (i, j) 0.456 is significant with p-value=0.014. Therefore it can be concluded that perceived listening music usage of female participants are significantly more than male participants.

Table 4.22: Factorial ANOVA for Perceived Listening Music Usage

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	10,713	1	10,713	6,136	**,014***
Faculty	13,583	4	3,396	1,945	,101
Accommodation	,522	2	,261	,150	,861
Gender * Faculty	9,717	4	2,429	1,391	,235
Gender * Accommodation	1,652	2	,826	,473	,623
Faculty * Accommodation	14,396	8	1,799	1,031	,411
Gender * Faculty * Accommodation	21,670	8	2,709	1,552	,136
Error	1071,986	614	1,746		
Total	9329,000	644			
Corrected Total	1178,874	643			
a. R Squared = ,091 (Adjusted R Squared = ,048)					

4.3.6 Effects of Characteristics on Perceived Seeking Current Information

Under the hypotheses that participants perceived seeking current information is not vary by gender, accommodation, faculty or any combination of them, Factorial ANOVA was constructed and results were summarized at Table 4.23. For the alpha = 0.05, followings are significant:

- Main effect of gender is significant with p-value=0.045
- Main effect of faculty is significant with p-value=0.004

Mean scores of perceived usage are 3.934 for male participants and 3.629 for female participants. The mean difference (i, j) 0.305 is significant with p-value=0.045. Therefore it can be concluded that perceived Internet usage as seeking current information like news of male participants are significantly more than female participants.

From the Post Hoc pairwise mean difference test, it can be concluded that perceived Internet usage as seeking current information of participants from Faculty of Economic and Administrative Sciences are significantly more than participants from Faculty of Engineering (mean difference (i, j) = 0.43, Tukey p-value = 0.032).

Table 4.23: Factorial ANOVA for Perceived Seeking Current Information like news, sports

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	4,767	1	4,767	4,033	**,045***
Faculty	18,255	4	4,564	3,861	**,004***
Accommodation	2,986	2	1,493	1,263	,284
Gender * Faculty	7,287	4	1,822	1,541	,189
Gender * Accommodation	,632	2	,316	,267	,766
Faculty * Accommodation	14,728	8	1,841	1,558	,134
Gender * Faculty * Accommodation	14,013	8	1,752	1,482	,160
Error	725,741	614	1,182		
Total	9985,000	644			
Corrected Total	778,129	643			
a. R Squared = ,067 (Adjusted R Squared = ,023)					

4.3.7 Effects of Characteristics on Perceived Music Downloading Usage

Under the hypotheses that participants perceived music downloading usage is not vary by gender, accommodation, faculty or any combination of them, Factorial ANOVA was constructed and results were summarized at Table 4.24. For the alpha = 0.05, following is significant:

- Main effect of gender is significant with p-value=0.005

Mean scores of perceived usage are 2.616 for male participants and 3.154 for female participants. The mean difference (i, j) 0.538 is significant with p-value=0.005. Therefore it can be concluded that perceived Internet usage for downloading music of female participants are significantly more than male participants.

Table 4.24: Factorial ANOVA for Perceived Music Downloading

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	14,744	1	14,744	7,790	**,005***
Faculty	5,436	4	1,359	,718	,580
Accommodation	5,733	2	2,866	1,514	,221
Gender * Faculty	8,172	4	2,043	1,079	,366
Gender * Accommodation	3,694	2	1,847	,976	,377
Faculty * Accommodation	8,765	8	1,096	,579	,796
Gender * Faculty * Accommodation	20,820	8	2,603	1,375	,204
Error	1152,641	609	1,893		
Total	6950,000	639			
Corrected Total	1240,923	638			

a. R Squared = ,071 (Adjusted R Squared = ,027)

4.3.8 Effects of Characteristics on Perceived Playing Online Games Usage

Under the hypotheses that participants perceived playing online games usage is not vary by gender, accommodation, faculty or any combination of them, Factorial ANOVA was constructed and results were summarized at Table 4.25. For the alpha = 0.05, following is significant:

- Main effect of gender is significant with p-value=0.020

Mean scores of perceived usage are 2.464 for male participants and 2.030 for female participants. The mean difference (i, j) 0.433 is significant with p-value=0.020. Therefore it can be concluded that perceived playing online games usage of male participants are significantly more than female participants.

Table 4.25: Factorial ANOVA for Perceived Online Games Playing

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	9,660	1	9,660	5,443	**,020***
Faculty	10,023	4	2,506	1,412	,228
Accommodation	6,225	2	3,112	1,754	,174
Gender * Faculty	8,548	4	2,137	1,204	,308
Gender * Accommodation	1,059	2	,530	,298	,742
Faculty * Accommodation	24,211	8	3,026	1,705	,094
Gender * Faculty * Accommodation	24,280	8	3,035	1,710	,093
Error	1089,659	614	1,775		
Total	4421,000	644			
Corrected Total	1187,694	643			

a. R Squared = ,083 (Adjusted R Squared = ,039)

4.3.9 Effects of Characteristics on Perceived Shopping Usage

Under the hypotheses that participants perceived shopping usage is not vary by gender, accommodation, faculty or any combination of them, Factorial ANOVA was constructed and results were summarized at Table 4.26. As can be seen from table, there is no significant effect of any factor.

Table 4.26: Factorial ANOVA for Perceived Shopping Usage

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	,220	1	,220	,273	,601
Faculty	3,355	4	,839	1,040	,386
Accommodation	2,291	2	1,146	1,420	,243
Gender * Faculty	4,036	4	1,009	1,250	,288
Gender * Accommodation	1,317	2	,658	,816	,443
Faculty * Accommodation	5,804	8	,726	,899	,517
Gender * Faculty * Accommodation	8,766	8	1,096	1,358	,212
Error	492,194	610	,807		
Total	2158,000	640			
Corrected Total	519,600	639			

a. R Squared = ,053 (Adjusted R Squared = ,008)

4.3.10 Effects of Characteristics on Perceived Watching Streaming Videos

Under the hypotheses that participants perceived watching streaming video usage is not vary by gender, accommodation, faculty or any combination of them, Factorial ANOVA was constructed and results were summarized at Table 4.27. For the alpha = 0.05, following is significant:

- Interaction effect of gender and accommodation is significant with p-value=0.002

Mean score of female participants staying at house with family is the minimum value (2.559) whereas that of males at house with family is the highest score of males (3.195). On the other hand, there is no significant difference between mean scores of neither male and female participants nor within accommodation types. Since the interaction effect of gender and accommodation type is significant, it can be said that the relative effect of males across accommodation types is different from that of females.

Table 4.27: Factorial ANOVA for Perceived Watching Streaming Videos

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	,864	1	,864	,656	,418
Faculty	3,866	4	,967	,734	,569
Accommodation	3,943	2	1,971	1,498	,224
Gender * Faculty	,139	4	,035	,026	,999
Gender * Accommodation	16,359	2	8,179	6,215	**,002***
Faculty * Accommodation	9,954	8	1,244	,945	,478
Gender * Faculty * Accommodation	11,424	8	1,428	1,085	,372
Error	805,452	612	1,316		
Total	6958,000	642			
Corrected Total	851,458	641			

a. R Squared = ,054 (Adjusted R Squared = ,009)

4.3.11 Effects of Characteristics on Perceived Music File Sharing

Under the hypotheses that participants perceived music file sharing usage is not vary by gender, accommodation, faculty or any combination of them, Factorial ANOVA was constructed and results were summarized at Table 4.28. For the alpha = 0.05, following is significant:

- Interaction effect of gender and accommodation is significant with p-value=0.041

Mean scores of female participants are ordered as 1.952 for staying at house with family, 2.353 for staying at house with friends or alone and 2.512 for staying at METU Dormitories. On the other hand male participants have different order: 1.541 for staying at house with friends or alone, 2.111 for staying at METU Dormitories 2.281 for staying at house with family. In addition, there is no significant difference between mean scores of neither gender nor accommodation types. Since the interaction effect of gender and accommodation type is

significant, it can be said that the relative effect of males across accommodation types is different from that of females.

Table 4.28: Factorial ANOVA for Perceived Music File Sharing

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	4,456	1	4,456	2,623	,106
Faculty	,913	4	,228	,134	,970
Accommodation	5,377	2	2,688	1,583	,206
Gender * Faculty	12,726	4	3,182	1,873	,114
Gender * Accommodation	10,870	2	5,435	3,200	**,041***
Faculty * Accommodation	16,731	8	2,091	1,231	,278
Gender * Faculty * Accommodation	20,054	8	2,507	1,476	,163
Error	1034,402	609	1,699		
Total	4386,000	639			
Corrected Total	1140,930	638			
a. R Squared = ,093 (Adjusted R Squared = ,050)					

4.3.12 Effects of Characteristics on Perceived Video File Sharing Usage

Under the hypotheses that participants perceived video file sharing usage is not vary by gender, accommodation, faculty or any combination of them, Factorial ANOVA was constructed and results were summarized at Table 4.29. For the alpha = 0.05, following is significant:

- Interaction effect of gender and accommodation is significant with p-value=0.013

Mean score of male participants staying at house with friends or alone is the minimum value (1.490). On the other hand, the mean score of 1.497 was calculated for females staying at house with family. For participants staying at

METU Dormitories, mean scores are near to each other: 2.111 for males, 2.132 for females. Since the interaction effect of gender and accommodation type is significant, it can be said that the relative effect of males across accommodation types is different from that of females.

