THE EFFECT OF INDIVIDUAL DIFFERENCES ON ACCEPTANCE OF WEB-BASED LEARNING MANAGEMENT SYSTEM: A CASE OF THE CENTRAL BANK OF THE REPUBLIC OF TURKEY

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

BY

ARZU HANCI

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

SEPTEMBER 2007

Approval of the thesis:

THE EFFECT OF INDIVIDUAL DIFFERENCES ON ACCEPTANCE OF WEB-BASED LEARNING MANAGEMENT SYSTEM: A CASE OF THE CENTRAL BANK OF THE REPUBLIC OF TURKEY

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ABSTRACT

THE EFFECT OF INDIVIDUAL DIFFERENCES ON ACCEPTANCE OF WEB-BASED LEARNING MANAGEMENT SYSTEM: A CASE OF THE CENTRAL BANK OF THE REPUBLIC OF TURKEY

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September 2007, 142 pages

The aim of this study is to investigate the effect of Bank employees' individual and organization related individual differences on the acceptance of Learning Management System (LMS) in Central Bank of the Republic of Turkey (CBRT). The study aims to find out whether there are differences in perceived ease of use of technology, perceived usefulness of technology, and attitudes toward the use of LMS in terms of Bank employees' gender, age, seniority, title, department, and LMS role groups.

Survey design was used in this thesis study. Two self-report questionnaires were developed on LMS acceptance for two different LMS role groups. Accordingly, these questionnaires were distributed to department managers, training experts, training researchers, office staff and participants of training programs who have experienced LMS recently in the CBRT. 167

participants, and 64 department managers and office users responded the survey significantly.

The data gathered via questionnaires was analyzed with the SPSS program, using descriptive and inferential statistics where correlation analysis and ANOVA were conducted. The results of the study showed that *age* and *seniority* of "participants" affect the participants' acceptance of LMS; in particular they affect the perceived usefulness of LMS. Furthermore, the *department* of "department managers and office users" affects their acceptance of LMS regarding perceived usefulness, perceived ease of use, and attitudes toward the use of LMS. Consequently, the results of this case study can contribute to the literature regarding the determinants of technology acceptance factors.

Keywords: Educational Technology, CBRT, LMS, Technology Acceptance

ÖZ

KİŞİSEL FARKLILIKLARIN
AĞ TABANLI EĞİTİM YÖNETİM SİSTEMİNİN KABULÜNE ETKİSİ:
TÜRKİYE CUMHURİYET MERKEZ BANKASI ÖRNEĞİ

Hancı, Arzu
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Eylül 2007, 142 sayfa

Bu araştırmanın amacı, Türkiye Cumhuriyet Merkez Bankası'ndaki (TCMB), Banka çalışanlarının kişisel ve organizasyona dayalı kişisel farklılıklarının, Eğitim Yönetim Sistemi'ni (EYS) kabullerine etkisini araştırmaktır. Araştırma, Banka çalışanlarının cinsiyet, yaş, kıdem, unvan, bölüm ve EYS rol gruplarına bağlı olarak, EYS'nin yararlılığı ile ilgili algılarında, EYS'nin kullanım kolaylığı ile ilgili algılarında ve EYS'ye ilişkin tutumlarında bir farklılık olup olmadığını ortaya çıkarmayı hedeflemektedir.

Bu çalışmada anket yöntemi kullanılmıştır. Farklı EYS rol grupları için EYS kabulleri üzerine iki adet anket hazırlanmıştır. Bu anketler, TCMB'de yakın zamanda EYS'yi kullanan birim amirleri, eğitim uzmanları, eğitim araştırmacıları, ofis sorumluları ve eğitim programları katılımcılarına dağıtılmıştır. 167 katılımcı, 64 birim amiri ve ofis sorumlusu anketleri anlamlı olarak doldurmuştur.

Anket yöntemi ile toplanan veri, korelasyon ve ANOVA'nın yürütüldüğü betimsel ve tahminsel yöntemler kullanılarak SPSS paket programı ile analiz edilmiştir. Çalışmanın sonuçları, "katılımcıların" *yaş* ve *kıdeminin* EYS kabullerini özellikle EYS'nin algılanan yararlılığını etkilediklerini göstermiştir. Ayrıca, "birim amirleri ve ofis sorumlularının" *bölümleri,* EYS kabullerini, özellikle algılanan yararlılık, algılanan kullanım kolaylığı ve EYS'ye ilişkin tutumlarını etkilemektedir. Böylece, bu örnek çalışmanın sonuçları, teknoloji kabul faktörlerinin etkenlerine ilişkin literature katkı sağlayabilir.

Anahtar Kelimeler: Eğitim Teknolojileri, TCMB, EYS, Teknoloji Kabulü

To everyone
who taught me anything

ACKNOWLEDGEMENTS

First of all, I would like to thank to my thesis supervisor, Dr. Hasan Karaaslan. This thesis would not be completed without his support and encouragement throughout the study.

I would like to express my sincere thanks to Examining Committee Members, Dr. Gülin Onat Bayır, Prof. Dr. M. Yaşar Özden, Assoc. Prof. Dr. Kürsat Çağıltay, and Assoc. Prof. Dr. Soner Yıldırım for their valuable suggestions and comments.

I would like to express my special thanks to Dr. Gülin Onat Bayır, Süheyla Gökmen, and Çağla Basat who were the supporter of this thesis study in the Training and Development Division in the CBRT. Thanks to Dr. Gülin Onat Bayır for her rigorous examination of my work throughout the study. Thanks to Süheyla for her suggestions during the development of questionnaries and thanks to my roommate Çağla for her friendly support throughout the study. Also special thanks go to Çağlar Sarıkaya and Hilal Sarıkaya for their being with me whenever I need.

I would also like to express my love and deep gratitude to my family, Afire Hancı, Muzaffer Hancı, Aslıhan Hancı Yerli and Sina Hancı for their ongoing encouragement and support throughout the study and their unwavering faith in me. Thanks to mom and dad since they have brought up us with love and altruism. Thanks to my dear sister Aslı, for her wordless and faithful continuous support. Thanks to our little Sina, for his help in complicated tasks such as finding the resources at METU library.

I am also thankful to my fiancée Olgun Karademirci, for his patience and support. He has always been thoughtful and helpful.

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LIST OF ABBREVIATIONS

A	:	Attitude
BI	:	Behavioral Intention
CBRT	:	Central Bank of Republic of Turkey
HPT	:	Human Performance Technology
LMS	:	Learning Management System
PEOU	:	Perceived Ease of Use
PU	:	Perceived Usefulness
SN	:	Subjective Norm
TAM	:	Technology Acceptance Model
TRA	:	Theory of Reasoned Action

CHAPTER 1

INTRODUCTION

1.1 Background of the Study

Over the years, there have been used a variety of definitions and explanations indicating the purposes and boundary of instructional/educational technology. Yet, what remains unchanged is the changing nature of the field. Indeed, the progress of the field is definitely an evidence of this statement.

During the late 1920s through 1940s, early definitions of instructional technology examined the field with an emphasis on "media" such as television, films, overhead projectors, visual and audiovisual aids. Beginning in the 1950s this emphasis was changed and it was discussed as being a "process", suggesting the application of science to instructional practices. In fact, the 1963 definition was a milestone, which focused on the study of instructional design as the steps to be followed for effective learning. Then in 1970s, the change in the definition was more apparent. The field was considered as a process similarly but with a broader sense pointing out a systematic approach with combination of human and nonhuman resources for effective learning. And one of the most essential characteristics of the definition in 1994 was its emphasis on both theory and practice for learning (Reiser, 2002).

The field of instructional technology and its definitions has evolved further since 1994. On the other hand, the labels have changed in variety since 1920s, likewise the definitions. As well as the "instructional technology", the

term “educational technology” has been commonly used and discussed. Even though the definition of instructional technology and educational technology overlapped in some cases, mostly they go in parallel, but having slight differences.

Currently, Google search returns 228 million hits for “educational technology” and quite as much hits for the definition of educational technology. On account of the wideness of the field, there can be found many definitions some of which are conflicting. As Gentry (1995) makes the point “it is possible to see that meaning depends considerably on what part of the elephant is being touched and by whom!” (p. 4). Such definitions highlight, and indicate one or some parts of educational technology in terms of the concept and practice of the field. Additionally, different perspectives, which discuss educational technology as a theoretical construct, as a field, or as a profession, increase the variation of the definition (Association for Educational Communications and Technology, 1977).

However, among these vide range of definitions, Association for Educational Communications and Technology’s (AECT) are commonly accepted as blueprints for a better understanding of the field and its evolution.

