

ASSESSING THE EFFECTIVENESS OF USING METU-ONLINE TOOL IN A
COURSE AT THE DEPARTMENT OF POLITICAL SCIENCE AND PUBLIC
ADMINISTRATION: A CASE STUDY

A THESIS SUBMITTED TO
THE GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES
OF
MIDDLE EAST TECHNICAL UNIVERSITY

BY

NURCAN DURMAZ

IN PARTIAL FULLFILLMENT OF THE REQUIREMENTS
FOR
THE DEGREE OF MASTER OF SCIENCE
IN
COMPUTER EDUCATION AND INSTRUCTIONAL TECHNOLOGY

AUGUST 2009

Approval of the thesis:

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ABSTRACT

ASSESSING THE EFFECTIVENESS OF USING METU-ONLINE TOOL IN A
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ADMINISTRATION: A CASE STUDY

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August 2009, 68 pages

The purpose of this study is to investigate the effect of gender, CGPA and amount of weekly Internet use on the acceptance of CMS (Course Management System). Specifically, the purpose is to investigate METU-ONLINE in a course given in PSPA (Political Science and Public Administration) department at METU.

One questionnaire has been used in the study. The questionnaires have been distributed to 63 PSPA students who were enrolled to POLITICAL HISTORY (ADM3106) course during spring semester of 2007-2008 year.

The data gathered from the students with questionnaires has been analyzed in SPSS 16.0 program with ANOVA method using descriptive and inferential statistics.

The results showed that students' Cumulative GPA and amount of weekly Internet use have an effect on the perceived usefulness of METU-ONLINE.

Keywords: Technology Acceptance, Educational Technology, METU-ONLINE, Course Management Systems.

ÖZ

ORTA DOĞU TEKNİK ÜNİVERSİTESİ-SİYASET BİLİMİ VE KAMU
YÖNETİMİ BÖLÜMÜ'NDE VERİLEN BİR DERSTE METU-ONLINE
ARACININ ETKİNLİĞİNİN DEĞERLENDİRİLMESİ: DURUM ÇALIŞMASI

Durmaz, Nurcan

Yüksek Lisans, Bilgisayar ve Öğretim Teknolojileri Eğitimi Bölümü

Tez Yöneticisi: Öğr. Gör. Dr. Hasan Karaaslan

Ağustos 2009, 68 sayfa

Bu çalışmanın amacı; cinsiyetin, akademik ortalamasının ve haftalık internet kullanım süresinin Ders Yönetim Sistem'leri, METU-ONLINE gibi, üzerinde etkisinin olup olmadığını Orta Doğu Teknik Üniversitesi-Siyaset Bilimi ve Kamu Yönetimi Bölümü'nde verilen bir derste araştırılmasıdır.

Bu çalışmada bir anket uygulanmıştır. Anket, 2007-2008 İlkbahar döneminde POLITICAL HISTORY (ADM3106) dersine kayıt olan 63 SBKY Bölümü öğrencisine dağıtılmıştır.

Öğrencilerden anketlerle elde edilen veriler SPSS 16.0 programında ANOVA yönteminde betimsel ve tahminsel yöntemler kullanılarak analiz edilmiştir. Sonuçlar, öğrencilerin akademik başarılarının ve haftalık internet kullanım oranlarının METU-ONLINE programındaki algılanan yararlılığı etkilediğini göstermiştir.

Anahtar Kelimeler: Teknoloji Kabulü, Eđitim teknolojisi, METU-ONLINE, Ders Yönetim Sistemleri

To old friends, good friends and the best friends

ACKNOWLEDGEMENTS

First of all, I would like to thank to my thesis supervisor, Dr. Hasan KARAASLAN. Without his continuous support and help, this thesis could not be completed.

I would like to thank to also to examining committee members, Dr. Ömür BİRLER, Dr. Cengiz S. AŞKUN, Dr. Hasan KARAASLAN, Dr. Saniye Tuğba BULU and Dr. Gülfidan CAN for their comments and suggestions.

I would like to express my sincere gratitude to following friends: Gülgün AFACAN, Fatma ERDOĞAN, Erkan ER, Öznur EROĞLU, Halise ŞEREFOĞLU HENKOĞLU and Gulshat MUHAMETJANOVA for their support and continuous encouragement.

I would like to thank you also to the all Department of PSPA members, especially, Hacer FİDAN, Seçil ERDEM, Aslıhan ÇOBAN and Özlem GÖLGELİOĞLU for their support during my thesis.

Finally, I would like to thank to my dearest family, to my little angle Beyza DURMAZ, my father Metin DURMAZ, my mother Sevilay DURMAZ, my brother Süleyman DURMAZ and his wife, Yeliz DURMAZ and my cousins for their support, love and encouragement throughout this study.

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CHAPTER 1

INTRODUCTION

This chapter includes the parts: background of the study, statement of the problem, purpose of the study, research questions, and assumptions of the study.

1.1. Background of the Problem

For years, implementing online courses and technology in educational institutions was considered as a tough issue. In today's world, distance education is gaining a much wider popularity in such institutions. Distance Education can be defined as “the process of providing instruction when students and instructors are separated by physical distance; and technology, and often in face to face communication, is used to bridge the gap” (Shea-Schultz, 2002, p.23) When we examine the history of the field of distance education; in the past, the media part was much dominant and some audio/visual materials have been used to deliver education. However, in later times, the researchers noticed that there are human and nonhuman effects on the delivery of education by technology.

Since 1994, instructional technology field made great evolutions in its definitions and has been started to be mentioned with “Educational Technology”. AECT (Association for Educational Communications and Technology) is widely accepted to outline the field and the progress. In 1994, AECT reported a new definition called Instructional Technology and described it as “the theory and practice of design, development, utilization, management, evaluation of processes, and resources for learning” (Seels & Richey, 1994, p. 1). With the new developments in the field of technology, in 2004, AECT made a new definition for Educational Technology which is “the study and ethical practice of facilitating learning and improving performance by creating, using, and managing appropriate technological processes and resources” (AECT, 2004, p. 2).

AECT 2004 defines educational technology as a “study” and the ethical performance to make learning environments easier for the learners by providing them with some forms of inquiry to develop their performance. It can be derived from AECT’ 2004 definition, there are great improvements in technology field and using technology in education is one of many study fields of researchers and therefore major expectations have appeared from technology use in education.

It is a commonly accepted fact that technology provides many benefits for educational institutions when it is applied appropriately. According to Roblyer and Edwards (2000), there are five essential reasons for integrating technology into the schools: increased student motivation; unique instructional opportunities; increased teacher efficiency; enhancing students’ information age skills; and supporting constructivist approaches. However, integrating technology into teaching and learning is a complex procedure and therefore some barriers appear with the use of computers in education.

In order to understand why people accept or reject the use of computers, behavioral models have been studied and specifically, TRA (Theory of Reasoned Action) Model

has been introduced by Fishbein and Ajzen (1975) (as cited in Davis, Bagozzi, & Warshaw, 1989). According to TRA model, human behavior can be predicted by behavioral intention, attitude, and the influence of subjective social norms. Intention is the best way to predict a human's behavior and it contains two determinants: nature of a person and the social influences on that person. Attitude is a person's view either it is positive or negative, while she or he is performing a particular behavior. Although TRA Model was a good combination in analyzing human behavior, Davis et al., (1989) stated that there are inadequate parts to answer the behavior of technology use.

With the awareness of lacking parts in TRA Model, TAM (Technology Acceptance Model) has been introduced by Davis (1986). Different from TRA Model, TAM aimed to explain the user acceptance behavior toward technology. Since TAM provides specific elements to understand the behavior of technology users, it has been widely accepted and used in the field of information systems. With the help of developments in technological areas, today there is a rapid communication system between teacher and students. Students can use a variety of tools to communicate with their teacher such as; mailing lists, news groups, videoconferencing tools and forums which can be used to share ideas of students on same topic.

According to Singh, O'donoghue and Claire Betts (2002) for obtaining a key success from technology applications in education, the students should be allowed to use online sources whenever and wherever they want. Therefore, with the allocation of technological sources to the learners in education, the success which is expected from students can be increased. Although providing students with technological resources is one of the most important keys in delivery of education, user acceptance is another important part in educational technology field. User acceptance part will be analyzed through this study.

In order to understand the user acceptance of online learners, TAM has been chosen and used by researchers. Pan, Gunter, Sivo and Cornell (2005) stated that with the four basic domains which are perceived usefulness (PU), perceived ease of use (PEOU), attitude toward using the system and actual system use, TAM is suitable to detect the hints about the success of CMS use in education.

METU-Online Tool is one of CMS (Course Management systems) which can provide extensive support through Internet. This study will aim to detect the user acceptance of CMS, namely METU- Online in one of PSPA courses, POLITICAL HISTORY (ADM3106) while investigating students' individual differences. This course has been chosen since its content is highly compatible with online discussions, posting lecture notes, and making announcements related to the course.

1.2. Significance of the Study

Technology has a wide range of use in many fields in today's people life. Education has started to be one of those fields in which technology has been started to integrated. Especially, with the introduction of the term "e-learning", people are being involved in online education in which they save their money and time. However, the success and effectiveness of e-learning applications in education are still questionable depending on some factors.

Edelstein & Edwards (2002) stated that developing an effective system for students' constant interaction is one of the most important doctrines for a successful online learning. However, while implementing online learning, researchers found out some critical barriers and challenges. Instructors' new roles and responsibilities (Zheng & Smaldino, 2003; Murihead, 2000), use of technology (Valentine, 2002; Palloff & Pratt, 2000; Berge, 1998; Volery, 2000), interaction with students (Bower, 2001) are some critical barriers while learning online. In addition to those obstacles, O'Quinn

& Corry (2002) stated that there are some faculty-related problems: a lack of professional reputation, the methods used in delivery of education, changing role of the faculty, and lack of financial support.