Table 4.29: Factorial ANOVA for Perceived Video File Sharing

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	,100	1	,100	,061	,805
Faculty	2,205	4	,551	,339	,852
Accommodation	5,619	2	2,809	1,725	,179
Gender * Faculty	7,974	4	1,993	1,224	,299
Gender * Accommodation	14,172	2	7,086	4,351	**,013***
Faculty * Accommodation	14,312	8	1,789	1,098	,362
Gender * Faculty * Accommodation	16,813	8	2,102	1,290	,245
Error	985,316	605	1,629		
Total	3874,000	635			
Corrected Total	1096,702	634			
a. R Squared = ,102 (Adjusted R Squared = ,058)					

4.3.13 Effects of Characteristics on Perceived Seeking Information About Hobbies

Under the hypotheses that participants perceived Internet usage for seeking information about hobbies is not vary by gender, accommodation, faculty or any combination of them, Factorial ANOVA was constructed and results were summarized at Table 4.30. As can be seen from table, there is no significant effect of any factor for alpha = 0.05.

Table 4.30: Factorial ANOVA for Perceived Seeking Information about Hobbies

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	,314	1	,314	,305	,581
Faculty	2,000	4	,500	,486	,746
Accommodation	,782	2	,391	,380	,684
Gender * Faculty	3,074	4	,768	,747	,560
Gender * Accommodation	1,236	2	,618	,601	,549
Faculty * Accommodation	3,926	8	,491	,477	,873
Gender * Faculty * Accommodation	8,391	8	1,049	1,020	,420
Error	628,501	611	1,029		
Total	9977,000	641			
Corrected Total	650,908	640			
a. R Squared = ,034 (Adjusted R Squared = -,011)					

4.3.14 Effects of Characteristics on Perceived Running a Business

Under the hypotheses that participants perceived Internet usage for running a business is not vary by gender, accommodation, faculty or any combination of them, Factorial ANOVA was constructed and results were summarized at Table 4.31. For the alpha = 0.05, following is significant:

- Main effect of faculty is significant with p-value=0.003

From the Post Hoc pairwise mean difference test, it can be concluded that perceived Internet usage for running a business of participants from Faculty of Education is significantly more than participants from Faculty of Arts and Science (mean difference (i, j) = 0.78, Tukey p-value = 0.000) and more than participants from Faculty of Engineering (mean difference (i, j) = 0.70, Tukey p-value = 0.000).

Table 4.31: Factorial ANOVA for Perceived Running a Business

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	,010	1	,010	,007	,936
Faculty	25,295	4	6,324	3,964	**,003***
Accommodation	3,392	2	1,696	1,063	,346
Gender * Faculty	1,682	4	,421	,264	,901
Gender * Accommodation	1,617	2	,809	,507	,603
Faculty * Accommodation	20,802	8	2,600	1,630	,113
Gender * Faculty * Accommodation	1,903	8	,238	,149	,997
Error	960,458	602	1,595		
Total	4847,000	632			
Corrected Total	1060,277	631			

a. R Squared = ,094 (Adjusted R Squared = ,051)

4.3.15 Effects of Characteristics on Perceived Sending Contents

Under the hypotheses that participants perceived Internet usage for sending contents to blogs, forums or building a web site is not vary by gender, accommodation, faculty or any combination of them, Factorial ANOVA was constructed and results were summarized at Table 4.32. For the alpha = 0.05, followings are significant:

- Main effect of gender is significant with p-value=0.000
- Main effect of faculty is significant with p-value=0.001

Mean scores of perceived usage are 2.272 for male participants and 1.673 for female participants. The mean difference (i, j) 0.599 is significant with p-value=0.000. Therefore it can be concluded that perceived Internet usage for sending contents to blogs, forums or building a web site of male participants are significantly more than female participants.

From the Post Hoc pairwise mean difference test, it can be concluded that perceived Internet usage for sending contents to blogs, forums or building a web site, participants from Faculty of Education is significantly more than participants from Faculty of Arts and Science (mean difference (i, j) = 0.68, Tukey p-value = 0.001), Faculty of Economics and Administrative Sciences (mean difference (i, j) = 0.53, Tukey p-value = 0.038) and Faculty of Engineering (mean difference (i, j) = 0.66, Tukey p-value = 0.000).

Table 4.32: Factorial ANOVA for Perceived Sending Contents to blogs, forums, etc. or Building a Website

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	18,395	1	18,395	12,707	**,000***
Faculty	28,821	4	7,205	4,977	**,001***
Accommodation	2,714	2	1,357	,937	,392
Gender * Faculty	1,631	4	,408	,282	,890
Gender * Accommodation	4,980	2	2,490	1,720	,180
Faculty * Accommodation	10,474	8	1,309	,904	,512
Gender * Faculty * Accommodation	3,943	8	,493	,340	,950
Error	872,941	603	1,448		
Total	3156,000	633			
Corrected Total	963,766	632			
a. R Squared = ,094 (Adjusted R Squared = ,051)					

4.3.16 Effects of Characteristics on Perceived Being Online at Social Sites

Under the hypotheses that participants perceived Internet usage for being online at social networking sites is not vary by gender, accommodation, faculty or any combination of them, Factorial ANOVA was constructed and results were

summarized at Table 4.33. As can be seen from table, there is no significant effect of any factor for alpha = 0.05.

Table 4.33: Factorial ANOVA for Perceived Being Online at Social Sites (facebook, linkedin, yonja, etc.)

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	,121	1	,121	,059	,807
Faculty	14,953	4	3,738	1,837	,120
Accommodation	6,713	2	3,356	1,649	,193
Gender * Faculty	,593	4	,148	,073	,990
Gender * Accommodation	,215	2	,108	,053	,949
Faculty * Accommodation	11,427	8	1,428	,702	,690
Gender * Faculty * Accommodation	15,056	8	1,882	,925	,495
Error	1245,652	612	2,035		
Total	7322,000	642			
Corrected Total	1301,508	641			
a. R Squared = ,043 (Adjusted R Squared = -,002)					

4.4 Effects of Characteristics on Perceived Importance of Internet Applications

For three characteristics of participants which are gender, accommodation type and faculty, Factorial ANOVA is used to answer the question: Is there any main effects or interactions between three independent variables and participants perceived importance of Internet applications? The main emphasis is not only on interactions between fixed variables of participants, but also on main effects of fixed variables. Therefore for participants' perceived importance with each Internet applications, following hypotheses are constructed:

- There is no main effect of gender
- There is no main effect of accommodation type
- There is no main effect of faculty
- There is no effect of interaction between gender and accommodation
- There is no effect of interaction between gender and faculty
- There is no effect of interaction between faculty and accommodation
- There is no effect of interaction between gender, faculty and accommodation

To analyze these hypothesis, 2 (gender) x 5 (faculty) x 3 (accommodation) Factorial ANOVA was constructed for each Internet application. In addition, to find which group of factor is different than the others for significant factors which have more than two groups, pairwise (I, j) mean differences are tested with Post Hoc Tukey test based on observed means.

4.4.1 Effects of Characteristics on Perceived Importance of E-mail

Under the hypotheses that participants perceived importance of e-mail is not vary by gender, accommodation, faculty or any combination of them, Factorial ANOVA was constructed and results were summarized at Table 4.34. For the alpha = 0.05, following is significant:

- Main effect of faculty is significant with p-value=0.008

From the Post Hoc pairwise mean difference test, it can be concluded that for perceived importance of e-mail, mean score of participants from Faculty of Education is significantly more than participants from Faculty of Engineering (mean difference (i, j) = 0.37, Tukey p-value = 0.002).

Table 4.34: Factorial ANOVA for Perceived Importance of E-mail

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	,520	1	,520	,649	,421
Faculty	11,208	4	2,802	3,495	**,008***
Accommodation	3,962	2	1,981	2,471	,085
Gender * Faculty	5,484	4	1,371	1,710	,146
Gender * Accommodation	1,394	2	,697	,869	,420
Faculty * Accommodation	6,888	8	,861	1,074	,379
Gender * Faculty * Accommodation	6,008	8	,751	,937	,485
Error	488,224	609	,802		
Total	12826,000	639			
Corrected Total	539,296	638			

a. R Squared = ,095 (Adjusted R Squared = ,052)

4.4.2 Effects of Characteristics on Perceived Importance of Instant Messaging

Under the hypotheses that participants perceived importance of instant messaging is not vary by gender, accommodation, faculty or any combination of them, Factorial ANOVA was constructed and results were summarized at Table 4.35. For the alpha = 0.05, following is significant:

- Main effect of gender is significant with p-value=0.002

Mean scores of perceived importance are 3.302 for male participants and 3.848 for female participants. The mean difference (i, j) 0.546 is significant with p-value=0.002. Therefore it can be concluded that perceived importance of instant messaging for female participants are significantly more than male participants.