In the 1977 report, clarifying the components of the process of educational technology, it was defined as a “complex, integrated process involving people, procedures, ideas, devices, and organization for analyzing problems and devising, implementing, evaluating, and managing solutions to those problems involved in all aspects of human learning” (AECT, 1977, p. 1). The report also separated the terms educational technology and instructional technology using the rationale that latter is a sub-set of former.

On the contrary, in AECT’s 1994 publication, a new definition was introduced in which the term instructional technology was preferred instead of educational technology. Instructional technology was defined as “the theory and practice of design, development, utilization, management, evaluation of processes, and resources for learning” (Seels & Richey, 1994, p. 1). In these

times, the terms instructional technology and educational technology were used interchangeably.

Finally, in 2004, AECT defined educational technology as "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). This definition differs from others in several aspects. The emphasis on "study" which comprise many forms of inquiry and reflective practice, the commitment on ethical practice, highlighting the centrality of learning, using less technical terms and emphasizing technological processes and resources are some distinctions of the definition.

As apparently indicated in the 2004 definition, in the modern times, utilization of technology is one of the major concepts in the field and there have been great expectations that technology usage in educational environments would change and solve many problematic issues. Indeed, it has been considered as the silver bullet of education.

Even though it is an unquestionable fact that when appropriately used, technology provides many benefits and opportunities both to the learners and organizations, as Garland (1995) underscored, there are some major factors that may turn out to be barriers in adapting new educational technologies. Further, Zemsky and Massy (2004) warn that "If we build it, they will come" would be a wrong assumption since the only guarantee of "their coming" is the users' acceptance of the system. No matter technology supports the changing nature of the field, realizing the user acceptance of these changes and actual usage of technology is not an easy matter in educational technology.

In the domain of information systems likewise, according to Swanson (1988) (as cited in Davis, Bagozzi, & Warshaw, 1989), one of the most challenging issues is to comprehend why people use or reject computers. In order to understand the reasons of it, information system researchers have studied behavioral models, considering usage of technology as a behavior. In particular, Theory of Reasoned Action (TRA), which was introduced by Fishbein and Ajzen

in 1975, has been a valuable model for the researchers in the field. In TRA's theory, a person's behavioral intention (BI) is said to be the predictor of behavior. Additionally, BI is formed by two factors; first the person's attitude (A) toward the behavior and second is the subjective norm (SN) concerning the behavior. While such determinants combined in a model are good references in the examination of human behavior, information systems researchers discovered the insufficiency of these models for their field (Davis et al., 1989). Accordingly, a need for a new model to explain the behavior of actual technology usage was soon acknowledged.

In 1986, Davis introduced Technology Acceptance Model (TAM) grounded in social psychology theory in general and TRA in particular. Since it was introduced, TAM has become a widely accepted and used model for understanding the user acceptance behavior in information systems. Different from TRA, TAM studies factors related with technology and this makes TAM usable in various domains.

Actually, the domain of educational technology has been one of the major technology implementation contexts. Management systems for educational purposes in terms of web-based instruction, and e-learning systems have become a top priority in higher education, public and private organizations (Pan, Gunter, Sivo & Cornell, 2005). However, given promises as various advantages and benefits of such systems would only be realized under some assumptions. One of these assumptions is the user acceptance, which will be the center of this study.

The need for understanding user acceptance in e-learning systems for providing effective learning environments has made educational researchers identify and use TAM. Owing to its merely four generic variables as perceived usefulness (PU), perceived ease of use (PEOU), attitude toward using the system and actual system use, TAM appears to be a dynamic and flexible model for LMS (Pan et al., 2005). Actually applying TAM for LMS provides us early information and clues about the success and failure of the system due to the powerful determinants of the TAM.

Accordingly, this study aims to investigate the end-user acceptance of an institutional web-based LMS, while examining the effects of individual and organization related individual differences on the acceptance of LMS by using TAM.

1.2 Purpose of the Study

Different from its four major determinants; TAM comprises external variables as determinants of acceptance. Considering the individual and organization related individual differences as a set of external variable, the purpose of this study is to investigate the effect of individual and organization related individual differences on acceptance of an institutional web-based LMS.

No matter the model assumes that these set of external variables are fully mediated by PU and PEOU (Burton-Jones & Hubona, 2005), this thesis study aims to find out whether there are differences in the perceived ease of use of technology, perceived usefulness of technology, and attitudes toward technology with regard to these individual and organization related individual differences. Furthermore, the study aims to find what kind of reasons may cause the "significantly different" cases and what kind of activities and adjustments can be done to improve the LMS acceptance in these cases and generally in the Bank.

Therefore, the main and sub research questions are:

1. What is the effect of the CBRT's employees' individual differences such as gender, and age on their acceptance of LMS of the Bank?

    a. Within the same LMS role group, is there a significant difference between the CBRT's employees' perceptions of the usefulness of LMS, in terms of their gender?
    b. Within the same LMS role group, is there a significant difference between the CBRT's employees' perceptions of the ease of use of LMS, in terms of their gender?

c. Within the same LMS role group, is there a significant difference between the CBRT's employees' perceptions of the attitude toward the use of LMS in terms of their gender?
d. Within the same LMS role group, is there a significant relationship between the CBRT's employees' age and their perceptions of the usefulness of LMS?
e. Within the same LMS role group, is there a significant relationship between the CBRT's employees' age and their perceptions of the ease of use of LMS?
f. Within the same LMS role group, is there a significant relationship between the CBRT's employees' age and their perceptions of the attitude toward the use of LMS?

2. What is the effect of the CBRT's employees' organization related individual differences such as seniority, title, department, and LMS role on their acceptance of LMS of the Bank?
    a. Within the same LMS role group, is there a significant relationship between the CBRT's employees' seniority and their perceptions of the usefulness of LMS?
    b. Within the same LMS role group, is there a significant relationship between the CBRT's employees' seniority and their perceptions of the ease of use of LMS?
    c. Within the same LMS role group, is there a significant relationship between the CBRT's employees' seniority and their perceptions of the attitude toward the use of LMS?
    d. Within the same LMS role group, is there a significant difference between the CBRT's employees' perceptions of the usefulness of LMS, in terms of their title, and department?
    e. Within the same LMS role group, is there a significant difference between the CBRT's employee's perceptions of the ease of use of LMS, in terms of their title, and department?

f. Within the same LMS role group, is there a significant difference between the CBRT's employee's perceptions of the attitude toward the use of LMS, in terms of their title, and department?
g. Is there a significant difference between the CBRT's employees' perceptions of the attitude toward the use of LMS, in terms of their LMS role?

3. What kind of reasons may cause the "significantly different" cases in the study, and what kind of activities and adjustments can be done to improve the LMS acceptance of the sub groups which reflect lower scores in these cases and generally in the Bank?

1.3 Significance of the Study

Technology investments in educational environments have increased significantly in last decades. In particular, e-learning comprising web-based and online learning has been commonly used in many organizations. However, there have been many factors that may affect the usage, effectiveness and success of such technology based systems.

As Herrington, Herrington, Oliver, Stoney, & Willis (2001) stated, there are three critical factors for an effective online learning. First factor is setting pedagogies in terms of learning activities. Second is the resources, which are the content and information provided for the learners. And third factor is delivery strategies, the ways the course or system is delivered. Nevertheless, even though all of these factors are well designed and prepared, the benefits of an e-learning system can only be realized only if the users use it.

As an ongoing discussion, why e-learning has not met the expectations yet is due to the factors one of which people does not use it. Since the active usage is essential in the success, models representing the major factors in terms of the technology acceptance and usage gain importance. TAM, which can easily

be adapted to an educational setting, is a valuable model in understanding such factors.

Accordingly, by using TAM as a model, this study will provide us information in two dimensions. At first, we will have an insight about current perceptions of the users in terms of usefulness, ease of use, attitude toward usage, and actual usage of LMS in the CBRT. Then, secondly, searching for the effect of individual differences such as gender, and age, and organization related individual differences such as title, department, seniority, and LMS role group on the acceptance of the LMS will help us to understand the extent to what kind of individual differences affect the acceptance of LMS. In fact, relating this external set of variables with TAM will be helpful for the training staff in the Bank to decide which actions should be taken to improve the acceptance and therefore the usage of LMS. Since the LMS has been newly used in the Bank, such early findings in the acceptance of it will be valuable for assessment of LMS usage and developing suggestions for the following phases of LMS.