From the literature, it can be drawn that one of the main reasons why online education does not work effectively is that people are not using it. However, in online education, students' usage and user acceptance of the CMS are the key factors. Therefore, for an active usage, some improvements need to be done by the developers of CMS.s. With the help of TAM, the factors for an effective online learning can be easily understood

This study will provide results firstly about the PSPA students' current computer and Internet skills and after that, it will provide an understanding of students' perceptions about METU-ONLINE in terms of usefulness, ease of use, attitude toward METU-ONLINE use, and actual use of METU-ONLINE in the PSPA Department at METU. In addition to this understanding, the study will present whether there are any effect of students' individual differences such as gender and age and also academic-related individual differences such as CGPA and weekly Internet use of students on their acceptance of METU-ONLINE. With the help of information gathered at the end of this study will provide an insight about what kind of improvements can be done in order to increase the user acceptance of METU-ONLINE in the department of PSPA. PSPA is one of the departments at METU, in which METU-ONLINE is newly being used; therefore with this study, early findings will be found for the improvements to increase the actual usage of this CMS at the department.

Moreover, this study will be one of the first studies which are about students' perception of METU-ONLINE at METU. Therefore, the result of this study will be helpful for the Informatics Institute, developer of METU-ONLINE at METU. With the exploration of the factors which affect the user acceptance of METU-ONLINE

among PSPA students, some improvements can be done in order to provide better online tools for the students.

1.3. Definition of Terms

In this study TAM will be used to detect the factors influencing students' acceptance of METU-ONLINE in their course, therefore the elements which TAM includes are described as follows:

Perceived usefulness is defined as “the degree to which an individual believes that use of the target system could enhance the job performance” (Davis, 1993, p. 477) (as cited in Pan, Gunter, Sivo & Cornell, 2005).

Perceived ease of use is “the degree to which the individual believes that using the target system would be free of mental and physical efforts” (Davis, 1993, p. 477) (as cited in Pan et al., 2005).

Attitude toward the use of target system is defined as “the degree to which an individual evaluates and associates the target system with his or her job” (Davis, 1993, p. 476) (as cited in Pan et al., 2005).

1.4. Purpose of the Study

By including three main elements of TAM: perceived usefulness (PU), perceived ease of use (PEOU), and attitude toward using the system, external variables also have effects on user acceptance of a CMS systems. By taking into consideration students' gender, CGPA and amount of weekly Internet use as external variables, the purpose of this study was to investigate the effect of individual differences and

academic achievements on the acceptance of CMS system, specifically, METU-ONLINE in a course given in PSPA department.

Although external variables are being analyzed in the study, mainly, the aim of this thesis is to find out whether there are differences in the perceived ease of use of CMS, perceived usefulness of CMS, and attitudes toward CMS by taking into consideration students' individual and academic differences. In addition to finding the differences, this thesis also aims to identify the reasons which make "significantly different" cases and what kind of improvements can be done in order to increase the students' acceptance of CMS use.

The main research questions and sub questions for this study are:

1. What is the effect of students' individual differences such as gender on their acceptance of METU-ONLINE?
 - a. Is there a significant difference between the students' perception of the usefulness of METU-ONLINE, in terms of their gender?
 - b. Is there a significant difference between the students' perception of the ease of use of METU-ONLINE, in terms of their gender?
 - c. Is there a significant difference between the students' perception of the attitude toward use of METU-ONLINE, in terms of their gender?

2. What is the effect of students' Cumulative GPA (CGPA) on their acceptance of METU-ONLINE?
 - a. Is there a significant difference between the students' perception of the usefulness of METU-ONLINE in terms of their CGPA?
 - b. Is there a significant difference between the students' perception of ease of use of METU-ONLINE in terms of their CGPA?
 - c. Is there a significant difference between the students' perception of the attitude toward use of METU-ONLINE in terms of their CGPA?

3. What is the effect of students' amount of weekly Internet use on their acceptance of METU-ONLINE?
 - a. Is there a significant difference between the students' perception of the usefulness of METU-ONLINE in terms of students' amount of weekly Internet use?
 - b. Is there a significant difference between the students' perception of ease of use of METU-ONLINE in terms of students' amount of weekly Internet use?
 - c. Is there a significant difference between the students' perception of the attitude toward use of METU-ONLINE in terms of students' amount of weekly Internet use?

CHAPTER 2

LITERATURE REVIEW

In this part of study, themes related to this study have been reviewed with respect to research questions. There are three main titles in this section; first of all Educational technology will be reviewed covering e-learning and Course management systems. Secondly, Online Education, Web-based Instruction and Online communication and Collaboration will be presented. And finally, Diffusion of Innovation with Technology Acceptance Model (TAM) will be covered starting with its emergence till its applications in educational technology field.

2.1. Educational Technology

In today's rapidly changing world, technology has started to be involved in various fields including education. In previous times, audio/visual materials such as television and radio were much dominant. With the introduction of Internet, since 1994 in Instructional Technology field there have been great improvements and "Instructional Technology" and "Educational Technology" terms have started to be used interchangeably.

With the new developments in the field of technology, in 2004, AECT made a new definition for Educational Technology which is “the study and ethical practice of facilitating learning and improving performance by creating, using, and managing appropriate technological processes and resources” (AECT, 2004, p. 2).

In this definition, study refers to research doing in the field of educational technology. Research includes both qualitative and quantitative methods with the support of other forms such as theorizing, historical research of the field and making analyses of systems and faults in the systems. Gentry (1995) states that educational technology is a dynamic field which means it is a continuously developing area and the field of educational technology has obtained a wide range of meaning for itself. In educational Technology field, the research part has an important meaning since research allows the scientists to generate new ideas for the field and to provide an evaluation environment for practice in the field. AECT (2004) declares that with the developments and changes in learning theories, and in information systems, the investigation programs in the field of educational technology have been influenced.

Ethical practice in the definition has been divided into three sub categories: ‘Commitment to Individual’, which refers to the rights of the learners while accessing to the material. ‘Commitment of the Society’, which refers to true statements concerning educational issues and finally ‘Commitment to Society’, means improving qualified knowledge and skills in the field and giving sufficient value to the ideas and skills.

AECT’s 1963 definition was “the design and use of messages which control the learning process.”, facilitating learning with technology meant controlling the learning with drill and practice format, however, today to facilitate learning learners are being supported with suitable environments and tools.

2.1.1. E-Learning

With the new improvements, technology has been started to be used in many of the fields. And education is one of those fields in which technology and its applications have been started to be used. “E-learning” sometimes is referred as online learning, web-based learning, distance learning, and technology-based learning (Inoue, 2007).

(Waight, Willing, & Wentling, 2004) states that e-learning is an area which gathered a global attention; and the importance of e-learning is universal. Therefore, e-learning applications make an impact on people globally. As Howell, Williams, & Lindsay (2004) states the structure of higher education is shifting to academic accountability, competency results, subcontracting, content standardizing, and adaptation to learner-consumer demands.

“Learner Satisfaction” with online programs is generally related to success in many of those programs (Hong, Kwok-Wing, Holton, 2003). In general, the success is much dependent on the communication with the other learners. According to (Chaudier, 2004) successful communication requires consistent communication. Throughout the World Wide Web, learners may get extensive and rich resources to communicate with each other. Rena Palloff and Keith Pratt (1999), “Without the purposeful formation of an online learning community in distance learning, we are doing nothing new and different”

Toward the end of twentieth century, people got the chance of communicating with each other by writing. When Berners-Lee (1992) developed World Wide Web, communicating through writing has increased rapidly. People started to mail each other.

Communication technologies remove the physical space and timing barriers in front people. In today’s world, those people who are not computer-literate enough have a risk of falling behind socially and economically (Zembylas & Vrasidas, 2005).

Therefore, the importance of being able to use computers among students has increased.

A number of studies have shown that faculty members are motivated by e-learning technology as a result of convenience and other logical factors (Abel, 2007; Rhodes, 2001). Other studies have indicated that faculty members are frustrated with the technology due to its lack of physical interaction with students and the related institutional administrative changes (Ascione, 2006; Fadel, 2005; Kouzes & Posner, 2007).

Lee (2001) indicated that, when faculty members recognize institutional encouragement and rewards are offered, their level of motivation and dedication are increased as e-learning increases in importance throughout the academic arena. A common misconception is viewing no difference between the traditional classroom experience and e-learning (Cyrs, 1997).

2.1.2. Course Management Systems (CMS)

Course Management System is a recent technology. Before the introduction of this new technology, technology-supported learning was delivered with expensive programs developed by instructional designers and computer programmers. As Carmean and Brown (2005) states faculty development centers has become CMS experts and a lot of handbooks have been written for effective discussion boards and online learning. With those developments, the students have started to ask the internet site of the courses they have enrolled.

Since the introduction of those CMSs, students are able to use educational tools related to the course they are enrolled. Carmean and Haefner (2002) states that deeper learning occurs when the learning is: social, active, related, involve learner possession, and engages the learner. And in CMS, those conditions are taken into consideration while it is being developed.

With the continuous and picture perfect access to the wide information resources within the CMS, it is much possible that learning occur. The CMS can be a tool in order to promote the students' engagement and student-centered learning experiences. Although it is much important that providing students with environments in which there is abundant information resources to be accessed, McLean and Lynch (2004) report that:

“...much of the current thinking is based on a fairly library-centric view of being able to “push” information resources into CMS [learning management system]. There has been little thought given to the learner activity perspective where the learner wish to draw on any number of information resources either prescribed, or of his or her choosing, at any given moment in the learning activity (p.6).”