Table 4.35: Factorial ANOVA for Perceived Importance of Instant Messaging

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	15,097	1	15,097	9,729	**,002***
Faculty	6,708	4	1,677	1,081	,365
Accommodation	8,071	2	4,036	2,601	,075
Gender * Faculty	5,350	4	1,338	,862	,486
Gender * Accommodation	,004	2	,002	,001	,999
Faculty * Accommodation	13,191	8	1,649	1,063	,388
Gender * Faculty * Accommodation	16,190	8	2,024	1,304	,238
Error	943,475	608	1,552		
Total	9621,000	638			
Corrected Total	1031,218	637			
a. R Squared = ,085 (Adjusted R Squared = ,041)					

4.4.3 Effects of Characteristics on Perceived Importance of Academic Course Work

Under the hypotheses that participants perceived importance of academic course work is not vary by gender, accommodation, faculty or any combination of them, Factorial ANOVA was constructed and results were summarized at Table 4.36. For the alpha = 0.05, following is significant:

- Main effect of gender is significant with p-value=0.001

Mean scores of perceived importance are 3.799 for male participants and 4.288 for female participants. The mean difference (i, j) 0.489 is significant with p-value=0.001. Therefore it can be concluded that perceived importance of academic course work for female participants are significantly more than male participants.

Table 4.36: Factorial ANOVA for Perceived Importance of Academic Course Work

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	12,089	1	12,089	10,906	**,001***
Faculty	6,890	4	1,723	1,554	,185
Accommodation	2,409	2	1,204	1,087	,338
Gender * Faculty	1,752	4	,438	,395	,812
Gender * Accommodation	,447	2	,223	,202	,817
Faculty * Accommodation	3,780	8	,473	,426	,905
Gender * Faculty * Accommodation	5,113	8	,639	,577	,798
Error	666,181	601	1,108		
Total	10569,000	631			
Corrected Total	751,059	630			
a. R Squared = ,113 (Adjusted R Squared = ,070)					

4.4.4 Effects of Characteristics on Perceived Importance of Academic Research

Under the hypotheses that participants perceived importance of academic research is not vary by gender, accommodation, faculty or any combination of them, Factorial ANOVA was constructed and results were summarized at Table 4.37. For the alpha = 0.05, following is significant:

- Main effect of gender is significant with p-value=0.001

Mean scores of perceived importance are 3.686 for male participants and 4.212 for female participants. The mean difference (i, j) 0.526 is significant with p-value=0.001. Therefore it can be concluded that perceived importance of academic research for female participants are significantly more than male participants.

Table 4.37: Factorial ANOVA for Perceived Importance of Academic Research

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	14,005	1	14,005	11,367	**,001***
Faculty	6,961	4	1,740	1,412	,228
Accommodation	3,158	2	1,579	1,282	,278
Gender * Faculty	1,925	4	,481	,391	,815
Gender * Accommodation	,350	2	,175	,142	,867
Faculty * Accommodation	2,288	8	,286	,232	,985
Gender * Faculty * Accommodation	10,413	8	1,302	1,056	,392
Error	740,462	601	1,232		
Total	10186,000	631			
Corrected Total	843,395	630			
a. R Squared = ,122 (Adjusted R Squared = ,080)					

4.4.5 Effects of Characteristics on Participants Perceived Importance of Listening Music

Under the hypotheses that participants perceived importance of listening music is not vary by gender, accommodation, faculty or any combination of them, Factorial ANOVA was constructed and results were summarized at Table 4.38. For the alpha = 0.05, followings are significant:

- Main effect of gender is significant with p-value=0.005
- Interaction effect of faculty, gender and accommodation is significant with p-value=0.019

Mean scores of perceived importance are 3.269 for male participants and 3.824 for female participants. The mean difference (i, j) 0.554 is significant with p-value=0.005. Therefore it can be concluded that perceived importance of listening music for female participants are significantly more than male participants.

For the Post Hoc tests for within faculty and within accommodation, no significant difference was observed whereas there is a significant difference between male and female participants as mentioned above. The interaction effect of gender, faculty and accommodation is significant, it can be said that effects of each factor are not additive since there is a relative effect. For instance, mean score of male participants staying at METU Dormitories is 2.949 which differs from staying at house with family (3.605) and at house with friends or alone (3.255). On the other hand, mean scores of female participants are close to each other, 3.664 for staying at house with family, 3.999 for staying at house with friends and 3.809 for staying at METU Dormitories.

Table 4.38: Factorial ANOVA for Perceived Importance of Listening Music

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	15,544	1	15,544	8,122	**,005***
Faculty	9,142	4	2,285	1,194	,312
Accommodation	4,731	2	2,366	1,236	,291
Gender * Faculty	11,441	4	2,860	1,494	,202
Gender * Accommodation	9,193	2	4,597	2,402	,091
Faculty * Accommodation	10,692	8	1,336	,698	,693
Gender * Faculty * Accommodation	35,364	8	4,421	2,310	**,019***
Error	1150,250	601	1,914		
Total	8505,000	631			
Corrected Total	1267,648	630			

a. R Squared = ,093 (Adjusted R Squared = ,049)

4.4.6 Effects of Characteristics on Perceived Importance of Seeking Current Information

Under the hypotheses that participants perceived importance of Internet usage for seeking current information like news, sports, etc. is not vary by gender, accommodation, faculty or any combination of them, Factorial ANOVA was constructed and results were summarized at Table 4.39. For the alpha = 0.05, followings are significant:

- Main effect of faculty is significant with p-value=0.043
- Interaction effect of faculty, gender and accommodation is significant with p-value=0.017

From the Post Hoc pairwise mean difference test, it can be concluded that for perceived importance of seeking current information, mean score of participants from Faculty of Economics and Administrative Sciences is significantly more than participants from Faculty of Education (mean difference (i, j) = 0.51, Tukey p-value = 0.027) and Faculty of Engineering (mean difference (i, j) = 0.46, Tukey p-value = 0.019).

The interaction effect of gender, faculty and accommodation is significant, it can be said that effects of each factor are not additive since there is a relative effect.

Table 4.39: Factorial ANOVA for Perceived Importance of Seeking Current Information

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	,532	1	,532	,447	,504
Faculty	11,815	4	2,954	2,485	**,043***
Accommodation	,742	2	,371	,312	,732
Gender * Faculty	7,530	4	1,883	1,584	,177
Gender * Accommodation	,297	2	,149	,125	,882
Faculty * Accommodation	11,777	8	1,472	1,238	,274
Gender * Faculty * Accommodation	22,318	8	2,790	2,347	**,017***
Error	715,572	602	1,189		
Total	10082,000	632			
Corrected Total	769,538	631			

a. R Squared = ,070 (Adjusted R Squared = ,025)

4.4.7 Effects of Characteristics on Participants Perceived Importance of Downloading Music

Under the hypotheses that participants perceived importance of downloading music is not vary by gender, accommodation, faculty or any combination of them, Factorial ANOVA was constructed and results were summarized at Table 4.40. For the alpha = 0.05, followings are significant:

- Main effect of gender is significant with p-value=0.000
- Main effect of accommodation is significant with p-value=0.017
- Interaction effect of gender and accommodation is significant with p-value=0.043

Mean scores of perceived importance are 2.724 for male participants and 3.479 for female participants. The mean difference (i, j) 0.755 is significant with p-value=0.000. Therefore it can be concluded that perceived importance of

downloading music for female participants are significantly more than male participants.

From the Post Hoc pairwise mean difference test, it can be concluded that for perceived importance of downloading music, mean score of participants staying at house with family is significantly more than participants staying at house with friends or alone (mean difference (i, j) = 0.66, Tukey p-value = 0.001) and participants staying at METU Dormitories (mean difference (i, j) = 0.39, Tukey p-value = 0.006).

The interaction effect of gender, faculty and accommodation is significant, it can be said that effects of each factor are not additive since there is a relative effect.