Furthermore, while the study is significant in the case of the CBRT in terms of the issues mentioned above, this study has an importance in the field as well. Whereas e-learning management systems have been used with an increasing rate, there are few studies in the field focusing on LMS acceptance and usage. Much of the instructional/educational researchers examine the difference between on-line and traditional classes (Pituch & Lee, 2006). Examining the factors regarding individual differences that affect the acceptance of a web-based learning management system, this study may improve the knowledge on determinants of LMS acceptance.

1.4 Definition of Terms

Technology acceptance variables, which are perceived usefulness, perceived ease of use, and attitudes toward the use of target system involved in this study, are defined 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 et al., 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).

CHAPTER 2

LITERATURE REVIEW

This chapter covers the related themes regarding to the research questions. Throughout first section, trends in educational technology were introduced with a short glance on Human Performance Technology at first, and e-learning and its management systems were examined in the following sub sections. In the second section, Diffusion of Innovations, with its elements and theories were analyzed. Then, in the third section, Technology Acceptance Model, emergence and description of the model, motivations of its usage in educational technology, and its recent applications with the determinants of acceptance factors were introduced.

2.1 Trends in Educational Technology

As the social and economic systems change, the educational approaches and the “world of learning” (Rosenberg, 2006, p. 1) change as well.

During the Second World War and the Second Industrial Revolution in the second half of 20th century, the mass production and likewise mass education were popular. The format of products was all-same for all people as well as the format of education. The industrial organization in fordist-production includes strict steps that a product must go through to be accurate (Second Industrial Revolution, 2007). Similarly, in the educational institutions, like products, people were prepared to be "accurate" for the industrial life. Nevertheless, this

system has not survived a lot, the criticisms to the war and to the social and economic organization has risen day by day. The educational approach was criticized a lot as well. Pink Floyd's most popular song voices this uprising with the chorus "we don't need no education", while defining education as putting a brick in the wall and calling teachers to “leave those kids alone!”.

The social and economic crisis in the middle of 20th century was overcome by new economic and social models. In these new models, the basic argument is the diversity of people and diversity of the needs. The products were produced with different colors, sizes, and models with foreseeing the diversity. People want their cars, cloths, and houses more "personalized" and not alike to any others. The banks develop more personalized accounts and credit cards. The scientists develop intelligence tests with the theory of "multiple intelligence" other than IQ tests. The educators design their courses with more flexible models, with personalized and learner/learning-centered approach. Further, in 1970s, the integration of technology to the educational contexts has accelerated and enhanced this approach. Since then, no radical changes but changing trends in the field of education have been appearing.

As it is known, trends rarely suggest the truths; yet, in educational technology they are good guidelines to indicate what is happening in the field, what is “in” and what is “out” in the current scope (Ely, 2002). Since trends do not emerge in short periods and they are the indicators of past and snapshots of the present, examining the trends from 1990s to present would be a more accurate approach.

Ely (2002), the author of “Trends in Educational Technology”, which was published in 1988, 1989, 1992, 1996 and 2002, listed 1996 and 2002 trends in the 2002 edition of the book as below. For each trend, published in the 1996 edition is listed first, then 2002 version of the trend follows in italics.

TREND 1

Computers are pervasive in school and higher education institutions. Virtually every student in a formal education setting has access to a computer.
There is near saturation of computers in K-12 schools, while higher education institutions report moderate saturation. Students and teachers have almost universal access to computers, many of which are connected to the Internet.

TREND 2
Networking is one of the fastest growing applications of technology in education.
The Internet has become a major source of information for students and teachers. In higher education, the use of the Internet to deliver instruction has been steadily growing.

TREND 3
Access to television resources in the schools is almost universal.
Video materials are increasingly being delivered by a variety of distribution systems, such as video streaming on the Web, video conferencing, synchronous teaching and learning by closed circuit, broadcast and satellite television systems. Use of video in classrooms and independent study spaces has leveled off.

TREND 4
Advocacy for educational technology has increased among policy groups.
More community organizations than ever are promoting and supporting the use of technology for teaching and learning in schools, colleges and the public sector. Policy organizations have joined the chorus of voices that advocate more and better use of technology in schools and higher educations.

TREND 5
Educational technology is increasingly available in homes and community settings.
The home has become a classroom for children and adults. Distance education has become a significant provider of instruction through the use of technological media.

TREND 6
New delivery systems for educational technology applications have grown in geometric proportions.

New delivery systems have stimulated the development and use of educational applications for teaching and learning. Foremost among them are wireless devices, such as laptop and handled computers.

TREND 7
There is a new insistence that teachers must become technologically literate.
Opportunities for teachers to become competent in the use of technology for teaching and learning have increased substantially, resulting in greater and improved use in education.

TREND 8
Educational technology is perceived as a major vehicle in the movement toward education reform.
More than ever, reputable organizations perceive the use of instructional technology in schools, colleges and the public sector as a vehicle for education reform (pp. 50-52).

Among these trends, the last one representing the educational reform, reserves more attention. It implies a "change" in education, which is supported by the other trends listed. Undoubtedly, change in the requirements, some of which are discussed below, creates the need for education reform.

According to O'Banion (1997), the significance of learner and the learning process have emerged more clearly in 21st century as the center of education, which forces the change and reform in education. And, as Scales (1994) pointed out, the educators are searching for ways to improve the students' skills on local and national level in order to empower students to deal with the challenges facing them in the "real world". Also the lack of motivation on both learning and teaching, low performance on tests are other issues for the need for educational change at schools.

When we move from the schools to the private and public sector, the question "how efficiently and effectively will employees acquire the necessary knowledge and skills so that they may reengage their career with new capabilities" (Ritchie, 1999, p. 35) searches for the answer. In fact, there are two major issues in this question regarding the change. One is the importance of improving the capabilities of employees to the current needs of organizations and

the other is training approaches, methods and tools to be used in this process. The solution domain of this question/problem is shaped by the intersection of workforce performance and training. Actually, these are two different fields which are synthesized in another domain; Human Performance Technology (HPT).

HPT, as an interdisciplinary approach, has been dealing with improving the workforce of the employees by kinds of interventions some of which are training based. Before digging into the training issues regarding e-learning and e-learning management systems, a short glance on HPT will provide some background information.

2.1.1 Human Performance Technology

Apparently, HPT means more than putting the words; human, "the individuals and groups that make up our organizations", performance, "activities and measurable outcomes", and technology "a systematic and systemic approach to solve practical problems" together (International Society for Performance Improvement, n.d.).

According to Mager (1999), it is a powerful collection of techniques, procedures, and approaches aimed to solve problems involving human performance. The problems could be about any subject and concern any kind of people. The insufficient production level of the company, unsatisfied learners with the learning system, lack of motivation among employees are kinds of problems in the domain of HPT. Furthermore, as a recent definition, Pershing (2006) defined the field as "the study and ethical practice of improving productivity in organizations by designing and developing effective interventions that are results-oriented, comprehensive and systemic" (p. 6). As it can be seen in the definitions, the emphasis of productivity in HPT has made the human resources field increase the use of it more than ever due to the challenges of

competitiveness and high productivity in the modern times (Rosenberg, Coscarelli & Hutchinson, 1999; Rosenberg, 1996).

Actually, the term HPT has been evolving for fifty years defining a field of practice in the organizations as well as providing a set of principles which guide its practitioners. The common known principles of HPT which are defined by International Society for Performance Improvement (n.d.) are, *focusing on outcomes* which confirms that people share the same vision and goals; *taking a systems view* which is a vital principle since organizations are very complex systems affecting the performance of the individuals; *adding value* which is an evaluation that clients are asked to make; *establishing partnerships* by which improvement professionals work in partnership with clients and other specialists; *being systematic in the assessment of the need or opportunity* that comprises the needs or opportunity analysis about the current situation at any level; *being systematic in the analysis of the work and workplace* which analyzes why any gap in performance or expectations exists; *being systematic in the design of the solution* by which the key attributes of a solution are organized; *being systematic in the development of all or some of the solution and its elements* which involves the identification of outputs as a product, process, system, or technology; *being systematic in the implementation of the solution* that is about organizing the solution and managing the change required to sustain it; and *being systematic in the evaluation of the process and the results* which is about measuring the efficiency and effectiveness of the outputs, processes and the level to which solutions produced the expected results.

Certainly, there are several practices applying these principles of HPT, which are out of the scope of this study. On the contrary, the solutions and interventions in terms of e-learning and e-learning management systems will be examined in the following sub section. As the HPT Model is demonstrated in Figure 2.1, during the performance analysis when there found a gap between the "desired workforce performance" and "actual state of workforce performance", cause analysis is held and according to the cause, "intervention selection and

design" is implemented. E-learning and e-learning management systems will be analyzed under this headline.