Therefore, CMS should be developed according to the needs of the learners. However, although it is often overlooked, an instructor's belief or conception about teaching and learning has an important influence on teaching and learning process. Kember (19a7) states that those conceptions have a significant influence on the instructional strategies and practices they perform. The term “conception” can be defined as:

“...specific meanings attached to phenomena which then mediate our response to situations involving those phenomena. We form conceptions of virtually every aspect of our perceived world, and in so doing, use those abstract representations to delimit something from, and relate it to, other aspects of our world. In effect, we view the world through the lenses of our conceptions, interpreting and acting in accordance with our understanding of the world. (Pratt, 1992, p.204)”

In online education, there are four types of interaction: learner-teacher, learner-content, learner-learner (Moore, 1989) and most recently, learner-technology (Hanna, Glowacki-Dudka, 2000; Palloff & Pratt, 2001). In order to provide a useful

CMS environment, the environment should be more flexible, and it should provide flexible structure for both learners and the instructors.

2.2. Online Education

Today, it is almost possible for campus-based students to have their education online as much as in-person. We need to know how campus-based students engage with online environments and also their university education with general aspects. Davis and Murrell (2003) states that in online environments, while students are responsible for constructing their knowledge, the faculty members and the instructors stimulate and encourage students' involvement while learning occur. CMS are the first comers of online learning technologies in higher education. These wide systems, such as Blackboard, TopClass / First Class and WebCT, have been adopted fast and started to be used among the world universities (OBHE, 2004a; Green, 2003).

Electronic medium has both advantages and disadvantages. For the advantages, online education supports greater freedom and flexibility in communication (Mccomb, 1993) because it allows the learners to follow given instructions at their own pace (Morgan, 2000). In addition it allows the students to improve their critical thinking abilities and self-directed learning (Aviv, Erlich, Ravid, & Geva, 2003). However, there are also some disadvantages of distance learning, there could appear increased time spent on the course, (Wiesenberg & Hutton, 1996), and some learners may not wish to participate in online discussions (Guzdial & Carroll, 2002).

Timing is a real important issue in communication in today's world. Especially, as the age is getting older people become aware of that time is a really precious thing in their lives. People who are aware of that learning is also important in their lives within a limited time may have a chance of studying at a later time. Time management allows adults to get more done in the time they have (Kozoll, 1982).

In addition to that, According to Cahon (1998) Online discussions have a significant role in development of critical thinking and deliberative skills. In addition, online discussions give students chance of reflecting their ideas more deeply on a given topic.

Student engagement with the online learning tools is very important in the successfulness of online education. Chikering and Gamson's (1987) 'seven principles of good practices in undergraduate education' are one of the commonly accepted documents on higher education pedagogy. Gamson (1991:7) declares that they identify the key principles of educationally successful undergraduate institutions. They include:

- Encouraging student-faculty contact
- Encouraging cooperation among students
- Encouraging active learning
- Giving prompt feedback
- Emphasizing time on task
- Communicating high expectations
- Respecting diverse talents.

The principles are easy to interpret although they are derived from substantial theoretical and empirical research.

2.3. Diffusion of Innovation

Rogers (2003), defines diffusion as “the process, by which an innovation is communicated through certain channels over time among the members of a social system” (p. 5) structured his theory with four main elements which are innovation, communication channels, time and the social system.

2.3.1. Elements

According to Rogers (2003), any idea, subject or practice could be called an *innovation* if it is “perceived” as new by the individual. Five “perceived” characteristics of innovation are:

Relative advantage is the degree to which an innovation is perceived as better than the idea it supersedes (p. 15).

• *Compatibility* is the degree to which an innovation is perceived as being consistent with the existing values, past experiences and needs of potential adopters (p. 15).

• *Complexity* is the degree to which an innovation is perceived as difficult to understand and use (p. 16).

• *Trialability* is the degree to which an innovation may be experimented with on a limited basis (p. 16).

Observability is the degree to which the results of an innovation are visible to others (p. 16).

Second element, communication channel, is described as “the means by which messages get from one individual to another” (p.18). Third element *time* has three dimensions: the innovation-decision process, innovativeness of individual or other unit of adoption (adopter categories), and rate of adoption. Finally, fourth element, *social system* is described as “a set of interrelated units that are engaged in joint problem solving to accomplish a common goal” (p. 23).

2.3.2. Theories

There are four major theories which deal with the diffusion of Innovations: innovation-decision process theory, individual innovativeness theory, rate of adoption theory, and theory of perceived attributes (Rogers, 1995)

The innovation-decision process is described by Rogers (1995) as “the process through which an individual (or other decision-making unit) passes from gaining initial knowledge of an innovation, to forming an attitude toward the innovation, to making a decision to adopt or reject, to implementation of new idea, and to confirmation of this decision”. As Figure 2.1 demonstrates, there are sequential five steps to be followed in the *innovation-decision process*.

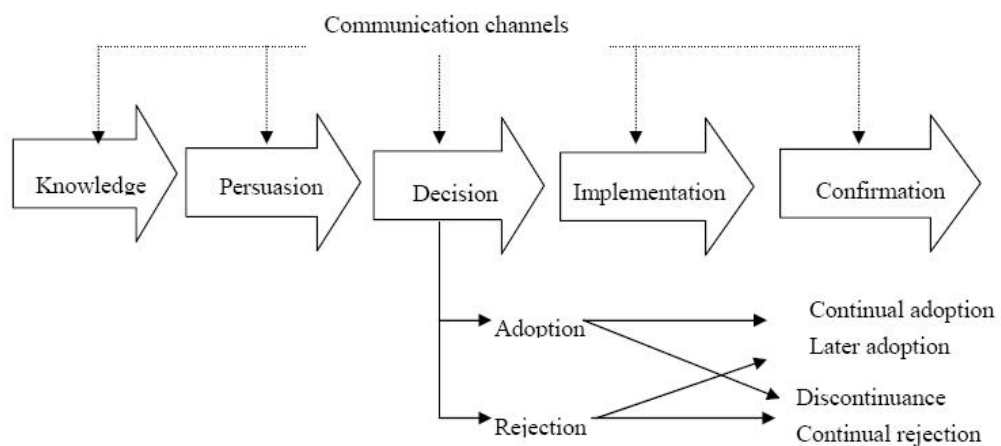


Figure 2.1 Innovation-Decision Process (Source: Papazafeiropoulou *Gandecha & Stergioulas, 2005, p. 4*)

Rogers (2003) identified the stages as below:

- *Knowledge* occurs when an individual (or other decision-making unit) is exposed to an innovation’s existence and gains an understanding of how it functions.

- *Persuasion* occurs when an individual (or other decision-making unit) forms a favorable or an unfavorable attitude towards the innovation.
- *Decision* takes place when an individual (or other decision-making unit) engages in activities that lead to a choice to adopt or reject the innovation.
- *Implementation* occurs when an individual (or other decision-making unit) puts a new idea into use.
- *Confirmation* takes place when an individual seeks reinforcement of an innovation-decision already made, but he or she may reverse this previous decision if exposed to conflicting messages about the innovation (p. 169).

According to innovation-decision model, who will decide and when he or she will decide is very important. The individual innovativeness theory suggests a method for categorizing individuals on the basis of innovativeness.

First category of adopters is innovators include the 2.5 % of the social system. These are the leaders in the system. Next 13.5 % represents the early adopters. They are more integrated with the social system. The third and fourth groups are early majority and late majority. Both of them represent 34 % of the community. The early majority adopts the innovation before the average member of the system while the late majority adopt just after the average. The final group is laggards with 16 % of the social system.

The theory of rate of adoption suggests that an adoption grows slowly at first and then speeds up that will come to a point, finally becomes stable and eventually decreases (Rogers, 2003).

As the fourth major theory, theory of perceived attributes suggests a number of attributes that determine the rate of adoption. Diffusion of Innovation and its theories have been used in many studies. TAM is a reliable model in order to detect technology acceptance in information systems.

2.4. Technology Acceptance Model (TAM)

Implementation of e-learning applications in an organization is expensive and sometimes there is low success in the end. Therefore, some models are developed and grouped to help examination information system use (Legris, Ingham & Collette, 2003).

Davis introduced TAM in 1986 and it is a model for enlightenment for computer and technology use behavior in information systems. Actually, TAM is an adoption of Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1980) (as cited in Davis, et al., 1989), a well researched intention model which explain human behavior in various domains. Since 1986, TAM has been used widely because it provided different solutions to different requirements.

TAM tries to forecast people's technology acceptance and actual system usage from a measure of their intentions, and explain their intentions in terms of their attitudes, perceived usefulness, perceived ease of use and external variables. The parts TAM is comprised of are shown in below figure:

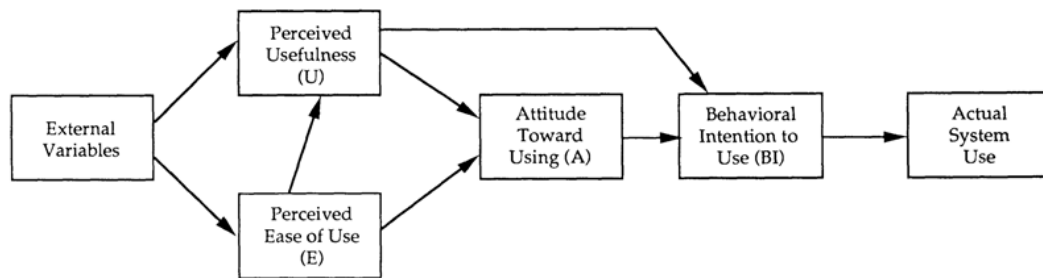


Figure 2.2 Technology Acceptance Model (TAM) (Source: Davis et al., 1989, p.985)

As demonstrated in the figure, in brief, TAM purposes to provide a basis for assessing the effect of external variables on internal beliefs (perceived usefulness and perceived ease of use), attitudes and intentions (Davis, et al., 1989). The effect of external variables has been emphasized on internal beliefs, attitudes and intentions, which lead to actual usage (Garson, 2006).