Table 4.40: Factorial ANOVA for Perceived Importance of Downloading Music

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	28,942	1	28,942	14,592	**,000***
Faculty	17,176	4	4,294	2,165	,072
Accommodation	16,238	2	8,119	4,093	**,017***
Gender * Faculty	7,833	4	1,958	,987	,414
Gender * Accommodation	12,565	2	6,282	3,167	**,043***
Faculty * Accommodation	11,067	8	1,383	,697	,694
Gender * Faculty * Accommodation	26,532	8	3,316	1,672	,102
Error	1201,984	606	1,983		
Total	7310,000	636			
Corrected Total	1343,484	635			
a. R Squared = ,105 (Adjusted R Squared = ,063)					

4.4.8 Effects of Characteristics on Participants Perceived Importance of Playing Online Games

Under the hypotheses that participants perceived importance of playing online games is not vary by gender, accommodation, faculty or any combination of them, Factorial ANOVA was constructed and results were summarized at Table 4.41. For the alpha = 0.05, following is significant:

- Main effect of gender is significant with p-value=0.002

Mean scores of perceived importance are 2.565 for male participants and 1.960 for female participants. The mean difference (i, j) 0.605 is significant with p-value=0.002. Therefore it can be concluded that perceived importance of playing online games for male participants are significantly more than female participants.

Table 4.41: Factorial ANOVA for Perceived Importance of Playing Online Games

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	18,540	1	18,540	9,573	**,002***
Faculty	8,401	4	2,100	1,084	,363
Accommodation	4,354	2	2,177	1,124	,326
Gender * Faculty	2,508	4	,627	,324	,862
Gender * Accommodation	1,822	2	,911	,470	,625
Faculty * Accommodation	18,826	8	2,353	1,215	,287
Gender * Faculty * Accommodation	16,735	8	2,092	1,080	,375
Error	1165,843	602	1,937		
Total	4368,000	632			
Corrected Total	1248,987	631			
a. R Squared = ,067 (Adjusted R Squared = ,022)					

4.4.9 Effects of Characteristics on Participants Perceived Importance of Shopping

Under the hypotheses that participants perceived importance of shopping is not vary by gender, accommodation, faculty or any combination of them, Factorial ANOVA was constructed and results were summarized at Table 4.42. For the alpha = 0.05, followings are significant:

- Main effect of gender is significant with p-value=0.041
- Main effect of faculty is significant with p-value=0.043
- Main effect of accommodation is significant with p-value=0.021

Table 4.42: Factorial ANOVA for Perceived Importance of Shopping

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	5,398	1	5,398	4,202	**,041***
Faculty	12,711	4	3,178	2,474	**,043***
Accommodation	9,936	2	4,968	3,868	**,021***
Gender * Faculty	4,788	4	1,197	,932	,445
Gender * Accommodation	4,275	2	2,138	1,664	,190
Faculty * Accommodation	9,390	8	1,174	,914	,504
Gender * Faculty * Accommodation	10,024	8	1,253	,975	,454
Error	768,096	598	1,284		
Total	3121,000	628			
Corrected Total	831,826	627			
a. R Squared = ,077 (Adjusted R Squared = ,032)					

Mean scores of perceived importance are 2.219 for male participants and 1.892 for female participants. The mean difference (i, j) 0.328 is significant with p-value=0.041. Therefore it can be concluded that perceived importance of online shopping for male participants are significantly more than female participants.

From the Post Hoc pairwise mean difference test, no significant difference was observed for both Tukey test and LSD test.

From the Post Hoc pairwise mean difference test, it can be concluded that for perceived importance of online shopping, mean score of participants staying at house with friends or alone is significantly more than participants staying METU Dormitories (mean difference (i, j) = 0.33, Tukey p-value = 0.011).

4.4.10 Effects of Characteristics on Perceived Importance of Watching Streaming Videos

Under the hypotheses that participants perceived importance of watching streaming videos is not vary by gender, accommodation, faculty or any combination of them, Factorial ANOVA was constructed and results were summarized at Table 4.43. For the alpha = 0.05, followings are significant:

- Main effect of gender is significant with p-value=0.004
- Interaction effect of gender and accommodation is significant with p-value=0.013

Mean scores of perceived importance are 2.740 for male participants and 3.259 for female participants. The mean difference (i, j) 0.519 is significant with p-value=0.004. Therefore it can be concluded that perceived importance of watching streaming videos for female participants are significantly more than male participants.

The interaction effect of gender and accommodation is significant, it can be said that effects of each factor are not additive since there is a relative effect. On the other hand, mean scores of male participants are 2.807 for staying at house with family, 2.873 for staying at METU Dormitories and 2.539 for staying at house with friends or alone but mean scores of females are 2.799 for staying at house

with family, 3.032 for staying at house with friends or alone and 3.944 for at house with friends or alone. Order of accommodation types in terms of mean scores are different for male and female participants, where female participants staying at house with friends or alone has the highest rank within females order, but male participants staying at METU Dormitories has highest rank within males order.

Table 4.43: Factorial ANOVA for Perceived Importance of Watching Streaming Videos

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	13,587	1	13,587	8,423	**,004***
Faculty	12,625	4	3,156	1,957	,100
Accommodation	4,859	2	2,429	1,506	,223
Gender * Faculty	3,603	4	,901	,558	,693
Gender * Accommodation	14,145	2	7,072	4,384	**,013***
Faculty * Accommodation	7,314	8	,914	,567	,805
Gender * Faculty * Accommodation	7,498	8	,937	,581	,794
Error	974,327	604	1,613		
Total	6873,000	634			
Corrected Total	1028,166	633			
a. R Squared = ,052 (Adjusted R Squared = ,007)					

4.4.11 Effects of Characteristics on Perceived Importance of Sharing Music File

Under the hypotheses that participants perceived importance of sharing music file is not vary by gender, accommodation, faculty or any combination of them, Factorial ANOVA was constructed and results were summarized at Table 4.44. As can be seen from table, there is no significant effect of any factor for the alpha = 0.05.

Table 4.44: Factorial ANOVA for Perceived Importance of Sharing Music File

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	5,267	1	5,267	3,198	,074
Faculty	4,249	4	1,062	,645	,631
Accommodation	1,383	2	,692	,420	,657
Gender * Faculty	7,489	4	1,872	1,137	,338
Gender * Accommodation	8,716	2	4,358	2,646	,072
Faculty * Accommodation	9,922	8	1,240	,753	,645
Gender * Faculty * Accommodation	6,913	8	,864	,525	,838
Error	986,597	599	1,647		
Total	3952,000	629			
Corrected Total	1045,952	628			

a. R Squared = ,057 (Adjusted R Squared = ,011)

4.4.12 Effects of Characteristics on Perceived Importance of Sharing Video File

Under the hypotheses that participants perceived importance of sharing video file is not vary by gender, accommodation, faculty or any combination of them, Factorial ANOVA was constructed and results were summarized at Table 4.45. As can be seen from table, there is no significant effect of any factor for the alpha = 0.05.

Table 4.45: Factorial ANOVA for Perceived Importance of Sharing Video File

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	,622	1	,622	,384	,536
Faculty	4,332	4	1,083	,669	,614
Accommodation	4,436	2	2,218	1,369	,255
Gender * Faculty	7,991	4	1,998	1,233	,295
Gender * Accommodation	5,993	2	2,996	1,850	,158
Faculty * Accommodation	15,021	8	1,878	1,159	,322
Gender * Faculty * Accommodation	6,457	8	,807	,498	,858
Error	965,404	596	1,620		
Total	3766,000	626			
Corrected Total	1024,626	625			
a. R Squared = ,058 (Adjusted R Squared = ,012)					

4.4.13 Effects of Characteristics on Perceived Importance of Seeking Information about Hobbies

Under the hypotheses that participants perceived importance of seeking information about hobbies is not vary by gender, accommodation, faculty or any combination of them, Factorial ANOVA was constructed and results were summarized at Table 4.46. As can be seen from table, there is no significant effect of any factor for the alpha = 0.05.

Table 4.46: Factorial ANOVA for Perceived Importance of Seeking Information about Hobbies

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	,855	1	,855	,797	,372
Faculty	3,390	4	,848	,790	,532
Accommodation	,015	2	,008	,007	,993
Gender * Faculty	6,310	4	1,578	1,471	,210
Gender * Accommodation	1,613	2	,806	,752	,472
Faculty * Accommodation	1,701	8	,213	,198	,991
Gender * Faculty * Accommodation	2,717	8	,340	,317	,960
Error	644,665	601	1,073		
Total	11252,000	631			
Corrected Total	670,295	630			

a. R Squared = ,038 (Adjusted R Squared = -,008)

4.4.14 Effects of Characteristics on Perceived Importance of Running a Business

Under the hypotheses that participants perceived importance of running a business is not vary by gender, accommodation, faculty or any combination of them, Factorial ANOVA was constructed and results were summarized at Table 4.47. As can be seen from table, there is no significant effect of any factor for the alpha = 0.05.