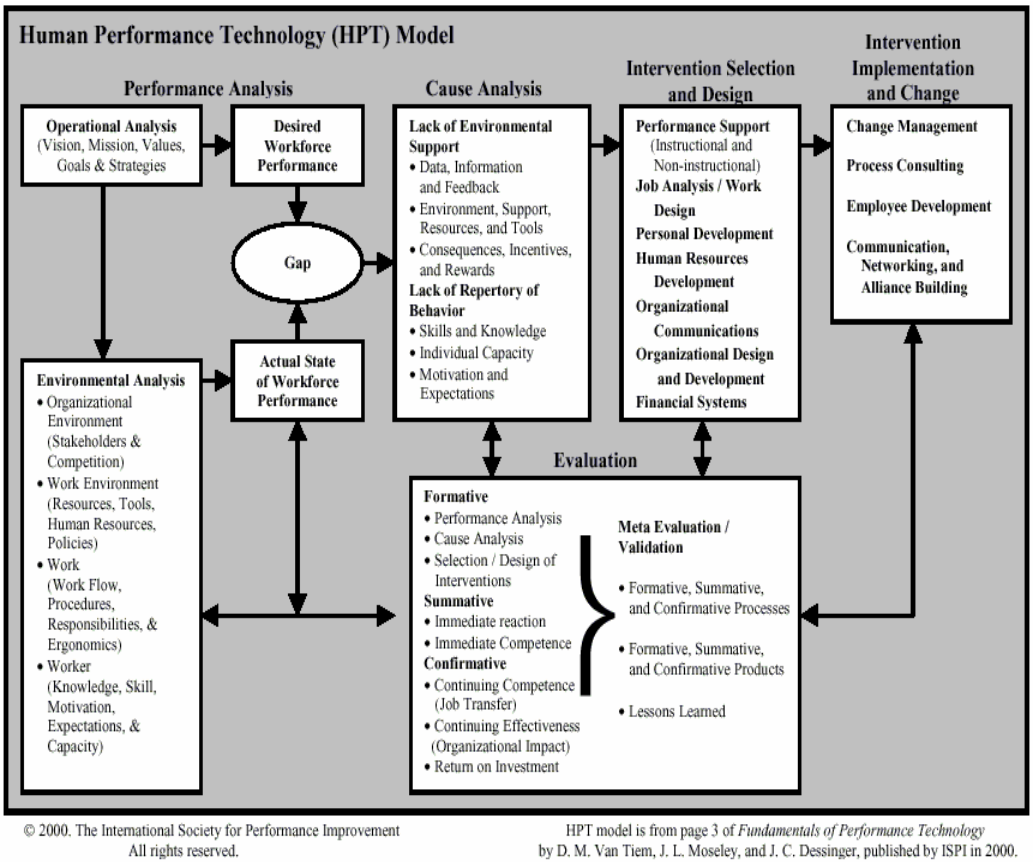

Figure 2.1. Human Performance Technology Model (Source: International Society for Performance Improvement, 2000)

2.1.2 E-Learning

The changes in social and economic systems, and technological improvement regarding infrastructure, data storage and software development have overlapped and leaded e-learning "the use of technology to support learning" (Rosenberg, 2006, p. 3) in various educational and learning settings. In

particular, a growing number of organizations including private and public corporations, use applications and systems of e-learning as an intervention for the workforce performance. According to the information in UNESCO's website (The Status of E-learning, 2003, ¶ 2),

> "There are an estimated ten million courses online, and the U.S. alone reports about 700 e-learning companies. Some companies or institutions offer online tutoring to students at specific grade levels, ranging from primary through university; others offer courses only for corporations; some offer courses for individuals in career development and/or personal development; and many offer training in various management, finance and ICT-related skills."

Certainly, there are reasons other than new socio-economic system why e-learning gained so much popularity against to the classroom training. As Rosenberg (2006, p. 45) listed, the popularity of e-learning is due to some limitations of the classroom training as below.

- The classroom cannot scale
- The classroom cannot handle the speed at which knowledge is changing
- Classroom costs are rising
- It can be difficult to assemble a homogeneous roster for a class
- Classrooms don't allow flexible scheduling
- There is a lack of qualified instructors
- Message consistency may be an issue
- Classroom training is time-consuming and interruptive

On the other hand, e-learning attract the private and public companies providing many advantages some of which are, providing learning programme at any time, participants can reach these programmes at any place, integration of computers, asynchronous or synchronous interaction, collaboration, and new educational approaches.

According to Rosett (2002), e-learning is a big tent covering the concepts such as *learning* which is changing what we know previously; *information support and coaching* which focuses on building an external resource that the learner use in case a need; *knowledge management* that captures, organizes, and

stirs the organization's brainpower; *interaction and collaboration* which provides engagement; and *guidance and tracking* that comprises assessment, tracking, and information.

Further, as Zemsky and Massy (2004) discussed in their report, three main domains define e-learning's basic market niches. First, e-learning is considered as a kind of distance education which serves online courses on the web. Online certificate or graduate programs are examples of e-learning in this domain. Secondly, e-learning is seen as electronic learning materials as standardized tests, flash animations, simulations, interactive CDs etc. Such materials are in digital format and differ from the first group products since these are not necessarily remote. Finally, the third includes the course management systems by which courses, schedules, assignments, grades, and any kind of learning materials are served. While the authors limited this category of e-learning as course management systems, it would be better to expand it as e-learning management systems since there are other virtual platforms serving various kinds of functions other than course management systems.

2.1.3 E-Learning Management Systems

There are four types of e-learning management systems (Horton, 2006). To begin with, LMS, which stands for learning management system, is used for formal learning in terms of registration and tracking of the students' records. Most of LMSs serve online courses, while some of them have other special features according to the context. Secondly, LCMS, which stands for learning content management system, is used for integration of lessons, topics, modules, tests, and any other kind of course material. Learning materials can be reused in different courses and topics as well. Indeed, LMSs and LCMSs may be used interchangeably in the market. Thirdly, CMS, which stands for course management system, is used in generally universities and school systems to manage the course programs. Finally, another CMS but which stands for *content*

management system is used for assembling documents and web sites in knowledge management manner.

Comprising many features, e-learning management systems usage has been spread worldwide. Paulsen (2003) emphasized the importance of management systems while stating that some part of the success of e-learning is due to the availability of such virtual platforms. In his study, "Experiences with Learning Management Systems in 113 European Institutions", Paulsen (2003) gives detailed information about the usage and other issues of LMSs in Europe. Having interviewed with 113 system managers of the various institutions from 17 European countries, he examined Internet penetration and the use of LMSs, large scale providers of online education, commercial LMSs, regional preferences and market leaders, competitive issues, self-developed systems, e-learning standards, and supportive tools in LMSs for the 113 institutions in Europe.

The study represents that, in the countries that use English as the first language, the American LMS systems (WebCT, Blackboard and TopClass) are leading the market. However, WebCT, FirstClass, and BlackBoard seem to be the most used LMS systems in the Nordic countries. In this manner, the study indicates the competitive issues for LMSs as below.

- The institutions do not seem to be especially loyal to, or dependent on, one LMS provider. The majority of the institutions had changed system, planned to change system, or operated additional systems.
- LMS systems could have reached a point where user-friendliness, cost-effectiveness, and integration with other systems are more important than new features.
- The open source strategy may have an impact on the future LMS market.
- Adaptability and management facilities on the level above individual courses are requested (p. 141).

In addition to commercial LMSs, locally developed systems have a strong position in the countries that do not use English as their first language.

The study also examined 35 self-developed LMSs. Some of the reasons for developing in-house systems are:

- The need to buy external programs would question the institution's qualifications
- Institutions with self-developed LMS systems perceive the commercial systems as expensive and complex
- The self-developed systems avoid linguistic problems and they are regarded as supportive of local needs and target groups (p. 142)

In fact, while LMSs in the study were examined in different aspects, how the adoption and acceptance of these LMS were performed is out of the subject. Undoubtedly, whether it is commercial or self-developed, adoption, diffusion and implementation of such systems is rarely easy. Realizing the innovation that is adopted by majority of the members of a social community is challenging. According to Forum Corporation study of 144 U.S. companies, in spite of the increased rush of the companies to use e-learning and get benefits of it, there are significant barriers regarding with the adoption (Simmons, 2002). In fact, there has been a shift from dealing with the technical difficulties of building e-learning management systems to the human factor issues including the user acceptance and adoption.

Due to the complexity of adoption and diffusion processes, there are theories and models developed for such innovations. Apparently, with his study named "Diffusion of Innovations" Everett Rogers (2003) is the most known and leading researcher in the adoption and diffusion theory which has been applied in various fields. Throughout the next section, diffusion of innovations theory and in particular, main elements of diffusion and theories of diffusion of innovations will be examined.