External variables in TAM are very critical. The critical assumption of TAM is perceived usefulness (PU) and perceived ease of use (PEU) *fully* mediate the effect of external behaviors on the attitude toward the system usage and actual system usage. In brief, TAM assumes that external variables predict the usage *only* through PU and PEU.

According to Hodgson and Aiken (1998), the empirical research demonstrated that attitudes toward the computer usage and computerization have been related with age, locus of control, cognitive style, education, gender, job involvement, organizational commitment, prior computer usage, and trait anxiety. Alshare, Grandon and Miller (2004) point out several hypotheses in their study, which are based on investigating the effect of age, gender, educational background and income on computer literacy, PU, PEOU, and negative attitude toward the computer usage. Additionally, as Wixom and Todd (2005), state in their study, personality traits and demographic characteristics are external variables, which influence PU and PEOU within TAM.

Then, even though there are suggestions to remove individual differences regarding external variables from the model, these variables seem to be worth further investigation.

When we move to the field of educational technology, not much but a few studies were conducted using TAM. However these studies also examine various external behaviors as the determinants of acceptance of technologybased educational systems, particularly e-learning and CMSs. An example for user acceptance study is a case study about end-user acceptance of a learning management system of undergraduate courses (Pan, et al., 2005). This study aims to investigate the correlation between the students' acceptance of WebCT and their final grades. Also two external variables affecting the relationship were taken into account in the study. These external variables were subjective norms and computer self-efficacy.

As the sample studies illustrate, CMSs represent a domain in which TAM is appropriately applied with different kinds of external variables. Actually, likewise the debate in information systems, the individual differences as external variables in the field of educational technology are in the interest of this study.

Regarding computer applications, Henry (2002) states that men are more involved in such applications than women. However, recent studies show women made a great improvement in the use of computers. As Day, Janus, and Davis (2005) shows in Figure 5.1 that women made a great improvement in the use of computers since 1984 till 2003.

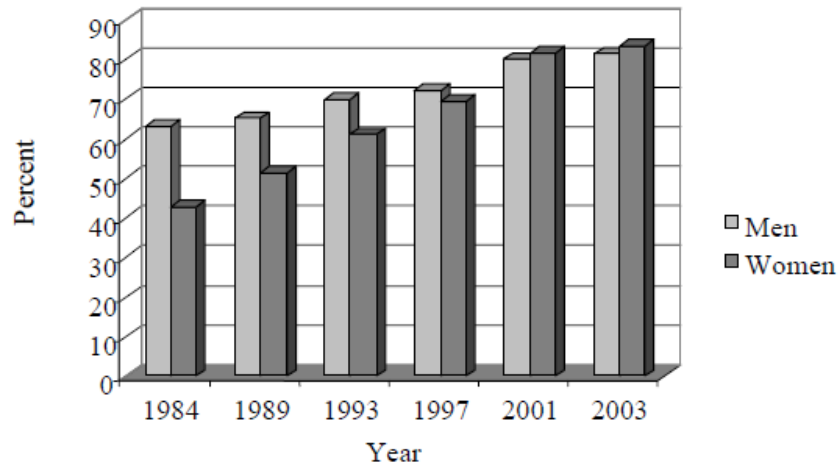


Figure 2.3 Computer use by gender

In terms of academic achievements, Brodie (1964) reported significantly higher grades for satisfied students. Student satisfaction scores and grade point average were found to be related Beelick (1973), and high achievers are most satisfied with the technology than the low achievers. However, a study by Bowen and Kilmann (1975) found no relationship between student satisfaction and grade point average. Marks, Sibley and Arbaugh (2005) found that the personal variables of age, gender, and GPA were not related significantly to perceptions of learning performance.

In order to measure students Internet experience, students are asked about the amount of weekly Internet use. Smith, Caputi, Crittenden, Jayasuriya, and Rawstone (1999) have grouped computer experience as subjective and objective measures. And according to this study there was a relation that students who are familiar with computers are much willing to use its applications.

CHAPTER 3

METHODOLOGY

In this chapter, the research questions, information about METU-ONLINE, the overall design of the study, population and sample, instruments used in the study, the data collection and data analyzing procedures, assumptions and finally limitations that the researcher has faced with during the study has been presented.

3.1. Research Questions

The purpose of this study was to find out if there are differences in the perceived ease of use of, perceived usefulness of, and attitudes toward METU-ONLINE by taking into consideration students' gender, CGPA and amount of weekly Internet use in POLITICAL HISTORY (ADM3106) course at the department of PSPA at METU.

The main research questions and sub questions for this study are:

1. What is the effect of students' individual differences such as gender on their acceptance of METU-ONLINE?
 - a. Is there a significant difference between the students' perception of the usefulness of METU-ONLINE, in terms of their gender?
 - b. Is there a significant difference between the students' perception of the ease of use of METU-ONLINE, in terms of their gender?

- c. Is there a significant difference between the students' perception of the attitude toward use of METU-ONLINE, in terms of their gender?
2. What is the effect of students' Cumulative GPA (CGPA) on their acceptance of METU-ONLINE?
- d. Is there a significant difference between the students' perception of the usefulness of METU-ONLINE in terms of their CGPA?
 - e. Is there a significant difference between the students' perception of ease of use of METU-ONLINE in terms of their CGPA?
 - f. Is there a significant difference between the students' perception of the attitude toward use of METU-ONLINE in terms of their CGPA?
3. What is the effect of students' amount of weekly Internet use on their acceptance of METU-ONLINE?
- g. Is there a significant difference between the students' perception of the usefulness of METU-ONLINE in terms of students' amount of weekly Internet use?
 - h. Is there a significant difference between the students' perception of ease of use of METU-ONLINE in terms of students' amount of weekly Internet use?
 - i. Is there a significant difference between the students' perception of the attitude toward use of METU-ONLINE in terms of students' amount of weekly Internet use?

3.2. Information about METU-ONLINE at METU

METU-ONLINE is an educational tool with the aim of meeting e-learning needs of METU students and faculty members. METU-ONLINE's website is a source to be informed about NetClassR (https://online.metu.edu.tr/help/help_english/Help.html).

NET-ClassR is a learning management system developed by METU Informatics Institute since 1997, by taking into account the faculty and student feedbacks in campus wide. It is being used in most of the departments at METU. According to METU-ONLINE's site, there were 20000 students enrolled to the courses and 1250 instructors are registered to CMS by the end of 2007.

NetClassR provides instructors and students with an educational environment in which they can easily manage their courses at a distance. With the help of METU-ONLINE, instructors can use this educational tool in their courses.

In order to login to the CMS, the users have an interface as follows, through which they can enter their METU-User Name and Passwords.



Figure 3.1 NET-ClassR Users and Tools

After logging in, the students will have an educational tool and main elements of the tool are: forum, e-mail, online exam, grade book, and student tracking, lecture notes.

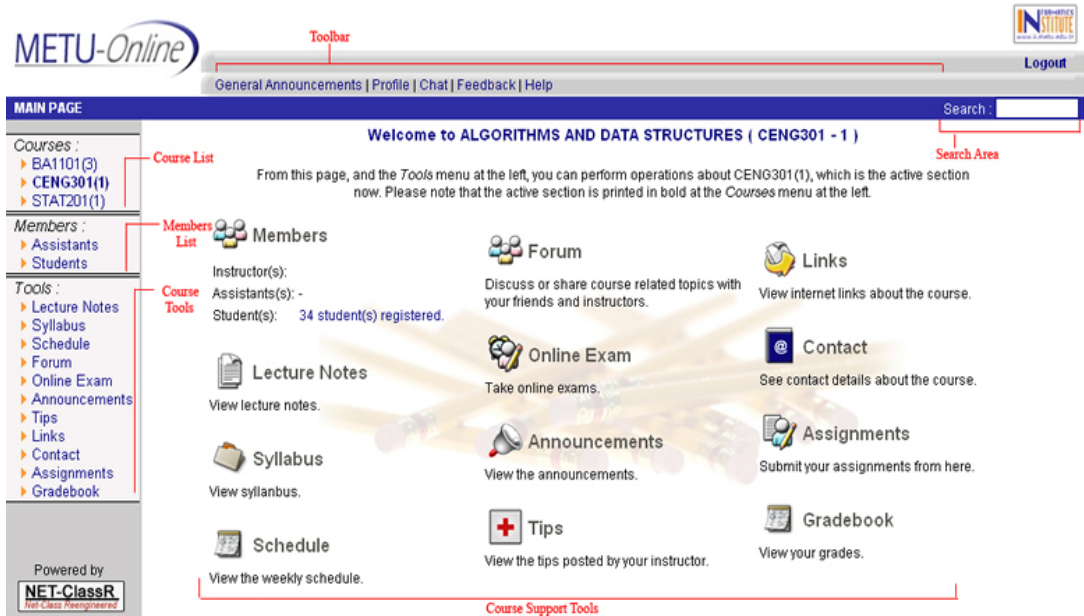


Figure 3.2 NET-ClassR Users and Tools

Three kinds of users who are Instructors, Students and Administrators can make use of the CMS and working scheme of the CMS shown in following figure:

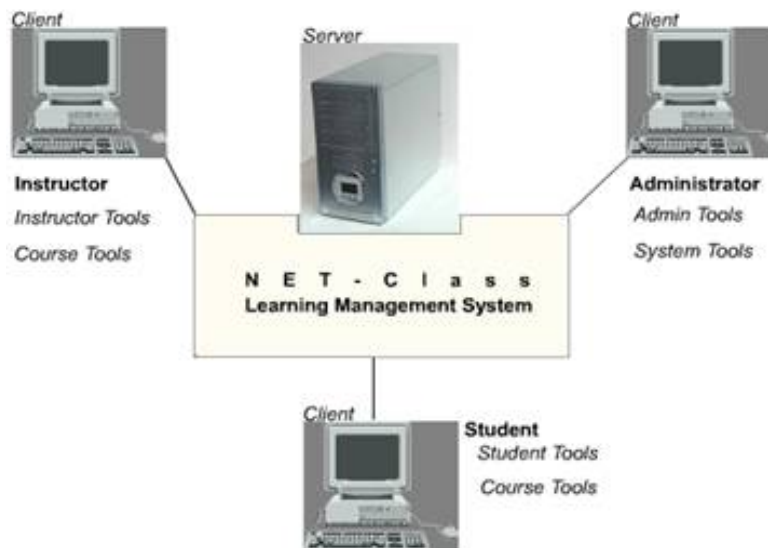


Figure 3.3 NET-ClassR Users and Tools

With the use of METU-ONLINE, students can communicate with their instructors and the students taking the same course. In addition to that, students are able to reach lecture notes posted by the instructor, see the assignments and view their grades after exams.