Table 4.47: Factorial ANOVA for Perceived Importance of Running a Business

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	,175	1	,175	,085	,770
Faculty	17,315	4	4,329	2,114	,078
Accommodation	,333	2	,167	,081	,922
Gender * Faculty	3,265	4	,816	,399	,810
Gender * Accommodation	2,413	2	1,206	,589	,555
Faculty * Accommodation	17,842	8	2,230	1,089	,369
Gender * Faculty * Accommodation	6,593	8	,824	,402	,919
Error	1226,636	599	2,048		
Total	7337,000	629			
Corrected Total	1322,652	628			
a. R Squared = ,073 (Adjusted R Squared = ,028)					

4.4.15 Effects of Characteristics on Perceived Importance of Sending Contents

Under the hypotheses that participants perceived importance of sending contents to blogs, forums, etc. and building a website is not vary by gender, accommodation, faculty or any combination of them, Factorial ANOVA was constructed and results were summarized at Table 4.48. For the alpha = 0.05, followings are significant:

- Main effect of gender is significant with p-value=0.000
- Main effect of faculty is significant with p-value=0.001

Mean scores of perceived importance are 2.555 for male participants and 1.892 for female participants. The mean difference (i, j) 0.663 is significant with p-value=0.000. Therefore it can be concluded that perceived importance of sending

contents to blogs, forums, etc. and building a website for male participants are significantly more than female participants.

From the Post Hoc pairwise mean difference test, it can be concluded that for perceived importance of sending contents to blogs, forums or building a web site, mean score of participants from Faculty of Education is significantly more than participants Faculty of Architecture (mean difference (i, j) = 0.66, Tukey p-value = 0.049), Faculty of Arts and Science (mean difference (i, j) = 0.93, Tukey p-value = 0.000), Faculty of Economics and Administrative Sciences (mean difference (i, j) = 0.85, Tukey p-value = 0.000) and Faculty of Engineering (mean difference (i, j) = 0.88, Tukey p-value = 0.000).

Table 4.48: Factorial ANOVA for Perceived Importance of Sending Contents

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	22,211	1	22,211	12,544	**,000***
Faculty	33,855	4	8,464	4,780	**,001***
Accommodation	,753	2	,377	,213	,808
Gender * Faculty	3,319	4	,830	,469	,759
Gender * Accommodation	6,092	2	3,046	1,720	,180
Faculty * Accommodation	8,715	8	1,089	,615	,765
Gender * Faculty * Accommodation	9,522	8	1,190	,672	,716
Error	1060,660	599	1,771		
Total	4194,000	629			
Corrected Total	1192,607	628			
a. R Squared = ,111 (Adjusted R Squared = ,068)					

4.4.16 Effects of Characteristics on Perceived Importance of Being Online at Social Sites

Under the hypotheses that participants perceived importance of being online at social sites (Facebook, Linkedin, Yonja, etc...) is not vary by gender, accommodation, faculty or any combination of them, Factorial ANOVA was constructed and results were summarized at Table 4.49. For the alpha = 0.05, following is significant:

- Interaction effect of faculty, gender and accommodation is significant with p-value=0.041

For the Post Hoc tests for within faculty and within accommodation, no significant difference was observed and there is no significant difference between male and female participants. On the other hand, the interaction effect of gender, accommodation and faculty is significant, it can be said that effects of each factor are not additive since there is a relative effect.

Table 4.49: Factorial ANOVA for Perceived Importance of Being Online at Social Sites

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	,178	1	,178	,094	,759
Faculty	2,136	4	,534	,282	,890
Accommodation	1,346	2	,673	,356	,701
Gender * Faculty	8,293	4	2,073	1,096	,358
Gender * Accommodation	3,797	2	1,899	1,003	,367
Faculty * Accommodation	13,374	8	1,672	,883	,530
Gender * Faculty * Accommodation	30,726	8	3,841	2,029	**,041***
Error	1143,064	604	1,892		
Total	6053,000	634			
Corrected Total	1205,983	633			
a. R Squared = ,052 (Adjusted R Squared = ,007)					

4.5 Effects of the Internet on Academic Works

Participants were asked to declare their perceived ideas about effect of the Internet on their academic works. There were four questions and all of them have a 5-scale Likert type multiple choice answers starting from 1: Strongly disagree to 5: Strongly agree. Answers were summarized at Table 4.50. Participants declared that hey have no difficulty on using Internet applications with 4.78 mean score and 0.481 standard deviation. They also declared that being able to use the Internet contributes to their academic improvement with 4.19 mean score and 0.808 standard deviation. On the other hand, participants declared nearly neutral answers for question about the things that participants like to do on the Internet distract and slow down their academic improvement (2.87 mean score with 1.098 standard deviation) and for question about students can concentrate on academic work without being distracted by Internet activities when online (3.11 mean score with 1.082 standard deviation).

Table 4.50: Descriptives of Ideas about Effect of the Internet on Academic Works

	N	Mean	Std. Deviation
Being able to use the Internet contributes to academic improvement	642	4,19	,808
No difficulty using Internet applications	640	4,78	,481
The things that students like to do on the Internet distract and slow down their academic improvement	642	2,87	1,098
Students can concentrate on academic work without being distracted by Internet activities when online	639	3,11	1,082
Valid N (listwise)	635		

For three characteristics of participants which are gender, accommodation type and faculty, Factorial ANOVA is used to answer the question: Is there any main effects or interactions between three independent variables and participants

perceived ideas about effect of the Internet on their academic works? The main emphasis is not only on interactions between fixed variables of participants, but also on main effects of fixed variables. Therefore for each question about participants' perceived ideas about effect of Internet on their academic works, following hypotheses are constructed:

- There is no main effect of gender
- There is no main effect of accommodation type
- There is no main effect of faculty
- There is no effect of interaction between gender and accommodation
- There is no effect of interaction between gender and faculty
- There is no effect of interaction between faculty and accommodation
- There is no effect of interaction between gender, faculty and accommodation

To analyze these hypotheses, 2 (gender) x 5 (faculty) x 3 (accommodation) Factorial ANOVA was constructed for each question. In addition, to find which group of factor is different than the others for significant factors which have more than two groups, pairwise (I, j) mean differences are tested with Post Hoc Tukey test based on observed means.

4.5.1 Effects of Characteristics on Perceived Ideas About Using the Internet Contributes to Academic Improvement

Under the hypotheses that participants perceived ideas about "being able to use the Internet contributes to academic improvement" is not vary by gender, accommodation, faculty or any combination of them, Factorial ANOVA was constructed and results were summarized at Table 4.51. For the alpha = 0.05, following is significant:

- Main effect of gender is significant with p-value=0.041

Mean scores of perceived importance are 4.123 for male participants and 4.352 for female participants. The mean difference (i, j) 0.229 is significant with p-value=0.041. Therefore it can be concluded that female participants think more strongly than male participants on item ‘using the Internet contributes to academic improvement’.

Table 4.51: Factorial ANOVA for Using the Internet Contributes to Academic Improvement

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	2,667	1	2,667	4,176	**,041***
Faculty	2,049	4	,512	,802	,524
Accommodation	1,209	2	,605	,947	,389
Gender * Faculty	1,936	4	,484	,758	,553
Gender * Accommodation	,236	2	,118	,185	,831
Faculty * Accommodation	3,505	8	,438	,686	,704
Gender * Faculty * Accommodation	4,843	8	,605	,948	,476
Error	388,843	609	,638		
Total	11615,000	639			
Corrected Total	416,839	638			
a. R Squared = .067 (Adjusted R Squared = .023)					

4.5.2 Effects of Characteristics on Perceived Ideas About No Difficulty on Using Internet Applications

Under the hypotheses that participants perceived ideas about “No difficulty using Internet Applications” is not vary by gender, accommodation, faculty or any combination of them, Factorial ANOVA was constructed and results were summarized at Table 4.52. As can be seen from table, there is no significant effect of any factor for the alpha = 0.05.

Table 4.52: Factorial ANOVA for No Difficulty Using Internet Applications

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	,241	1	,241	1,066	,302
Faculty	,645	4	,161	,714	,582
Accommodation	,887	2	,444	1,965	,141
Gender * Faculty	,278	4	,069	,308	,873
Gender * Accommodation	,468	2	,234	1,037	,355
Faculty * Accommodation	2,460	8	,308	1,362	,210
Gender * Faculty * Accommodation	1,033	8	,129	,572	,801
Error	137,010	607	,226		
Total	14665,000	637			
Corrected Total	147,447	636			

a. R Squared = .071 (Adjusted R Squared = .026)

4.5.3 Effects of Characteristics on Perceived Ideas About Internet Distraction on Academic Improvement

Under the hypotheses that participants perceived ideas about "The things that students like to do on the Internet distract and slow down their academic improvement" is not vary by gender, accommodation, faculty or any combination of them, Factorial ANOVA was constructed and results were summarized at Table 4.53. For the alpha = 0.05, following is significant:

- Interaction effect of gender and accommodation is significant with p-value=0.025

The interaction effect of gender and accommodation is significant, it can be said that effects of each factor are not additive since there is a relative effect.