2.2 Diffusion of Innovations

In 1903, a French sociologist Gabriel Tarde's S-shaped curve, representing the level of adoption verses time for an innovation, started the idea of diffusion of innovations. Actually, the emergence of the theories and models

for adoption and diffusion appeared afterward due to the agricultural innovation studies in the early in 20th century. In 1943, two sociologists Bryce Ryan and Neal C. Gross published a study, which focused on the adoption and diffusion of a new type of corn, seed to be planted in Iowa fields. Since then, there have been many other studies done on the topic. The next step in research on the diffusion theory was done in 1960s. While Everett M. Rogers introduced "Diffusion of Innovations" study in 1962, many other studies have been done on the diffusion of contemporary topics (Diffusion of Innovation, n.d.; Diffusion of Innovation, 2007).

Rogers (2003), defining 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.

2.2.1 Elements

The lexical meanings of innovation are stated as "the introduction of something new" and "a new idea, method and device" (Innovation, 2007). However, Rogers (2003), using a client-oriented approach, indicated that any idea, subject or practice could be called an *innovation* if it is "perceived" as new by the individual. His definition gives a subjective approach to the meaning of innovation. Further, he noted five perceived characteristics of innovation as below:

- *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).

As the second main element of diffusion, *communication channel* is defined as "the means by which messages get from one individual to another" (p. 18). Here, the messages are undoubtedly about innovation and the channels are identified as mass media and interpersonal channels. Third element *time* is considered in three dimensions: the innovation-decision process, innovativeness of individual or other unit of adoption (adopter categories), and rate of adoption. The innovation decision process will be identified in detail in the next sub section while adopter categories are innovators, early adopters, early majority, late majority, and laggards. 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).

This very broad definition can be applied at many contexts such as private and public organizations and organizational units. Actually, all these four main elements form a baseline for theories of diffusion of innovations.

2.2.2 Theories

There are four major theories those deal with the diffusion of innovations. These are namely, innovation-decision process theory, individual innovativeness theory, rate of adoption theory, and theory of perceived attributes (Rogers, 1995) (as cited in Yates, 2001).

The innovation-decision process has been introduced by Rogers (2003, p. 168) 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 2.2 demonstrates, there are sequential five steps to be followed in the *innovation-decision process*

theory. "Decision-making unit" passes from these steps, and reaches to the decision to adopt or reject it.

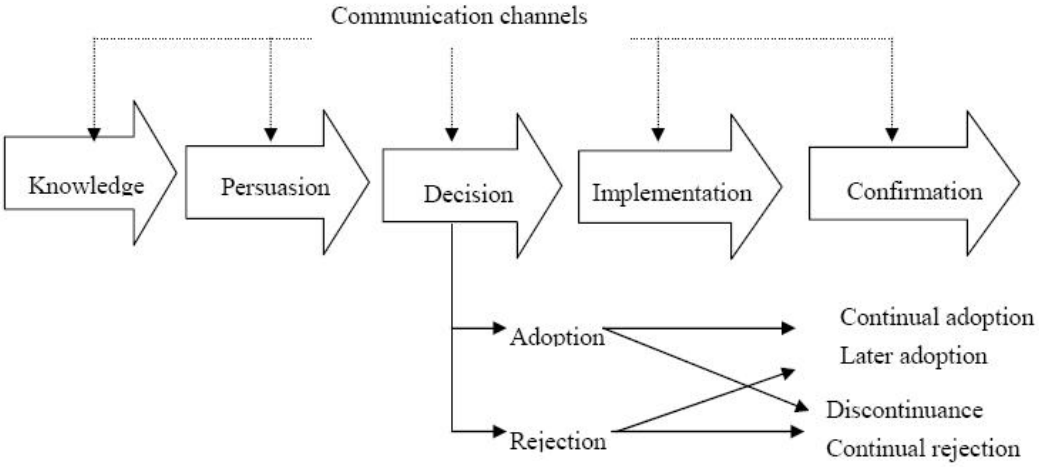

Figure 2.2. Innovation-Decision Process (Source: Papazafeiropoulou, Gandecha & Stergioulas, 2005, p. 4)

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 reserve this previous decision if exposed to conflicting messages about the innovation (p. 169).

According to the innovation-decision model, in the decision stage, who will decide to adopt and when are crucial. In fact, in a community, all the individuals do not adopt an innovation at the same time. At this point, the individual innovativeness theory suggests a method for categorizing individuals on the basis of innovativeness. First category of adopters is innovators including the 2.5 percent of the social system. These are the pioneers leading the way. The next 13.5 percent represents the early adopters. They are more integrated with the social system and highest degree of opinion leadership in most systems. The third and fourth groups are early majority and late majority. Each constitutes 34 percent 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 percent of the social system. They are the individuals most resist to an innovation. In many cases they never adopt (Rogers, 2003).

The S-shaped curve gives clues about the categorization of individuals in a community while it directly represents the adoption of innovation regarding time. Accordingly, 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 declines (Rogers, 2003).

As the fourth major theory, theory of perceived attributes suggests a number of attributes that determine the rate of adoption. These are relative advantage over an existing innovation, compatibility with existing values and practices, complexity of the innovation, trialability of the innovation suggesting a limited time for the test of innovation, and finally observability which suggest that innovation's outputs should be observable (Rogers, 2003).

Diffusion of innovation, and its major theories were used a number of times in various kinds of studies. While Rogers' theories and models have been proven each time, some criticisms have been appearing as well.

Lyytinen and Damsgaard (2001) (as cited in Papazafeiropoulou et al., 2005), point out that while diffusion of innovations theory explains reasons

behind the adoption, it is lack of considering the particularities of complex information technologies. The need for specialized models for the adoption of innovations in information systems leads researchers to develop models in this subject. Moore and Benbasat (1991) (as cited in Furneaux, 2005), expanded the five factors effecting the adoption of innovations as presented in theory of perceived attributes, then generated eight factors as voluntariness, relative advantage, compatibility, image, ease of use, result demonstrability, visibility, and trialability which impact the adoption of information technologies. According to Bradford and Florin (2003) (as cited in Furneaux, 2005), research has found that technical compatibility, technical complexity, and relative advantage (perceived need) are important antecedents to the adoption of innovations. And, in Hodgson and Aiken's view (1998), innovation in information systems requires change in the way that people interact with computerized technology, and the adoption of such innovations depends on the attitudes people have toward the change. There is a psychological process since people affected by a change. They need to understand it and adapt to the new reality.

Among these various ideas and practices, TAM has emerged as a reliable model and has been commonly accepted and used in the adoption of information technologies. According to Garson (2006), TAM, which will be discusses in the next section, is a variant of diffusion theory. Indeed, Davis's TAM, which is well respected in information technology adoption and use, is quite similar to diffusion of innovation model (Al-Gahtani, 2002).

2.3 TAM

It is apparent that, information systems implementations are costly and have low success rate. Then the studies have concentrated on better understanding of factors that facilitated target system use. Since various variables have appeared representing little effects on system usage, for practical

reasons, these variables and factors had to be grouped into a model, which would help analysis of information system use (Legris, Ingham & Collerette, 2003). Accordingly, Davis introduced TAM in 1986, which is a special model for the explanation of computer and technology usage 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 explaining human behavior in various domains.

Actually, TAM was derived and designed to apply only to computer usage behavior in the field of information systems. Ever since Davis introduced TAM in 1986, the model has been commonly accepted and used. Further, providing solutions to various requirements, TAM gains importance in the field, some of which will be discussed in the following.

To begin with, there are some important managerial aspects of TAM such as "(1) from the perspective of the manager as a potential user; (2) from the perspective of the manager of the design team or organization responsible for developing new end-user information systems; (3) from the perspective of the manager of the user organization" (Al-Gahtani, 2002, p. 161).

Next, from the view of practitioners and researchers there are some issues that TAM provides. First, practitioners and researchers are willing to enhance user acceptance by understanding why people reject or use technology based systems. And second, practitioners and researchers are interested in how well prediction and explanation of future user behavior could be performed from simple measures (Davis, et al., 1989).

Finally, since TAM promises to be practical tool for early user acceptance testing (Al-Gahtani, 2002), system managers and professionals require these early assessments such as after a brief period of interaction with the system or a rapid prototype of the system in order to reduce development costs (Davis, et al., 1989).

In reality, TAM tends to predict 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 Figure 2.3.