3.3. Description of the Research Design

In this study, method of case study was used. Khan (2005) defines case studies as “real or hypothetical situations developed in depth for use in an e-learning course in order to engage learners in realistic problem-solving tasks”.

Cases can encourage discussion about best practices and problem-solving strategies, and can be based on the actual situations that learners are likely to encounter when they become practitioners (Brown, Collins & Duguid, 1989). These cases should, of course, be aligned with the learning goal(s) of the course in order for learners to benefit from them.

For the study, the researcher has used one questionnaire in Turkish and the instructor of the POLITICAL HISTORY (ADM3106) course announced that students will use METU-ONLINE in the course. The instructor has also stated to the students that 5% of the students' grades will be formed according to the effective use of METU-ONLINE during semester. The researcher has registered herself to the course as course assistant in order to observe how often students use the METU-ONLINE.

At the end of the semester, a questionnaire (See Appendix A) has been distributed to the students in order to understand their acceptance of METU-ONLINE in the course. First part of the questionnaire is to collect the demographics of the students and their CGPA and weekly Internet use. Second part is “Perceptions about

usefulness”, third part is “Perceptions about ease of use of METU-ONLINE”, and fourth part is “Attitudes toward the use of METU-ONLINE”.

In this study, quantitative approach has been used in order to collect data from students. With quantitative approach, the researcher made descriptive and inferential analyses.

3.4. Description of the Sample and the Course

The participants of this study were 63 students from department of PSPA at METU. The students enrolled to POLITICAL HISTORY (ADM3106) course during spring semester of 2007-2008 year. The students were mostly junior students whose age level is between 20-23 age groups.

As written in its own site, Political Science and Public Administration are two closely related fields which deal with the scientific study of political and administrative subjects.

The discipline of Political Science analyses the processes by which resources are allocated and values are developed and discussed within a political system.

The discipline of Public Administration analyses the processes by which decisions and policies are made within administrative systems and particularly within the state. Political Science and Public Administration are major social science disciplines, which help us understand the political, social and economic processes and their transformation at both local and international levels. A degree in Political Science and Public Administration can be useful in a wide variety of vocations and/or large organisations. Any profession involving the public domain would benefit from the knowledge and skills gained by an undergraduate degree in the field. With this

degree, the graduates get access to several different careers in the public and private sector in Turkey as well as the international arena.

POLITICAL HISTORY (ADM3106) course aims to introduce the political trajectories constituting the European modernity with a historical perspective. The main focus of the course is the basic social and political developments and changes characterizing the transformation of Europe between the French Revolution and the First World War. In this framework, the creation of a new cultural form expressing these changes and the major economic dynamics within this period are also emphasized. It is thought that the students would be well-informed with respect to the historicity and the historical dynamics and processes constructing the European modernity. By the end of this course the students can come to relate the contemporary political agendas to their historical background so that they may get a historically informed awareness of the modern time.

3.4.1. Demographics of Participants

Table 3.1 Distribution of the Students in terms of their Gender

Gender of Students	Number of Students	Percent
Male	29	46.0
Female	34	54.0
Total	63	100.0

As shown in Table 3.1, in the study, 46.0% of the students were male, and 54.0% were female. The percentages of the students' distribution are close to each other.

Table 3.2 Distribution of the Students in terms of their Age

Age of Students	Number of Students	Percent
20	1	1.6
21	38	60.3
22	18	28.6
23	6	9.5
Total	63	100.0

As shown in Table 3.2, 1.6% of the students was at age 20, 60.3% of students were at age 21, 28.6% of the students were at age 22 and 9.5% of the students were at age 23. There is no wide range among the students' distribution in terms of their ages.

Table 3.3 Distribution of Students in terms of their CGPA

Cumulative of GPA of Students	Frequency	Percent
CGPA Below 2.49	17	27.0
Between 2.50 and 2.99	33	52.4
Between 3.00 and 4.00	13	20.6
Total	63	100.0

As shown in Table 3.3, 27.0% of the students have CGPA below 2.49, 52.4% of the students have CGPA between 2.50 and 2.99, 20.6% of the students have CGPA between 3.00 and 4.00 at the department of PSPA.

Table 3.4 Distribution of Students in terms of their amount of weekly Internet use

Amount of weekly Internet use	Frequency	Percent
Between 1-5 hours in a week	21	33.3
Between 6-10 hours in a week	27	42.9
Between 10-20 hours in a week	15	23.8
Total	63	100.0

Table 3.4 illustrates that 33.3% of the students use Internet between 1-5 hours in a week, 42.9% of students use 6-10 hours in a week, 23.8 of students use between 10-20 hours in a week.

3.5. Instruments used in the Study

In this study, the researcher used a questionnaire in order to collect data from PSPA students who took POLITICAL HISTORY (ADM3106) during spring semester of 2007-2008 year. Questionnaire Design site is an excellent source to be informed about “Questionnaires”

(http://www.cc.gatech.edu/classes/cs6751_97_winter/Topics/quest-design/). In this site, it is stated that Questionnaires are simple methods in order to gather data from a

large group of samples. If a questionnaire is prepared well, then the researchers can easily manage to reach a lot of people and can have both general and specific information about a system.

In the study, the researcher used a questionnaire (See Appendix A) which has been adapted from the questionnaire used in Hancı (2007) thesis.

The questionnaire is 37-item 5-point Likert-type scale and at the first page of the questionnaire, there are items in order to collect demographic characters of the students. The items are related to gender, age, academic successfulness, and weekly Internet use of the students.

The questionnaire has three main parts. First main part is “Perceptions about usefulness” and it has items in order to learn students’ opinions about the use of METU-ONLINE in their course. The items are mainly about if METU-ONLINE provides the students with an online educational platform in which students are much able to control their education, to do much faster their course-related jobs, to increase their performance in the course and if METU-ONLINE increases the quality of their education in the course.

Second main part is “Perceptions about ease of use of METU-ONLINE”, and the items in this part are related to easy and difficult points while using METU-ONLINE. In this part, students’ opinions has been collected in order to detect if they are able to use METU-ONLINE easily, and what kind of problems the students have during METU-ONLINE use, and finally if the students need any extra program to utilize METU-ONLINE effectively.

Third and final main part in the questionnaire is “Attitudes toward the use of METU-ONLINE”, and the items in this part are related to general attitudes toward METU-ONLINE. In this part of questionnaire, students were asked to rate their opinions

about how they feel toward METU-ONLINE and if the students believe that METU-ONLINE is an effective educational tool in the course during semester.

Although, in the thesis carried by Hanci(2007), reliability test for the questionnaire (See Appendix A) has been done, the researcher has analyzed the reliability by Cronbach Alpha (α) value and found it as Cronbach alpha (α) is $\alpha = .91$. The questions in the questionnaire were relevant to the purpose of the study therefore the researcher decided to adapt the questionnaire. Validity analysis has been done by the peers and experts. The questionnaire has been reviewed by them. Each question in the questionnaire in a way that they include only one thought.

Cronbach alpha (α) for “Perceptions about usefulness of METU-ONLINE” section is $\alpha = .89$, Cronbach alpha (α) for “Perceptions about ease of use of METU-ONLINE” section is $\alpha = .81$, and finally Cronbach alpha (α) for “Attitudes toward the use of METU-ONLINE” section is $\alpha = .84$.

3.5.1.1. Demographics

In this section, the researcher gathered data about gender, CGPA and amount of weekly Internet use of participants in the survey.

3.5.1.2. Perceived Usefulness of METU-ONLINE

This section has been used in order to collect data about perceived usefulness of the POLITICAL HISTORY (ADM3106) course students about METU-ONLINE use. Reliability analysis by the researcher has been made as follows:

Table 3.5 Reliability Analysis (Scale Alpha) of Perceived Usefulness in the Questionnaire of METU-ONLINE

Items	Cronbach's Alpha if Item Deleted
1	.87
2	.88
3	.88
4	.88
5	.88
6	.87
7	.88
8	.88
9	.88
10	.88
11	.88
12	.88

Cronbach Alpha value for “Perceived Usefulness” section is $\alpha = .88$ and any item deletion does not increase this alpha value and therefore, this section was used as it was.

For this section, validity analysis has been done by the peers and experts. The questionnaire has been reviewed by them. Each question in the questionnaire in a way that they include only one thought.

3.5.1.3. Perceived Ease of Use of METU-ONLINE

This section has been used in order to collect data about perceived ease of use of POLITICAL HISTORY (ADM3106) course students about METU-ONLINE use. Reliability analysis by the researcher has been made as follows:

Table 3.6 Reliability Analysis (Scale Alpha) of Perceived Ease of Use in the Questionnaire of METU Online

Items	Cronbach's Alpha if Item Deleted
1	.81
2	.81
3	.81
4	.80
5	.82
6	.81
7	.81
8	.81
9	.81
10	.81
11	.80
12	.81
13	.81

Cronbach Alpha value for “Perceived Ease of Use” section is $\alpha = .81$ and any item deletion does not increase this alpha value and therefore, this section was used as it was.