Table 4.53: Factorial ANOVA for Using Internet Distracts Academic Improvement

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	,163	1	,163	,137	,711
Faculty	1,474	4	,368	,310	,871
Accommodation	,160	2	,080	,067	,935
Gender * Faculty	4,967	4	1,242	1,044	,384
Gender * Accommodation	8,808	2	4,404	3,703	**,025***
Faculty * Accommodation	9,009	8	1,126	,947	,477
Gender * Faculty * Accommodation	8,982	8	1,123	,944	,479
Error	724,197	609	1,189		
Total	6013,000	639			
Corrected Total	766,426	638			

a. R Squared = .055 (Adjusted R Squared = .010)

4.5.4 Effects of Characteristics on Perceived Ideas About Internet Distraction on Studying

Under the hypotheses that participants perceived ideas about "Students can concentrate on academic work without being distracted by Internet activities when online" is not vary by gender, accommodation, faculty or any combination of them, Factorial ANOVA was constructed and results were summarized at Table 4.54. As can be seen from table, there is no significant effect of any factor for the alpha = 0.05.

Table 4.54: Factorial ANOVA for Internet Activities does not Distract Studying

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	2,140	1	2,140	1,856	,174
Faculty	,719	4	,180	,156	,960
Accommodation	2,083	2	1,041	,903	,406
Gender * Faculty	9,231	4	2,308	2,002	,093
Gender * Accommodation	5,053	2	2,527	2,192	,113
Faculty * Accommodation	14,789	8	1,849	1,603	,121
Gender * Faculty * Accommodation	15,789	8	1,974	1,712	,093
Error	698,656	606	1,153		
Total	6920,000	636			
Corrected Total	743,390	635			

a. R Squared = .060 (Adjusted R Squared = .015)

CHAPTER 5

CONCLUSION AND DISCUSSION

Throughout this final chapter, main findings of the study and recommendations for further research were presented.

5.1 Main Findings

Universities have relatively high speed backbone and Internet connection. Metropolitan area networks are also growing rapidly. With the help of these infrastructures, students having a computer are able to connect to the Internet from almost wherever they stay. Odell et al. (2000) stated that parental income or occupation do not affect Internet use. In addition, parents who are aware of computers and could not buy one for their child are sad about this situation and they are trying to overcome this problem (TÜBİSAD, 2005). However, effects of free and uncontrolled Internet usage of college students are still unknown. College students who are in late adolescence and young adulthood, are developing their identities until the twenties, leaving familiar peers by entering a new social environment characterized by greater freedom, academic challenges, and changing responsibilities (Woolfolk, 1998, p.67-72), (Lanthier and Windham, 2004).

This study aims to find out whether there are differences in the perceived usage and importance of Internet applications with respect to residence, faculties, and

gender. Overall the 653 participants, 64.4% of them are male. From all male participants, 65.1% of them are from Faculty of Engineering. In terms of male distribution within faculties, 81.9% of male participants are from Faculty of Engineering and Faculty of Economics and Administrative Sciences is following with 61.5%. On the other hand, in terms of gender distribution within faculties, Faculty of Architecture has the highest female respondents with 69.8% and Faculty of Arts and Science has the second highest female respondents with 63.3%.

5.1.1 Gender Differences

Gender differences were expected based on previous researches in terms of both usage and importance of Internet (Matthews and Schrum, 2003). Within this study, it is observed that although genders spent equal times on the Internet, their perceived usage and importance of the Internet differ from each other. A research by Odell et al. (2000) contradicts previous researches which were implied males are using the Internet for academic works more than females. Matthews and Schrums' (2003) research also stated no differences in quantity of using the Internet for academic works between genders. On the contrary, in this study female students indicated that they are using the Internet more than male students for academic work, academic course work and academic research usages. In addition, females' perceived importance to academic course work and academic research are more than males. As cited in Matthews and Schrums (2003), finding of Greene and Miller (1996), which states academic effort of females is greater than that of males, supports this finding.

Another remarkable finding is that, females' perceived both usage and importance of the Internet for instant messaging are more than that of males. A recent research about gender differences in email and instant messaging among undergraduate students contradicts with this finding, it is stated that male and

female students use and perceive email and instant messaging in a similar manner (Debrand, 2008).

Perceived Internet usage of female students for listening music, downloading music, watching streaming videos and using for personal deeds, is more than that of males. On the contrary, males stated that they are using the Internet more than females for seeking current information like news, sending contents to interactive web services, and playing online games. Males perceived importance also more than females for these items. In addition, answers of males indicated that their perceived importance of the Internet for online shopping is more than females. These findings overlap with previous researches in which it is stated that males are using the Internet more for researching purchases, playing games, obtaining news and information, and entertainment (Debrand, 2008).

5.1.2 Satisfaction with Current Infrastructure

Satisfaction of current network infrastructure differs between genders. Females are significantly more satisfied with Access Speed to the Internet and ULAKNET than male participants. In addition, there is a significant interaction effect of gender on satisfaction with Access Speed to the Internet and accommodation type. Female students, who are found to be using the Internet for academic purposes more than males, may use Internet applications needing less bandwidth. In other words, usage of male students may be more bandwidth consumer, like online games. On the other hand, speed of the Internet connection is not too much as compared to ULAKNET either from in-campus. Therefore, another reason for this finding may be females' expectations about access speed are less than males.

Participants staying at METU Dormitories are significantly more satisfied with access speed to METU-NET and ULAKNET than others. This perceived satisfaction is expected, since infrastructure of METU Dormitories is about hundred times faster and more available than infrastructure at city. On the other

hand, it is also remarkable that, for accessing the Internet, perceived satisfaction of students from METU Dormitories is similar with students from house at city. This finding is also understandable, because ULAKNET have Internet connection shared to whole academic institutions in Turkey, and Internet bandwidth per user is similar to that of available at houses.

5.1.3 Accommodation Types

Within all participants of this study, 55.3% of them are staying at METU Dormitories whereas 29.6% of them are staying with their families or relatives and 15.3% of them are staying at house with friends or alone. Students' quantity of Internet usage does not differ between whether they stay at dormitories, stay at house with relatives, with friends or alone. In other words, all students declared same amount of Internet usage. Odell et al. (2000) stated that, students having a personal computer and the Internet connection spend more time on the Internet. Although all participants of this study have personal computer and a proper Internet connection, students from METU Dormitories have the highest Internet bandwidth, and the most personal usage without family or households pressure. Because of this, more usage rates has been expected from students staying at METU Dormitories, however, there is no significant effect of accommodation type on daily and weekly usage. This result may be because of usage policies on dormitories and ethical rules of METU Information Technology Resources Use Policy. It can also be said that connecting METU Dormitories to the high speed network do not cause more usage and adoption than students staying at off-campus.

Within this study, students staying at METU Dormitories stated more instant messaging usage than that of staying at house with friends or alone. Students staying at dormitories are away from home towns or cities and even if they met new people in university and entered a new society, they continue to communicate with their relatives and pre-university friends (Quan-Hasse, 2007).

In addition, Clark (2005) stated that students are getting help from others with Internet conversations. As cited in Quan-Haase (2007), LaRose et al. (2001) stated that students can use the Internet for social support and the Internet can lead to reduced level of depression.

Other remarkable findings for accommodation types are students staying at house with family or relatives stated more perceived importance of downloading music than all others; and students staying at house with friends or alone stated more perceived importance of online shopping than students from METU Dormitories. It should be noticed that downloading music or video is forbidden in the campus network for copyright issues. This explains the gap of downloading music from METU Dormitories, but students staying at house with friends or alone also declared less usage for downloading music. This finding may indicate usage of social networking where students exchange their music and other files via removable media, like cd-roms, dvd-roms, usb cards.

5.1.4 Faculty Differences

In this study, participants are from Faculty of Engineering, Faculty of Education, Faculty of Arts and Science, Faculty of Economics and Administrative Sciences, and Faculty of Architecture. In terms of total amount of Internet usage, there is no difference between students from these faculties. On the other hand, there are differences among perceived usage and importance of Internet between faculties.

Faculty of Education students stated they are using the Internet for academic course work and academic research usage significantly more than Faculty of Engineering and Faculty of Arts and Science. This finding overlaps the findings of Gurel et al. (2007) in which they indicated that instructors of Faculty of Education have awareness for integration of new technologies to the teaching and learning methods. Students' usage of Internet for academic course work may depend on the usage of technology in courses which explains Faculty of

Education students use new technologies and the Internet for their academic works. In addition, Gurel et al. (2007) indicate that instructors from Faculty of Arts and Science use digital technologies less than the other faculties and added that the printed materials are mostly used by instructors of this faculty. Because of department of Faculty of Arts and Sciences mostly study on theoretic works and related laboratory studies, the need of using the Internet for academic work may be less than the other faculties. Students from Faculty of Education also indicate more perceived usage time and importance for email and interactive web sites. They also stated their usage of Internet for running a business is more than Faculty of Architecture and Faculty of Engineering.

Students from Faculty of Engineering indicate their time spent on the Internet for academic courses work is less than others. They also stated that they spend less time for personal deeds with respect to Faculty of Architecture and Faculty of Economics and Administrative Sciences.