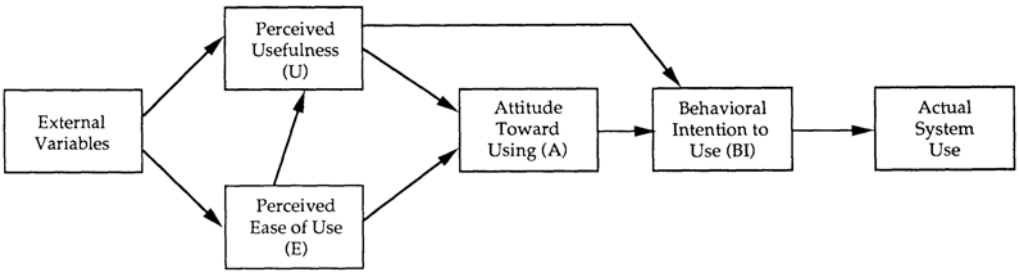

Figure 2.3.Technology Acceptance Model (TAM) (Source: Davis et al., 1989, p. 985)

As demonstrated in the figure, in brief, TAM aims 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).

Indeed, there may be many reasons why information systems researchers use TAM. On the other hand, for which purposes educational technologists may use TAM is the focus of this study. As mentioned previously in "Trends in Educational Technology" section, technological improvement regarding infrastructure, data storage and software development supported e-learning to spread rapidly. This is an important fact, which means that educational purposes and information systems will intersect in various educational applications. Furthermore, the models and theories especially built for information systems will be used educational purposes as well. TAM is a good example in this manner. In the next sub section, the motivations why TAM in particular and

diffusion theories in general are and should be used in educational contexts will be discussed.

2.3.1 Motivations

One of the main reasons of TAM usage in educational contexts is that the model is composed of four generic variables (perceived usefulness, perceived ease of use, attitudes toward the use and intention to use), which make the model dynamic and flexible to be applied in various settings (Pan, et al., 2005). TAM is a dynamic and flexible model, since the external variables, which are mediated by perceived usefulness and perceived ease of use could differ and be adapted the institutional context easily. Additionally, the measure of other variables such as perceived ease of use, perceived usefulness, attitude toward the system usage and actual usage is simple. This makes TAM be a valuable model for various domains as well as the educational contexts.

Next, for both practical and theoretical reasons, understanding resistance to change within educational organizations is important (Wolski & Jackson, 1999). Particularly, in the field of educational technology, Havelock (1974) (as cited in Burkman, 1987) discussed that, instructional designers have common problems in getting their products used since they used research-develop-diffusion (RDD) model during the development. In this model the experts identify the problem, and then systematically design the products, which are converted into problems to the others to be solved. In fact, the diffusion step of this model left to others while it is as important as the other steps and should be considered in relation with research and development. As it is mentioned before, understanding the field is not just understanding the hardware, software, design models and learning theories. The reasons why people use and more importantly do not use the educational technology are rather significant subjects in the field (Surry & Ely, 2002).

Actually, creating an effective and technically superior system and leaving it to be used does not always guaranteed the usage and success of the

system (Frazee, 2002). In Pool's view (1997) (as cited in Surry & Ely, 2002), while technical superiority is significant, it may not be the most important factor to determine whether the innovation is widely adopted or not. In other words, as Burkman (1987) (as cited in Surry & Ely, 2002) indicated, instructional technology had been suffering from little utilization, which fostered diffusion theories to be solutions in the field.

In addition, Khan (2005) emphasized the user-oriented approach as well by reminding the diversity of the e-learning system users. As he stated, institutions should perform special effort to get the support of the stakeholder groups consisting of learners, instructors, support services staff, and community members. Additionally, he recommends the institutions to use diffusion, adoption and implementation strategies for e-learning initiatives in order to provide user involvement to e-learning applications.

Finally, as Surry and Farquhar (1997) (as cited in Yates, 2001) suggest, educational technologists should study diffusion theory for three reasons. To begin with, educational technologists do not know why technological innovations are, or are not, adopted. Studying diffusion theory will help educational technologists to explain, predict and account for factors which effect or prevent adoption and diffusion of innovations. Second, instructional technology's nature is innovation-based. As technology goes forward, the products of instructional technology will be influenced and advanced as well. Since such instructional materials should be introduced and diffused into the educational system, the necessity of understanding the best way to present innovations for potential adoption gains importance. Third, and finally, the educational technologist should develop models of adoption and diffusion using systematic approaches. Therefore, identifying the factors those effect educational technologies' adoption and diffusion is important in the development of such models.

In this manner, TAM could be and actually has been used for examining the determinants of acceptance and predicting the future usage of target systems

in educational technology. In the following sub section, the determinants and applications of TAM will be discussed in different domains while focusing into the field of educational technology.

2.3.2 Determinants and Applications

In the field of information systems, there are many studies in which TAM was used as a model to be extended or to be tested. Target systems used in the TAM studies can be grouped into three, which are namely, office automation tools, software development tools, and business application tools. While examining these systems, the researchers add some subjective or/and external variables to their extended TAM-based model. Actually, these extended models increase the richness of TAM, and many studies have been conducted to increase empowerment acceptance models by using various external variables (Legris et al., 2003) (as cited in Burton-Jones & Hubona, 2005).

It is obvious that the external variables in TAM are critical. Therefore, an informative debate on the external variables regarding individual differences in information systems will be helpful before examining the applications of TAM.

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 the study that Agarwal and Prasad (1999) (as cited in Burton-Jones & Hubona, 2005) conducted, five individual differences such as organizational role, tenure, education, experience, and training directly affect information technology acceptance. Yet, the findings of their study demonstrated that such individual differences have only effect on PU and PEOU. Therefore, since PU and PEOU *fully* mediate these external variables, for simpler models, such individual differences are suggested excluding from TAM. On the contrary, unlike the argument above, Burton-Jones and Hubona (2005) have found that PU and PEU *only partially not fully* mediate the external variables. They studied

three individual differences as staff seniority, age and education level as external variables and reached the result that these variables had direct effect on usage over and above PU and PEOU. Therefore, the findings of the study indicate that PU and PEU *do not fully* mediate the external variables.

Actually, these results do not invalidate TAM, rather they point out the importance of external variables regarding individual differences on technology acceptance in information systems. Additionally, there are other studies indicating the importance of individual difference on technology acceptance.

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 technology-based educational systems, particularly e-learning and LMSs.

As an example, Pituch and Lee (2006) suggest an extended model in which system functionality, system interactivity, system response, self-efficacy, and Internet experience are determinants (external variables) of e-learning acceptance factors regarding perceived usefulness, and perceived ease of use. In this study the effect of such external variables on the acceptance of e-learning system was investigated. Likewise, another study, which focuses understanding

e-learning continuance intention, proposes an extended model as well. For the proposed model, path analysis was conducted across the elements of perceived quality, elements of perceived usability, elements of perceived control, elements of subjective norm, confirmation, satisfaction, and e-learning continuance intention (Roca, Chiu & Martinez, 2006). Within a complex model, several hypotheses were tested and according to the results model is revised. Another 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, LMSs 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.

2.4 Summary

There is a continuous influence of technological improvements on the field of education since the second half of 20^{th} century. In the modern times, the personalized and learner/learning-centered approach in educational contexts and the technology-based enhancements develop interdisciplinary approaches, applications, and studies in the field of educational technology. LMSs are such systems illustrating an application domain for both information systems and educational technology theories, models and assessments.

Since LMSs comprise planning, organizing, implementing, and assessing learning processes, there are different groups using LMSs. Hence; the success of the LMSs is based on the acceptance and usage of all these groups of people. Indeed it is not an easy work to design, develop and manage an LMS, which would be accepted and used with high-level adoption. As the literature review

represents, individual differences are still being discussed as the antecedents of acceptance of technology based systems. In this manner, the studies examining the individual differences as the determinants of acceptance and usage of LMSs are valuable.

Accordingly, the effect of individual and organization related individual differences such as gender, age, seniority, title, and department on their acceptance of institutional web-based LMS with regard to perceived ease of use of technology, perceived usefulness of technology, and attitudes toward the use of LMS were investigated in this study.

CHAPTER 3

METHOD

In the frame of descriptive methodology, survey design was used in this study, which focused on obtaining information about the current acceptance of the LMS and the effect of individual differences on the acceptance of LMS.

Throughout this chapter the detailed design of the study was covered. Namely, research problem and research questions, information about the LMS in Center Bank of the Republic of Turkey (CBRT), overall design of the study, population and sample, instruments, data collection procedures, data analysis approaches, and limitations and assumptions of the study were explained in this chapter.