For this section, validity analysis has been done by the peers and experts. The questionnaire has been reviewed by them. Each question in the questionnaire in a way that they include only one thought.

3.5.1.4. Attitudes toward the Use of METU-ONLINE

This section has been used in order to collect data about attitudes toward the use of METU-ONLINE by POLITICAL HISTORY (ADM3106) course students.

Reliability analysis by the researcher has been made as follows:

Table 3.7 Reliability Analysis (Scale Alpha) of Attitudes toward the use of METU-ONLINE in the Questionnaire of METU Online

Items	Cronbach's Alpha if Item Deleted
1	.84
2	.83
3	.85
4	.84
5	.84
6	.84
7	.83
8	.84
9	.84
10	.84
11	.84
12	.85

Cronbach Alpha value for “*Attitudes toward the use of METU-ONLINE*” section is $\alpha = .84$ and any item deletion does not increase this alpha value and therefore, this section was used as it was.

For this section, validity analysis has been done by the peers and experts. The questionnaire has been reviewed by them. Each question in the questionnaire in a way that they include only one thought.

3.6. Data Collection Procedures:

During semester, the students have used METU-ONLINE in their courses. They have found out “Lecture Notes” of the course, they were aware of announcements given by the instructor and also they have used “Forum” very often. In addition, the students have started to learn their grades from METU-ONLINE while in the past,

they were not able to learn the exam results unless they come and see on instructors' room.

At the end of the semester, the researcher distributed the questionnaire to the students in order to collect data about students' "Perceived Usefulness of METU-ONLINE", "Perceived Ease of Use of METU-ONLINE", and "Attitudes toward the Use of METU-ONLINE". Before applying the questionnaires, the researcher has applied to the "Uygulamalı Etik Araştırma Merkezi" (UEAM), in order to have permission to apply the questionnaire.

Overall, "Questionnaire of METU-ONLINE" has been distributed to 63 students who enrolled to POLITICAL HISTORY (ADM3106) course in 2007-2008 Spring semesters. Students and were requested to fill the questionnaire in the last course of the semester.

3.7. Data Analysis

The data collected through METU-ONLINE questionnaire, has been entered to SPSS 16.0 for Windows program to be analyzed. Although reliability tests for the questionnaire used in Hancı (2007) has been conducted, the researcher has also conducted reliability tests for each factor in the questionnaire. "EYS" term in the questionnaire has been replaced with "METU-ONLINE" and 2 items have been deleted since the items were not related to the content of this study.

Regarding research questions of the study, the researcher has performed statistical data analysis. In order to identify the effect of independent variables such as gender, CGPA, and amount of weekly Internet use on the acceptance of METU-ONLINE among PSPA students, ANOVA method has been used. In order to check normality assumption, Skewness and Kurtosis values were examined, and their values should not exceed +2.00 and -2.00 in order to not violate this assumption according to

Fouladi, R. T. (1998). The values in Table 3.8 do not exceed +2.00 and -2.00, so normality assumption is not violated.

Table 3.8 Skewness and Kurtosis Values for Perceived Ease of use of, Perceived Usefulness of and Attitudes toward METU-ONLINE

METU-ONLINE acceptance Factors	Skewness	Kurtosis
PEU of METU-ONLINE	-1.36	.66
PU of METU-ONLINE	-.81	1.77
Attitudes toward METU-ONLINE	.71	.75

In order to not violate homogeneity of variances it is expected that Levene's Test value not to be significant. As it shown on Table 3.9, the values are greater than 0.05, which is not significant, so this assumption is not violated.

Table 3.9 Levene's Test of Homogeneity of Variances for Perceived Ease of use of, Perceived Usefulness of and Attitudes toward METU-ONLINE

METU-ONLINE acceptance Factors	<i>F</i>	df1	df2	Sig.
PEU of METU-ONLINE	4.64	2	60	.12
PU of METU-ONLINE	1.47	2	60	.10
Attitudes toward METU-ONLINE	2.15	2	60	.24

3.8. Limitations and Assumptions of the Study:

It has been expected from the instructor of the course to make some certain alterations to the structure of the course to help the researcher create suitable research environment. The researcher in this study has no direct communication with the enrolled students. Therefore, it is assumed that all the answers to the items in the questionnaires have been answered sincerely and kindly.

This study has been conducted with 63 PSPA students who enrolled to POLITICAL HISTORY (ADM3106) course in 2007-2008 Spring semesters. The result of the study is limited to 63 PSPA students who enrolled to POLITICAL HISTORY (ADM3106) course in 2007-2008 Spring semesters. Therefore, it is difficult to generalize the findings of the study to whole student body of PSPA Department.

In this study, case study method has been used, therefore, before applying the results of this study to similar settings, extra care should be given.

CHAPTER 4

RESULTS

This chapter presents a summary of results obtained from the questionnaire which has been applied at the end of the semester. Taking into consideration students' gender, CGPA and amount of weekly Internet use as external variables, the purpose of this study is to investigate the effect of individual differences and academic achievements on the acceptance of CMS system, specifically, METU-ONLINE in a course given in PSPA department. In addition to this purpose, this thesis also aims to identify the reasons which make “significantly different” cases and what kind of improvements can be done in order to increase the students' acceptance of METU-ONLINE use.

The first section presents the findings of technology acceptance factors with respect to perceived usefulness of METU-ONLINE, ease of use of METU-ONLINE, and attitude toward use of METU-ONLINE. In the second section, the effect of individual differences on the acceptance of METU-ONLINE has been investigated and finally, in the third section, effect of students' academically related individual differences on the acceptance of METU-ONLINE has been examined.

4.1. Technology Acceptance Factors

In this section, Perceived usefulness of, perceived ease of use of, and attitudes toward the use of METU-ONLINE of the department of PSPA students who enrolled to POLITICAL HISTORY (ADM3106) course in 2007-2008 Spring semesters has been presented.

4.1.1. Students' Perceived Usefulness of METU-ONLINE

In the questionnaire of METU-ONLINE, data for perceived usefulness of METU-ONLINE has been collected with 12 items. One item has been deleted from the original questionnaire used in Hancı (2007), since it is not related to the content of this study.

Table 4.1 Students Perceived Usefulness of METU-ONLINE

	Mean	Std. Deviation
Overall	3.78	.60

As Table 4.1 illustrated, students' perceived usefulness was found 3.78. This value shows a medium level of perceived usefulness, and it shows department of PSPA students who enrolled to POLITICAL HISTORY (ADM3106) course in 2007-2008 Spring semesters have a positive perceptions about usefulness of METU-ONLINE.

4.1.2. Students' Perceived Ease of Use of METU-ONLINE

In the questionnaire of METU-ONLINE, data for perceived ease of use of METU-ONLINE has been collected with 13 items. One item has been deleted from the

original questionnaire used in Hancı (2007), since it is not related to the content of this study.

Table 4.2 Students Perceived Ease of Use of METU-ONLINE

	Mean	Std. Deviation
Overall	3.61	.48

As Table 4.2 illustrated, students' perceived ease of use was found 3.61. This value shows a medium level of perceived usefulness, and it shows department of PSPA students who enrolled to POLITICAL HISTORY (ADM3106) course in 2007-2008 Spring semesters have a positive perceptions about ease of use of METU-ONLINE.

4.1.3. Students' Attitudes toward the Use of METU-ONLINE

In the questionnaire of METU-ONLINE, data for students' attitudes toward the use of METU-ONLINE has been collected with 12 items.

Table 4.3 Students Attitudes toward the Use of METU-ONLINE

	Mean	Std. Deviation
Overall	3.47	.46

As Table 4.3 illustrated, students' attitudes toward the use of was found 3.47. This value shows a medium level of perceived usefulness, and it shows department of

PSPA students who enrolled to POLITICAL HISTORY (ADM3106) course in 2007-2008 Spring semesters have a medium perceptions about ease of use of METU-ONLINE.

4.2. Effects of Students' Individual differences on the acceptance of METU-ONLINE

In order to investigate if there are significant differences between the students' demographic characteristics -their gender- and their acceptance of METU-ONLINE regarding students' perceived usefulness of METU-ONLINE, students' perceived ease of use of METU-ONLINE and students' attitudes toward the use of METU-ONLINE inferential statistics (independent-samples t-test) was conducted. The researcher has gathered data about students' ages, however, their ages were so close to each other, therefore the researcher have not analyzed the effect of age of the students on the acceptance of METU-ONLINE.

The independent variable was gender and the dependent variables were the factors of METU-ONLINE acceptance, which are perceived usefulness of METU-ONLINE, perceived ease of use of METU-ONLINE, and attitude toward the use of METU-ONLINE. The significance level was set at 0.05.

4.2.1. The Effect of Participants' Gender on the Acceptance of METU-ONLINE

In this section, effect of individual differences, solely gender on the acceptance of METU-ONLINE has been analyzed and presented.

Table 4.4 Independent-Samples t-test Results of Gender Effect on the acceptance of METU-ONLINE

METU-ONLINE Acceptance Factors	Female		Male		t (61)
	M	SD	M	SD	
Students Perceived Usefulness of METU-ONLINE	46.91	5.05	43.66	9.06	.09
Students Perceived Ease of Use of METU-ONLINE	47.94	5.92	45.79	6.57	.18
Students Attitudes toward the Use of METU-ONLINE	45.94	6.21	44.17	5.80	.25

As Table 4.4 shows that the independent-samples t-test results indicated that there was not a significant effect of gender ($M = 46.91$, $SD = 5.05$) ($M = 43.66$, $SD = 9.06$) regarding students' perceived usefulness of METU-ONLINE), [$t(61) = 1.79$, $p = .09$].

When we look at the results, there was not a significant effect of gender ($M = 47.94$, $SD = 5.92$) ($M = 45.79$, $SD = 6.57$) regarding students' Perceived Ease of Use of METU-ONLINE, [$t(61) = 1.37$, $p = .18$].