Students from Faculty of Architecture are using the Internet for their personal deeds. In addition, it should be noticed that the least participation among faculties is from Faculty of Architecture. Since courses at this faculty are mostly related with creativity and designs, imagination and vision of students is very significant for their academic and professional lives. This may be the reason of architecture students using the Internet for personal deeds more than other faculties.

Perceived usage and importance of seeking current information for students from Faculty of Economics and Administrative Sciences is significantly more than that of students from Faculty of Engineering. In addition to theoretic instructions, following daily changes is a major for students from Faculty of Economics and Administrative Sciences against engineering students. This significant need overlaps with the finding.

We can conclude that the findings on perceived usage of Internet are reflecting the students' characteristics among faculties.

5.2 Recommendations for Administration and Faculty Members

Findings of this study show that high speed network connection in METU Dormitories does not change the students' amount of Internet use. Beside, students indicated an amount of academic usage and importance of the Internet. In-campus students also indicate a satisfaction to access speed to METUNET and ULAKNET. Therefore, investments for high speed network infrastructure at dormitories should be continued. In order to eliminate the digital inequality, METU administration may quickly invest on high speed network technologies in all dormitories and make all dormitories equal in terms of network infrastructure.

Technological investments may be implemented for sharing academic resources to off-campus students. With the help of network sharing mechanisms based on authentication and authorization methods, off-campus students can also reach the academic content from their residences as they are in campus.

From the findings of this study it is observed that students from Faculty of Education are using the Internet for academic purposes more than other students. This may be because of faculty instructors who are dealing with teaching and learning methods and integrate the new developments into the instruction (Gurel et al., 2007). If all faculty members are informed about new developments and how these can be integrated into the instruction in terms of teaching and learning methods, students from other faculties may also use the Internet for academic purposes more than today. In order to increase academic usage of the Internet, students also may be informed about how they can use the Internet for academic purposes. In addition, university administration may foster studies about parameters effecting academic achievement to increase and foster academic usage of Internet.

Today, numbers of forums, e-mail lists and portals are being used for academic purposes by instructors. The attraction of these portals may be increased and improved by analyzing the social sites like Facebook, Yonja, hoccam.com etc. all of which are being used by all students. In this study, it is observed that students are using social networks without any gender or faculty difference. By means of this finding, social networks and usages may be analyzed for inheritances about how these can be used for educational purposes and how these applications can be integrated with instruction.

5.3 Recommendations for Further Studies

Within this study, useful and representative data were collected and analyzed in terms of accommodation, gender and faculty. Further studies can include correlations between Internet applications, students' academic achievements, and distractions when using the Internet for academic purposes. Further studies can also include on campus usages between departments and faculties and comparisons between dormitories.

This study is based on voluntary students to provide self reported estimates of usage and importance. Although it did not measure the actual use, this study provided evidence about students' perceived usage and importance. A possibility for future research is to investigate the real usage data from METU Dormitories. Detailed IP address based Internet usage statistics like netflow data, are possible to be used for investigating. In addition, this data can be uniquely matched with students, with the information of 'which IP address assigned to which student' table that is available at Computer Center. However, this data also should be handled carefully in order not to break privacy of students.

A future research may also deal with all universities by obtaining netflow data from ULAKNET, without matching the data with students. This will provide evidences about differences between regions, universities, cultures etc. A

research like this can also be supported by students based detailed data obtained from representative universities.

Future research may provide information on students' perceived and actual academic achievement. This data are also difficult to be obtained and matched with real traffic usage, but it will provide evidence about relationship between Internet usage and academic achievement.

A qualitative research with decision makers, technical experts and users could be included to this study. There is an acceptable usage policy signed by each student for network connection at METU, and operators at Computer Center try to apply those rules technically and find out who are breaking rules to report them. Both students and technical experts could be asked for perceived usage, academic achievement and expectations. Decision makers of university can be asked for what reasons they are investing on high speed network to dormitories, their rationales. A future research including qualitative research may provide evidence to advance academic achievements and students' self-control mechanisms.

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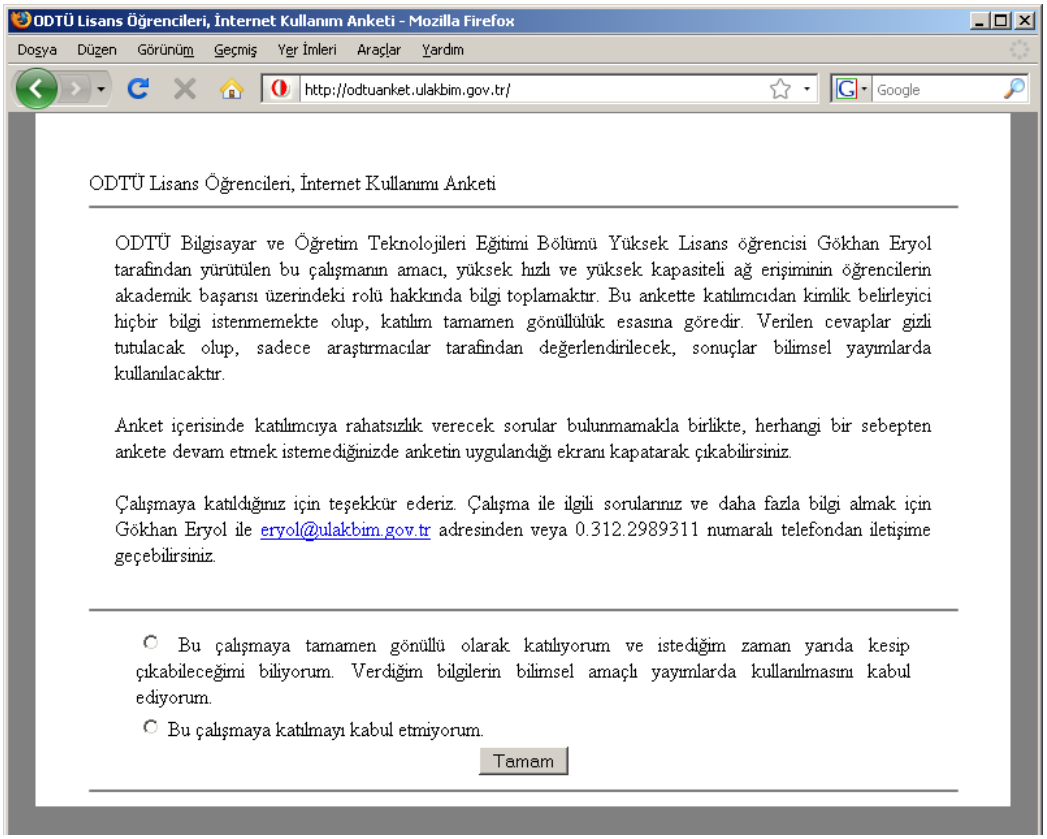
APPENDIX A

SCREENSHOT OF VOLUNTARY PARTICIPATION FORM



APPENDIX B

QUESTIONNAIRE

ODTÜ Lisans Öğrencileri, İnternet Kullanım Eğilimleri Anketi

Bu anketin tahmini doldurulma süresi 5 dakikadır. Çalışmanın hedef kitlesi lisans öğrencileri olmakla beraber, yüksek lisans ve doktora programları öğrencilerinin cevapları da ayrıca değerlendirilecektir.

Cinsiyetiniz:	○ Erkek ○ Kadın
Doğum Yılınız :	Doğum Tarihinizi Seçiniz
Okumakta Olduğunuz Fakülte: *(Yüksek Lisans veya Doktora öğrencisi iseniz,* **Yüksek Lisans - Doktora** *ile başlayan fakülte / enstitüleri seçiniz.)*	Fakültenizi Seçiniz
Halen okumakta olduğunuz eğitim dönemi kaçıncı döneminiz:	Döneminizi Seçiniz
Okul döneminde nerede ikamet ediyorsunuz?	○ Ailemle beraber kalıyorum ○ Arkadaşlarımla (veya yalniz) evde kalıyorum ○ Akrabalarımla evde kalıyorum ○ ODTÜ yurtlarında kalıyorum ○ ODTÜ dışında bir yurtta kalıyorum
Kullanmakta olduğunuz bilgisayarın tipi nedir?	○ Masaüstü PC ○ Dizüstü Bilgisayar ○ Her ikisi
İkamet ettiğiniz yerde İnternet bağlantı çeşidiniz nedir? *(Birden fazla bağlantı çeşidiniz varsa, en çok kullandığınız yöntemi seçiniz)*	○ Ethernet (Yurt Odası) ○ ODTÜ Kablosuz Ağ ○ ADSL Modem (kablolu/kablosuz) ○ Kablo Modem ○ Çevirmeli Ağ (Dial Up modem) 56K ○ Bilmiyorum
İkamet ettiğiniz yerde bilgisayarınızla ağa haftada ortalama ne sıklıkta bağlanırsınız :	Haftada Seçiniz
İkamet ettiğiniz yerde ağa bağlandığınızda günde ortalama ne kadar süre ağa bağlı kalırsınız :	Günde Seçiniz
İkamet ettiğiniz yerdeki ağ bağlantınızın İnternete ulaşma performansından memnun musunuz?	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 **(1 : Hiç memnun değilim <-> 5 : Çok memnunum)**
İkamet ettiğiniz yerdeki ağ bağlantınızın ODTÜ yerleşke ağına ulaşma performansından memnun musunuz?	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 **(1 : Hiç memnun değilim <-> 5 : Çok memnunum)**
İkamet ettiğiniz yerdeki ağ bağlantınızın ulusal ve uluslararası akademik ağa ulaşma performansından memnun musunuz?	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 **(1 : Hiç memnun değilim <-> 5 : Çok memnunum)**