3.1 Research Problem and Research Questions

The aim of this study is to find out the effects of the individual and organization related individual differences of Bank employees such as gender, age, seniority, title, department, and LMS role group on their acceptance of LMS with regard to perceived ease of use of technology, perceived usefulness of technology, and attitudes toward the use of LMS, in the CBRT, Ankara, Turkey. Furthermore, the study aim to find what kind of reasons may cause the "significantly different" cases in the study, and what kind of activities and adjustments can be done to improve the LMS acceptance of the sub groups which reflect lower scores in these cases and generally in the Bank.

Due to the different LMS roles in the system, investigations will be conducted within the same LMS role group.

Accordingly, the following research questions appeared to achieve the purpose of the study.

1. What is the effect of the CBRT's employees' individual differences such as gender, and age on their acceptance of LMS of the Bank?
   a. Within the same LMS role group, is there a significant difference between the CBRT's employees' perceptions of the usefulness of LMS, in terms of their gender?
   b. Within the same LMS role group, is there a significant difference between the CBRT's employees' perceptions of the ease of use of LMS, in terms of their gender?
   c. Within the same LMS role group, is there a significant difference between the CBRT's employees' perceptions of the attitude toward the use of LMS in terms of their gender?
   d. Within the same LMS role group, is there a significant relationship between the CBRT's employees' age and their perceptions of the usefulness of LMS?
   e. Within the same LMS role group, is there a significant relationship between the CBRT's employees' age and their perceptions of the ease of use of LMS?
   f. Within the same LMS role group, is there a significant relationship between the CBRT's employees' age and their perceptions of the attitude toward the use of LMS?

2. What is the effect of the CBRT's employees' organization related individual differences such as seniority, title, and department on their acceptance of LMS of the Bank?

a. Within the same LMS role group, is there a significant relationship between the CBRT's employees' seniority and their perceptions of the usefulness of LMS?
b. Within the same LMS role group, is there a significant relationship between the CBRT's employees' seniority and their perceptions of the ease of use of LMS?
c. Within the same LMS role group, is there a significant relationship between the CBRT's employees' seniority and their perceptions of the attitude toward the use of LMS?
d. Within the same LMS role group, is there a significant difference between the CBRT's employees' perceptions of the usefulness of LMS, in terms of their title, and department?
e. Within the same LMS role group, is there a significant difference between the CBRT's employee's perceptions of the ease of use of LMS, in terms of their title, and department?
f. Within the same LMS role group, is there a significant difference between the CBRT's employee's perceptions of the attitude toward the use of LMS, in terms of their title, and department?
g. Is there a significant difference between the CBRT's employees' perceptions of the attitude toward the use of LMS, in terms of their LMS role?

4. What kind of reasons may cause the "significantly different" cases in the study, and what kind of activities and adjustments can be done to improve the LMS acceptance of the sub groups, which reflect lower scores in these cases and generally in the Bank?

3.2 Information about LMS in the CBRT

The Training and Development Division in the CBRT has been enhancing the usage of the LMS in the Bank since 2006 with an increasing functionality in the system each year. In 2006, LMS Module-1 was used for the collection of the training requests of the Bank employees. Also, in 2006, LMS Module-2 began to be tested on the development site. And since 2007 January, Module-2 has been used officially in terms of several operations for the organization and management of the training programs. In the very near future, Module-3 serving online courses and e-learning material is planned to be actively used.

Module-1 by which the training program requests from the departments are collected is a start up step of the usage of LMS in the Bank. Employees select the programs, which they want to participate in the following year, and their department managers approve, or not approve these requests via LMS. After the staff of the Training and Development Division analyzed the approved requests by the help of reports achieved from LMS, number of programs that will be organized, number of employees that will participate these programs and the total budget are decided. There are basically 3 main roles in this module; training experts, training researchers and office staff as *office users*, managers as *department managers* and employees as *participants*.

As mentioned previously, Module-2 has been used officially since 2007 January. By the help of this module, diverse operations are performed by department managers, office users and participants (see Appendix A).

The operations, roles and responsibilities in Module-2 are rather complex than in Module-1. There are 3 main role groups likewise in Module-1 while the responsibilities of these role groups have been changed.

Office users are training experts, training researchers and office staff in Training and Development Division who are responsible for opening the

previously planned training program in LMS, performing or following the quota and enrollment operations, approving the final participant list of the program, controlling the LMS e-mails sent during all phases of the program, and following the completion of evaluation forms by participants.

Department managers are general managers and managers in the Head Office; and managers and assistant managers in the branches of the CBRT. They are responsible for performing the quota distribution to the departments, enrollment operations, approving the participant list of the program, following the LMS e-mails during all phases of the program.

Participants of a training program are the employees who are responsible for following the LMS e-mails sent during all phases of the program and filling the evaluation form of the program.

Since the office users' and department managers' roles and responsibilities are concentrating on the planning, managing and controlling of the training programs these two role groups are treated as one major LMS role group in this study. Participants are the second major LMS role group.

3.3 Overall Design of the Study

Survey design was used in this thesis study. Since two major role groups defined in LMS, the researcher developed two self-report questionnaires on LMS acceptance. These questionnaires are similar but differ in some cases since the responsibilities of the defined LMS role groups are different. They were distributed to department managers, training experts, training researchers, office staff and participants of training programs who have experienced LMS recently in the CBRT.

First major section in the questionnaires is the demographics that are same in both participants and department managers-office users' surveys. Second section is the perceptions about usefulness of LMS, third is the perceptions about ease of use of LMS, and fourth section is the attitudes toward

the use of LMS. The items in the second and third sections are similar in two questionnaires but differ according to the LMS roles. The fourth sections including the attitude items are same in both questionnaires. In addition to the data gathered from questionnaires, according to the findings of the quantitative study, one interview was performed with the staff from the Training and Development Division of the Bank.

This study employs quantitative approach. The initial data gathering was to gain responds of the users on the acceptance of LMS. This approach provides descriptive and inferential statistical analyses to some extent. Then, with the interview in which nominal group technique was used, the result of the quantitative survey was discussed and ways to improve the acceptance of LMS were searched with the staff from the Training and Development Division of the Bank.

3.4 Population and Sample

The study covered all employees in the CBRT who have used LMS Module 2 since January 2007. Between January and June 2007, more than 1200 participants used the system according to the reports achieved via LMS. In addition to the participants, managers in the departments and staff in the Training and Development Division have used LMS since January 2007. Due to the fact that recent usage of LMS is important for accurate and correct responds in questionnaires, the questionnaires were sent to the participants, department managers, training experts, training researchers and office users who have used LMS during the last two months. Consequently, nonrandom, purposive sampling method was used in this study.

"Questionnaire of LMS Participants" was distributed to 460 participants. And "Questionnaire of LMS Department Managers and Office Users" was distributed to 180 department managers and office users. 167 participants, and 64 department managers and office users responded the survey significantly.

Therefore, total respond rate to the "Questionnaire of LMS Participants" was 36 % and total respond rate to the "Questionnaire of LMS Department Managers and Office Users" was 33 %.

In addition to the survey conducted with self-reported questionnaires, one group interview was performed. The interview was done with the staff in the Training and Development Division. All the training researchers, office staff and 1 computer teacher were invited to the interview. 3 training researchers, 1 office staff and 1 computer teacher participated to the interview.

3.4.1 Demographics of Participants

The characteristics of the participants are shown in the tables below.

Table 3.1.

Distribution of the Participants in terms of their Gender

Genders of the Participants	Number of Participants	Percent
Male	93	55.7
Female	74	44.3
Total	167	100.0

As shown in Table 3.1, 55.7 % of the participants were male and 44.3 % were female in the sample.

Table 3.2.

Distribution of the Participants in terms of their Age Ranges

Age Ranges of the Participants	Number of Participants	Percent
20-25	14	8.6
26-30	74	44.3
31-35	20	12.0
36-40	9	5.4
41-45	18	10.8
46-50	22	13.2
51-60	5	3.0
Missing	5	3.0
Total	167	100.0

As Table 3.2 illustrates, 44.3% of the participants were between 26 and 30 years old.

Table 3.3.

Distribution of the Participants in terms of their Educational Background

Educational Background of the Participants	Number of Participants	Percent
High School	5	3.0
Postsecondary School	16	9.6
Bachelor's Degree	127	76.0
Master's Degree	18	10.8
Phd. Degree	1	0.6
Total	167	100.0

As shown in Table 3.3, the majority of the participants were graduated from university.

Table 3.4.