Table 4.4 illustrates also that, there was not a significant effect of gender ($M = 45.94$, $SD = 6.21$) ($M = 44.17$, $SD = 5.80$) regarding Students Attitudes toward the Use of METU-ONLINE, [$t(61) = 1.16$, $p = .28$].

4.3. Effect of students' academically related individual differences on their acceptance of METU-ONLINE

In order to investigate if there are significant differences between the students' academically related individual differences -their CGPA and amount of weekly Internet use- and their acceptance of METU-ONLINE regarding students' perceived usefulness of METU-ONLINE, students' perceived ease of use of METU-ONLINE and students' attitudes toward the use of METU-ONLINE, one-way ANOVA was conducted.

The independent variable was one of the two academically related individual characteristics (CGPA and amount of weekly Internet use) and the dependent variables were the factors of METU-ONLINE acceptance, which are perceived usefulness of METU-ONLINE, perceived ease of use of METU-ONLINE, and attitude toward the use of METU-ONLINE. The significance level was set at 0.05. The unequal sizes of the sub groups in ANOVA had minimal effect on the analysis since the assumption of homogeneity of variances was met for each ANOVA.

4.3.1. The effect of Students' CGPA on the acceptance of METU-ONLINE

The effect of students' CGPA on the acceptance of METU-ONLINE has been analyzed with one-way ANOVA method and following table shows the results:

Table 4.5 Students' Perceived Usefulness, Perceived Ease of Use, and Attitudes toward the Use of METU-ONLINE Scores in terms of their CGPAs

METU-ONLINE				
Acceptance Factors	CGPA	N	Mean	Std. Deviation
	Below 2.49	17	3.50	.73
Students Perceived Usefulness of METU-ONLINE	Between 2.50-2.99	33	3.79	.51
	Between 3.00-4.00	13	4.14	.52
	Below 2.49	17	3.53	.46
Students Perceived Ease of Use of METU-ONLINE	Between 2.50-2.99	33	3.58	.53
	Between 3.00-4.00	13	3.81	.32
	Below 2.49	17	3.56	.43
Students Attitudes toward the Use of METU-ONLINE	Between 2.50-2.99	33	3.81	.52
	Between 3.00-4.00	13	3.91	.51

Table 4.6 Students' Perceived Usefulness, Perceived Ease of Use, and Attitudes toward the Use of METU-ONLINE Scores in terms of their CGPAs-ANOVA Table

METU-ONLINE Acceptance Factors	df	F	Sig.
Students' Perceived Usefulness of METU-ONLINE	2	4.64	.01
Students' Perceived Ease of Use of METU-ONLINE	2	1.46	.24
Students' Attitudes toward the Use of METU-ONLINE	2	2.15	.13

As it is shown in Table 4.6, the ANOVA results indicates that there is no significant effect of CGPA on the acceptance of METU-ONLINE in terms of students' perceived ease of use of METU-ONLINE and students' attitudes toward the use of METU-ONLINE.

However, there is statistically significant difference between CGPA and students' perceived usefulness of METU-ONLINE, $F(2,60) = 4.64$, $p = .01$. In order to analyze pair wise differences, Post Hoc Tests have been conducted and according to the results of those tests indicated that there was a statistically difference between the students who have CGPA below 2.49 and students who have CGPA between 3.00 and 4.00. The mean of group who has CGPA between 3.00 and 4.00 was greater than the mean of group who has CGPA below 2.49. Therefore, students who have CGPA between 3.00 and 4.00 find METU-ONLINE much useful.

4.3.2. The effect of Students' amount of weekly Internet use on the acceptance of METU-ONLINE

The effect of students' amount of weekly Internet use on the acceptance of METU-ONLINE has been analyzed with one-way ANOVA method and following table shows the results:

Table 4.7 Students' Perceived Usefulness, Perceived Ease of Use, and Attitudes toward the Use of METU-ONLINE Scores in terms of their amount of weekly Internet use

METU-ONLINE Acceptance Factors	Amount of weekly Internet use	N	Mean	Std. Deviation
Students Perceived Usefulness of METU-ONLINE	Between 1-5 hours in a week	17	3.48	.76
	Between 6-10 hours in a week	33	3.87	.49
	Between 10-20 hours in a week	13	4.06	.52
Students Perceived Ease of Use of METU-ONLINE	Between 1-5 hours in a week	17	3.55	.53
	Between 6-10 hours in a week	33	3.57	.48
	Between 10-20 hours in a week	13	3.77	.42
Students Attitudes toward the Use of METU-ONLINE	Between 1-5 hours in a week	17	3.73	.54
	Between 6-10 hours in a week	33	3.70	.51
	Between 10-20 hours in a week	13	3.91	.44

Table 4.8 Students' Perceived Usefulness, Perceived Ease of Use, and Attitudes toward the Use of METU-ONLINE Scores in terms of their amount of weekly Internet use-ANOVA Table

METU-ONLINE	df	F	Sig.
Acceptance Factors			
Students' Perceived Usefulness of METU-ONLINE	2	5.11	.009
Students' Perceived Ease of Use of METU-ONLINE	2	1.07	.35
Students' Attitudes toward the Use of METU-ONLINE	2	.89	.41

As it is shown in Table 4.8, the ANOVA results indicates that there is no significant effect of amount of weekly Internet use of students on the acceptance of METU-ONLINE in terms of students' perceived ease of use of METU-ONLINE and students' attitudes toward the use of METU-ONLINE. However, there is a statistically significant difference between weekly Internet use and students' perceived usefulness of METU-ONLINE, $F(2,60) = 5.11$, $p = .009$. In order to analyze pair wise differences, Post Hoc Tests have been conducted and according to the results of those tests indicated that there was a statistically mean difference between the students who use Internet between 1-5 hours and students who use Internet between 10-20 hours. The mean of group who use Internet between 10-20 hours is was higher than the mean of the group who use Internet between 1-5 hours in a week. Therefore, students who use Internet between 10-20 hours in a week find METU-ONLINE much useful.

CHAPTER 5

CONCLUSION AND DISCUSSION

This final chapter presents conclusion of the study, discussions for the results, implications for practice and further research titles.

5.1. Conclusion of the Study

In addition to main elements of TAM: perceived usefulness (PU), perceived ease of use (PEOU), attitude toward using the system and actual system use, external variables also have effects on user acceptance of a CMS systems. By taking into consideration the students' gender, CGPA and amount of weekly Internet use as external variables, the purpose of this study is to investigate the effect of external variables on the acceptance of CMS system, specifically, METU-ONLINE in a course given in PSPA department.

Although external variables are being analyzed in the study, mainly, the aim of this thesis is to find out if there are differences in the perceived ease of use of METU-ONLINE, perceived usefulness of METU-ONLINE, and attitudes toward METU-ONLINE by taking into consideration students' gender, CGPA and weekly amount of Internet use. In addition to finding the differences, this thesis also aims to identify the reasons which make "significantly different" cases and what kind of improvements can be done in order to increase the students' acceptance of METU-ONLINE use.

The first research question was “What is the effect of students’ individual differences such as gender on their acceptance of METU-ONLINE?” Under this main research question, there were three sub questions which were aiming to find out if there were significant effects of gender in terms of perceived usefulness of METU-ONLINE, perceived ease of use of METU-ONLINE, and attitudes toward the use of METU-ONLINE.

With the sub questions, the researcher aimed to collect data in order to answer the main question. The results of statistical analysis in the previous chapter showed that there is no significant effect of gender on the acceptance of METU-ONLINE in terms of perceived usefulness of METU-ONLINE, perceived ease of use of MET-ONLINE and attitudes toward METU-ONLINE. According to frequencies of the male and female students, the numbers are close to each other.

The second main research question was “What is the effect of students’ academically related individual differences such as Cumulative GPA (CGPA) and weekly internet use on their acceptance of METU-ONLINE?” Under this main question, there were 6 sub questions which were aiming to find out if there were significant effects of Cumulative GPA and amount of weekly Internet use of students on the acceptance of METU-ONLINE in terms of perceived usefulness of, perceived ease of use of, and attitudes toward the use of METU-ONLINE.

In terms of CGPA, it has been found out that CGPA affects students’ acceptance of METU-ONLINE regarding only perceived usefulness, not the other acceptance factors. With the detailed analysis, it has been found out that the students who have CGPA below 2.49 finds METU-ONLINE less useful than students who have CGPA between 3.00 and 4.00. The reasons for the significant cases will be discussed in detail under “Discussions” section.

For the amount of weekly Internet use, it has been found out that there is a significant effect of amount of weekly Internet use on the acceptance of METU-ONLINE regarding only perceived usefulness, and other CMS acceptance factors do not have any effect.

The final main research question was “What can be the reasons which cause “significantly different” results in this study, and what kind of improvements can be done in order to increase the user acceptance of METU-ONLINE in the department of PSPA at METU?”

The reason for students who have CGPA below 2.49 have found METU-ONLINE less useful than students who have CGPA can be explained with that hardworking students take the course requirements into consideration much more than students whose CGPA are lower.

When it comes to the reasons for the students who use Internet between 1-5 hours in a week has found METU-ONLINE less useful than students who use Internet between 10-20 hours in a week can be that the more students are more involved in computers and technology, the more they like its applications such as METU-ONLINE.

5.2. Discussion

Having started with the use of technology in the field of education, it has been started to be asked continuously that if technology really works in this field. In addition to that, after emergence of e-learning applications, comparison between traditional learning and online education has started. In his study, Lightfoot (2006) found that students use e-mail communication to their instructor and to large groups of students than they use equivalent face-to-face communication to the same audience. In order

to provide students with much effective e-learning environments, theory-based studies have gained importance with respect to e-learning systems' general structure.