İnternete bağlı olduğunuz sürede, aşağıdakilerle ne sıklıkta uğraşırsınız ?	
E-posta :	○1 ○2 ○3 ○4 ○5 (1 : Çok Az <-> 5 : Çok Sık)
Instant Messaging Uygulamaları (MSN Messenger, Gtalk, Yahoo Messenger vb.) :	○1 ○2 ○3 ○4 ○5 (1 : Çok Az <-> 5 : Çok Sık)
Akademik ders çalışmaları :	○1 ○2 ○3 ○4 ○5 (1 : Çok Az <-> 5 : Çok Sık)
Akademik Araştırmalar :	○1 ○2 ○3 ○4 ○5 (1 : Çok Az <-> 5 : Çok Sık)
Müzik dinlemek :	○1 ○2 ○3 ○4 ○5 (1 : Çok Az <-> 5 : Çok Sık)
Haber ve spor gibi güncel bilgilere bakmak :	○1 ○2 ○3 ○4 ○5 (1 : Çok Az <-> 5 : Çok Sık)
Müzik indirmek :	○1 ○2 ○3 ○4 ○5 (1 : Çok Az <-> 5 : Çok Sık)
Oyun oynamak :	○1 ○2 ○3 ○4 ○5 (1 : Çok Az <-> 5 : Çok Sık)
Alışveriş :	○1 ○2 ○3 ○4 ○5 (1 : Çok Az <-> 5 : Çok Sık)
Video yayınlarını izlemek :	○1 ○2 ○3 ○4 ○5 (1 : Çok Az <-> 5 : Çok Sık)
Müzik dosyalarını paylaştırmak :	○1 ○2 ○3 ○4 ○5 (1 : Çok Az <-> 5 : Çok Sık)
Video dosyalarını paylaştırmak :	○1 ○2 ○3 ○4 ○5 (1 : Çok Az <-> 5 : Çok Sık)
İlgi alanlarımda araştırma yapmak :	○1 ○2 ○3 ○4 ○5 (1 : Çok Az <-> 5 : Çok Sık)
İş amacıyla :	○1 ○2 ○3 ○4 ○5 (1 : Çok Az <-> 5 : Çok Sık)
Web sayfası yapmak, web sayfalarına içerik göndermek (blog, forumlar, vb) :	○1 ○2 ○3 ○4 ○5 (1 : Çok Az <-> 5 : Çok Sık)
Sosyal sitelerde bulunmak (facebook, linkedin, yonja vb.) :	○1 ○2 ○3 ○4 ○5 (1 : Çok Az <-> 5 : Çok Sık)
İnternet kullanımınızda aşağıdakilerin her birisinin sizin için önem derecesini belirtiniz.	
E-posta :	○1 ○2 ○3 ○4 ○5 (1 : Hiç Önemi Yok <-> 5 : Çok Önemli)
Instant Messaging Uygulamaları (MSN Messenger, Gtalk, Yahoo Messenger vb.) :	○1 ○2 ○3 ○4 ○5 (1 : Hiç Önemi Yok <-> 5 : Çok Önemli)
Akademik ders çalışmaları :	○1 ○2 ○3 ○4 ○5 (1 : Hiç Önemi Yok <-> 5 : Çok Önemli)
Akademik Araştırmalar :	○1 ○2 ○3 ○4 ○5 (1 : Hiç Önemi Yok <-> 5 : Çok Önemli)
Müzik dinlemek :	○1 ○2 ○3 ○4 ○5 (1 : Hiç Önemi Yok <-> 5 : Çok Önemli)
Haber ve spor gibi güncel bilgilere bakmak :	○1 ○2 ○3 ○4 ○5 (1 : Hiç Önemi Yok <-> 5 : Çok Önemli)
Müzik indirmek :	○1 ○2 ○3 ○4 ○5 (1 : Hiç Önemi Yok <-> 5 : Çok Önemli)

Oyun oynamak :	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 **(1 : Hiç Önemi Yok <-> 5 : Çok Önemli)**
Alışveriş :	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 **(1 : Hiç Önemi Yok <-> 5 : Çok Önemli)**
Video yayınlarını izlemek :	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 **(1 : Hiç Önemi Yok <-> 5 : Çok Önemli)**
Müzik dosyalarını paylaştırmak :	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 **(1 : Hiç Önemi Yok <-> 5 : Çok Önemli)**
Video dosyalarını paylaştırmak :	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 **(1 : Hiç Önemi Yok <-> 5 : Çok Önemli)**
İlgi alanlarımda araştırma yapmak :	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 **(1 : Hiç Önemi Yok <-> 5 : Çok Önemli)**
İş amacıyla :	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 **(1 : Hiç Önemi Yok <-> 5 : Çok Önemli)**
Web sayfası yapmak, web sayfalarına içerik göndermek (blog, forumlar, vb) :	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 **(1 : Hiç Önemi Yok <-> 5 : Çok Önemli)**
Sosyal sitelerde bulunmak (facebook, linkedin, yonja vb.) :	○ 1 ○ 2 ○ 3 ○ 4 ○ 5 **(1 : Hiç Önemi Yok <-> 5 : Çok Önemli)**
Lütfen aşağıdaki sorular için size en uygun seçeneği işaretleyiniz :	
İnternet'e bağlı olduğunuz sürenin genelde yüzde kaçını e-posta, mesajlaşma, güncel haberleri takip etmek gibi kişisel işlerinizle ilgilenerek geçirirsiniz :	○ %10 dan az ○ %10 %30 arası ○ %31 %50 arası ○ %51 %70 arası ○ %71 %90 arası ○ %91 %100 arası
İnternet'e bağlı olduğunuz sürenin genelde yüzde kaçını akademik çalışmalarınızla geçirirsiniz :	○ %10 dan az ○ %10 %30 arası ○ %31 %50 arası ○ %51 %70 arası ○ %71 %90 arası ○ %91 %100 arası
İnternet'e bağlı olduğunuz sürenin genelde yüzde kaçını kişisel hobileriniz ve/veya ilgi alanlarınızla geçirirsiniz :	○ %10 dan az ○ %10 %30 arası ○ %31 %50 arası ○ %51 %70 arası ○ %71 %90 arası ○ %91 %100 arası
Lütfen aşağıdaki ifadelere katılma derecenizi belirtiniz :	
İnternet kullanabiliyor olmam, akademik gelişmeme katkı sağlamaktadır.	○ Hiç katılmıyorum ○ Katılmıyorum ○ Kararsızım ○ Katılıyorum ○ Tamamen katılıyorum
İnternet uygulamalarını (e-posta, mesajlaşma, arama motorları vb.) kolaylıkla kullanırım.	○ Hiç katılmıyorum ○ Katılmıyorum ○ Kararsızım ○ Katılıyorum ○ Tamamen katılıyorum
İnternet üzerinde yapmaktan hoşlandığım işler dikkatimi dağıtarak akademik gelişmemi yavaşlatır.	○ Hiç katılmıyorum ○ Katılmıyorum ○ Kararsızım ○ Katılıyorum ○ Tamamen katılıyorum

Bilgisayar başında iken, İnternet aktiviteleriyle dikkatimi dağıtmadan, akademik çalışmalarıma konsantre olarak çalışabilirim.	○ Hiç katılmıyorum ○ Katılmıyorum ○ Kararsızım ○ Katılıyorum ○ Tamamen katılıyorum

Ders çalışmalarımızda ihtiyaç duyduğunuz araştırmalar için başvurduğunuz kaynakları belirtiniz
(uygun olan tüm seçenekleri işaretleyiniz) **:**

- ☐ ODTÜ Kütüphanesi çevrimiçi kaynaklar (METU Library Online Resources)
- ☐ Internet Arama Motorları (Google, Yahoo vs)
- ☐ Çevrimiçi Dijital Kütüphaneler
- ☐ Kütüphane (ODTÜ Kütüphanesi, Milli Kütüphane veya diğer üniversitelerin kütüphaneleri)

Diğer : Belirtiniz

Gönder