Roger's (2003) diffusion of innovations theory provides a useful structure in the implementation of e-learning platforms. For e-learning environments, the quality of design and the interface does not always imply the success in educational settings. In addition to those factors, there are user-related issues while implementing online applications in educational settings. Without students' acceptance and the system use, use of e-learning applications may fail in educational contexts.

In this study, it has been aimed to examine the user acceptance of an e-learning application with the framework of diffusion of innovation theories. With the use of TAM which is a proper model in order to investigate the external variables as determinants and perceived usefulness, perceived ease of use, attitude toward the use of, and actual usage of the technology as technology acceptance factors, determinants and technology acceptance factors has been analyzed.

Through the study, students' gender, CGPA and amount of weekly Internet use has been considered as determinants of technology acceptance factors of METU-ONLINE. Although in the literature, there are conflicting results; regarding the effect of gender on technology acceptance Henry (2002) and Day, Janus, and Davis (2005), this present study suggests that there is no effect of gender on the acceptance of technology.

Except gender variable, there are not any precise studies which are about the other variables. Under the light of the assumptions, findings of this thesis have been presented below.

The survey which has been conducted among PSPA students, who enrolled to POLITICAL HISTORY (ADM3106) course, showed that gender did not affect the

acceptance of METU-ONLINE in terms of perceived usefulness of, perceived ease of use of and attitudes toward the use of METU-ONLINE.

As discussed before, discussions about the effect of gender on technology acceptance is still in debate. Therefore, the results of this study regarding gender variable is acceptable.

However, CGPA and amount of weekly Internet use of the students showed an influence on the acceptance of METU-ONLINE among students. The research showed that the students who have CGPA below 2.49 find METU-ONLINE less useful than students who have CGPA between 3.00 and 4.00. Therefore, the present study suggests that there is a difference between high achievers and low achievers. Brodie (1964) also found out there is a relation between students' academic success and their technology acceptance.

When it comes to the effect of amount of weekly Internet use and students' acceptance of technology and specifically CMS, the students who use Internet between 10-20 hours in a week find METU-ONLINE much useful than the students who use Internet between 1-5 hours in a week. Smith, Caputi, Crittenden, Jayasuriya, and Rawstone (1999) also found that there is a relation between students' computer and Internet use and students' willings to its applications.

The reason why students who are much experienced with Internet found METU-ONLINE much useful than the students who are less experienced can be that the more students like the Internet, the more they like its applications.

When the students use Internet, they become much familiar with its applications. METU-ONLINE has such applications as "Lecture Notes", "Forum" and "Quiz" and in those applications, students are asked to follow certain steps to be able to complete

the tasks. Hence, students' Internet skills play an important role in terms of their use of METU-ONLINE.

5.3. Implications for Practice

This study has put a profile of the Department of PSPA students who take POLITICAL HISTORY (ADM3106) during spring semester of 2007-2008 year at METU, and their acceptance of METU-ONLINE in terms of their individual and academically related differences. There is medium level of acceptance in terms of TAM factors which are perceived usefulness, perceived ease of use and attitude toward the use of METU-ONLINE.

The results of the study show that there are two issues that should be taken into consideration. The students who show low academic success and the students who use Internet less found METU-ONLINE less useful.

The reason why students found METU-ONLINE less useful regarding their low academic success can be that they take the requirements of the course into less consideration than the ones who show higher performance in the courses. Therefore, if the instructors use METU-ONLINE much effectively in their courses the students can be attracted by the properties of METU-ONLINE. For example, the instructor can upload the course materials weekly. Therefore, the students would be able to download useful files related to course. In addition to that, some seminars can be given to the students at the beginning of the semester about METU-ONLINE and its applications and how it can be useful in the courses.

For the second issue, the department can be supported with more computer laboratories in order to promote students' Internet use. Since the students who have personal computers in their homes or dormitories have an advantage on the ones who

do not have personal computer or Internet connection, the reason can be that they use more Internet and they are much familiar with Internet applications.

5.4. Recommendations for Further Research

In this study, the researcher conducted the surveys and interviews with Department of PSPA students who take POLITICAL HISTORY (ADM3106) during spring semester of 2007-2008 year at METU. Therefore, the results are limited to those students. In order to have a broader insight about the whole department, there can be future studies with different courses in the same department.

In the next research, the students can be given seminars before they start to use and learn METU-ONLINE by themselves. Therefore, they would be able to know what kind of environment will be in during the semester.

In addition to students, the instructors' opinions could be taken with interviews about their attitudes toward METU-ONLINE. Since the attitudes of the instructors play an important role in the implementation of online systems in the courses, it would be useful information to draw the opinions of the instructors.

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APPENDIX A

METU-ONLINE İLE İLGİLİ TUTUM VE GÖRÜŞLER

KİŞİSEL BİLGİLER

Yönerge: Aşağıdaki sorular cinsiyet ve yaş gibi kişisel özelliklerin yanında, Akademik ortalama ve haftalık internet kullanımınızı öğrenmeye yöneliktir. Lütfen soruları eksiksiz olarak yanıtlayınız. Size uygun parantezin içine "X" işareti koyarak, açık uçlu soruları ise yazarak yanıtlayınız.

1. Cinsiyetiniz:

Kadın

Erkek

2. Yaşınız:

.....

3. Akademik Ortalamanız: (CGPA)

0 – 2.49

2.50 – 2.99

3.00 – 4.00

4. Haftalık İnternet Kullanma Süreniz:

Hafta da 1-5 saat

Hafta da 6-10 saat

Hafta da 10-20 saat

METU-ONLINE İLE İLGİLİ TUTUM VE GÖRÜŞLER

Yönerge: Aşağıdaki maddeler METU-ONLINE ile ilgili algılanan yararlılık, kullanım kolaylığı ve METU-ONLINE'ye ilişkin tutumları belirlemek amacıyla hazırlanmıştır. Lütfen maddeleri eksiksiz olarak işaretleyiniz. Maddeleri, “1=Kesinlikle Katılmıyorum”, “2=Katılmıyorum”, “3=Kararsızım”, “4=Katılıyorum” ve “5=Kesinlikle Katılıyorum”, şeklinde, sağdaki sütunların yalnız birinin içine “X” işareti koyarak yanıtlayınız.

		1=Kesinlikle Katılmıyorum	2=Katılmıyorum	3=Kararsızım	4=Katılıyorum	5=Kesinlikle Katılıyorum
	Algılanan Yararlılık					
	METU-ONLINE;					
1.	eğitimim üzerinde daha fazla kontrol sahibi olmamı sağlar.					
2.	eğitimim ile ilgili işlerimi daha çabuk yerine getirmemi sağlar.					
3.	eğitimimde verimliliğimi artırır					
4.	eğitimimde performansımı artırır.					
5.	eğitimimde etkinliğimi artırır.					
6.	eğitimimi kolaylaştırır.					
7.	eğitim taleplerimi iletmemi kolaylaştırır.					
8.	eğitim programı ve öğretim elemanının değerlendirilmesini kolaylaştırır.					

9.	geçmiş eğitim bilgilerimi izlememi kolaylaştırır.					
10	Üniversitedeki eğitim ve öğretimin kalitesini artırır.					
		1=Kesinlikle Katılmıyorum	2=Katılmıyorum	3=Kararsızım	4=Katılıyorum	5=Kesinlikle Katılıyorum
11.	METU-ONLINE e-postaları ile gönderilen bilgiler, daha hızlı bilgi edinmemi sağlar.					
12.	METU-ONLINE e-postaları, eğitimim ile ilgili süreci takip etmemi kolaylaştırır.					
	Algılanan Kullanım Kolaylığı					
	METU-ONLINE'yi kullanırken;					
1.	sıkça hata yaparım.					
2.	yaptığım hatalar kolaylıkla düzeltilir.					
3.	yapmak istediklerimi kolaylıkla yapabilirim.					
4.	karşılaştığım açıklamalar, bilgi/hata mesajları ve yönlendirmeler açık ve anlaşılırdır.					
5.	sıklıkla yardım alma ihtiyacı hissedirim.					
6.	çok fazla zihinsel çaba harcamam gerekiyor.					
7.	işlemleri nasıl gerçekleştirmem gerektiğini hatırlamam kolaydır.					
8.	METU-ONLINE üzerinden eğitim taleplerimi iletmem kolaydır.					

9.	METU-ONLINE üzerinden değerlendirme Forum aracılığıyla haberleşmem kolaydır.					
10.	METU-ONLINE e-postaları sayesinde, eğitimim ile ilgili süreci takip etmem kolaydır.					
		1=Kesinlikle Katılmıyorum	2=Katılmıyorum	3=Kararsızım	4=Katılıyorum	5=Kesinlikle Katılıyorum
11.	METU-ONLINE'yi kullanmayı öğrenmek kolaydır.					
12.	METU-ONLINE'yi etkin bir biçimde kullanabilmem için bir eğitim programına katılmam gerekir					
13.	Genelde, METU-ONLINE'nin kullanımı kolaydır.					
	METU-ONLINE'ye İlişkin Tutumlar					
1.	METU-ONLINE kullanımı konusunda kendime güvenirim.					
2.	METU-ONLINE'yi rahatlıkla kullanıyorum.					
3.	METU-ONLINE ile çalışmak motivasyonumu artırır.					
4.	METU-ONLINE kullanırken kendimi rahat hissetmiyorum.					
5.	METU-ONLINE ile çalışırken zorlanıyorum.					
6.	METU-ONLINE'nin uygulamalarını öğrenmek bana zor gelir.					
7.	METU-ONLINE'nin etkin bir eğitim aracı olduğuna inanıyorum.					
8.	METU-ONLINE ile çalışmayı seviyorum.					

9.	Teknoloji ile çalışmayı seviyorum.					
10.	Üniversite’de METU-ONLINE kullanımı faydalıdır.					
11.	METU-ONLINE’nin geliştirilmesi için harcanan çabalar değerlidir.					
12.	METU-ONLINE kullanım becerileri öğrenciler için önemlidir.					