Distribution of the Participants in terms of their Seniority

Seniority of the Participants (years)	Number of Participants	Percent
1-5	95	56.9
6-10	12	7.2
11-15	7	4.2
16-20	9	5.4
21-25	35	21.0
26-30	6	3.6
Missing	3	1.8
Total	167	100.0

Table 3.5.

Distribution of the Participants in terms of their Title

Title of the Participants	Number of Participants	Percent
Officer	90	53.9
Chief Assist.	13	7.8
Chief	14	8.4
Dept. Chief	15	9.0
Expert Assist.	4	2.4
Expert	4	2.4
Computer Expert	3	1.8
System Expert	6	3.6
Operator	2	1.2
Cashier	1	0.6
Technician	2	1.2
Security	7	4.2
Missing	6	3.0
Total	167	100.0

As Table 3.5 illustrates, among the participants, the largest group of the respondents was officers with 53.9%.

Table 3.6.

Distribution of the Participants in terms of their Departments

Departments of the Participants	Number of Participants	Percent
Accounting	3	1.8
Banking and Financial Institutions	2	1.2
Banknote Printing Works	10	6
Communication	4	2.4
Construction & Procurement	1	0.6
Informatics Technology	9	5.4
Foreign Relations	2	1.2
Human Resources	3	1.8
Inspection Unit	2	1.2
Issue	3	1.8
Markets	4	2.4
Security & Defense	1	0.6
Social Affairs	8	4.8
Workers' Remittances	6	3.6
Adana Branch	6	3.6
Ankara Branch	10	6.0
Antalya Branch	3	1.8
Bursa Branch	7	4.2
Denizli Branch	3	1.8
Diyarbakır Branch	3	1.8
Edirne Branch	3	1.8
Erzurum Branch	5	3.0
Eskişehir Branch	8	4.8
Gaziantep Branch	6	3.6
İskenderun Branch	2	1.2
İstanbul Branch	21	12.6
İzmir Branch	7	4.2
İzmit Branch	5	3

Table 3.6. Continued

Kayseri Branch	2	1.2
Konya Branch	5	3.0
Malatya Branch	1	0.6
Mersin Branch	2	1.2
Samsun Branch	3	1.8
Trabzon Branch	3	1.8
Van Branch	3	1.8
Missing	1	0.6
Total	167	100.0

The distribution of the participants in terms of their departments is shown in Table 3.6.

3.4.2 Demographics of Department Managers and Office Users

Table 3.7.

Distribution of the Department Managers and Office Users in terms of their Gender

Genders of the Department Managers and Office Users	Number of Department Managers and Office Users	Percent
Male	17	26.6
Female	47	73.4
Total	64	100.0

As Table 3.7 shows, majority of the department managers and office users were female being 73.4% in the sample.

Table 3.8.

Distribution of the Department Managers and Office Users in terms of their Age Ranges

Age Ranges of the Department Managers and Office Users	Number of Department Managers and Office Users	Percent
25-30	3	4.7
31-35	2	3.1
36-40	4	6.3
41-45	8	12.5
46-50	27	42.2
51-55	18	28.1
56-60	1	1.6
Missing	1	1.6
Total	64	100.0

As Table 3.8 indicates majority of the department managers and office users were between 46 and 50 years old (42.2%) and 28.1% of the sample was between 51 and 55 years old.

Table 3.9.

Distribution of the Department Managers and Office Users in terms of their Educational Background

Educational Background of the Department Managers and Office Users	Number of Department Managers and Office Users	Percent
Postsecondary School	2	3.1
Bachelor's Degree	39	60.9
Master's Degree	19	29.7
Phd. Degree	4	6.3
Total	64	100.0

As Table 3.9 illustrates, majority of the department managers and office users (60.9%) were graduated from university.

Table 3.10.

Distribution of the Department Managers and Office Users in terms of their Seniority

Seniority of the Department Managers and Office Users (years)	Number of Department Managers and Office Users	Percent
1-5	5	7.8
6-10	1	1.6
11-15	1	1.6
16-20	8	12.5
21-25	23	35.9
26-30	21	32.8
31-35	4	6.3
Missing	1	1.6
Total	64	100.0

As Table 3.10 shows, majority of the department managers and office users (35.9%) had seniority between 21 and 25 years and 32.8% of the sample had seniority between 26 and 30 years.

Table 3.11.

Distribution of the Department Managers and Office Users in terms of their Title

Title of the Department Managers and Office Users	Number of Department Managers and Office Users	Percent
General Manager Assist.	7	10.9
Manager	27	42.2
Manager Assist.	22	34.4
System Expert	1	1.6
Computer Teacher	1	1.6
Training Expert	1	1.6
Training Researcher	4	6.3
Chief Dept.	1	1.6
Total	64	100.0

As Table 3.11 indicates, there were 27 managers (42.2%), and 22 manager assistants (34.4%) in the sample.

Table 3.12.

Distribution of the Department Managers and Office Users in terms of their Departments

Departments of the Department Managers and Office Users	Number of Department Managers and Office Users	Percent
Accounting	3	4.7
Banking and Financial Institutions	2	3.1
Banknote Printing Works	1	1.6
Communication	2	3.1
Construction & Procurement	1	1.6
Informatics Technology	3	4.7
Human Resources	13	20.3

Table 3.12. Continued

Inspection Unit	1	1.6
Issue	1	1.6
Markets	2	3.1
Research and Monetary Policy	1	1.6
Statistics	1	1.6
Workers' Remittances	3	4.7
Adana Branch	1	1.6
Ankara Branch	4	6.3
Bursa Branch	2	3.1
Denizli Branch	2	3.1
Diyarbakır Branch	1	1.6
Edirne Branch	1	1.6
Erzurum Branch	3	4.7
Eskişehir Branch	1	1.6
Gaziantep Branch	2	3.1
İskenderun Branch	3	4.7
İstanbul Branch	1	1.6
Kayseri Branch	1	1.6
Konya Branch	2	3.1
Malatya Branch	1	1.6
Mersin Branch	1	1.6
Samsun Branch	1	1.6
Van Branch	2	3.1
Missing	1	1.6
Total	64	100.0

The distribution of the department managers and office users in terms of their departments is shown in Table 3.12.

3.5 Instruments

A 39-item 5-point Likert-type scale for participants of LMS and a 45-item 5-point Likert-type scale for department managers and office users were designed according to the LMS roles of the employees in the CBRT. "Questionnaire of LMS Participants" is for the participants of the training programs and "Questionnaire of LMS Department Managers and Office Users" is for the department managers, training experts, training researches and office staff who deal with the organization and management of the training programs.

During the development of these questionnaires, for the "Perceived Usefulness of LMS" and "Perceived Ease of Use of LMS" sections, original Technology Acceptance survey (Davis et al., 1989) was inspired. The items in this survey were previously translated and used by Özdemir (2004) in a thesis study, which searched for the effects of educational ideologies on students and academicians acceptance of computer usage. Items used in both surveys were selected as original Technology Acceptance items. In addition to these items, the researcher added new items to the questionnaires to adapt the scale into the institutional context. For the "Attitudes toward the Use of LMS" section, Çınar's (2002) questionnaire was used. 10 items were inspired from this questionnaire and new items were added by the researcher (see Appendix B).

One interview was conducted with training researches and office staff who work in the Training and Development Division. The interview questions to be discussed were prepared by the researcher (see Appendix C).

3.5.1 Questionnaire of LMS Participants

The "Questionnaire of LMS Participants" is composed of four main sections. Reliability of the sections was analyzed in terms of Cronbach Alpha (α). Validity analysis for the sections was conducted in two ways. Expert opinion was obtained in terms of face validity. And, factor analysis was conducted with Varimax - Kaiser Normalization method to analyze construct validity.

After the deletion of the items according to the reliability and validity analysis final Cronbach alpha value for the whole questionnaire is $\alpha = .94$.

3.5.1.1 Demographics

This section aims at gathering information in terms of gender, age, educational status, seniority, title and department in the survey of participants.

3.5.1.2 Perceived Usefulness of LMS

This section was developed to retrieve data about the perceived usefulness of the participants in the survey. In the "Questionnaire of LMS Participants", 1st, 2nd, 3rd, 4th, 5th, 6th, 10th, and 13th items of this section are original items. The 7th, 8th, 9th, 11th, and 12th items were added by the researcher. Reliability and validity analysis of this section were conducted as below.

Table 3.13.

Reliability Analysis (Scale Alpha) of Perceived Usefulness in the Questionnaire of LMS Participants

Items	Alpha If Item Deleted	Items	Alpha If Item Deleted
1	.91	**8**	.91
2	.90	**9**	.91
3	.91	**10**	.91
4	.91	**11**	.91
5	.91	**12**	.91
6	.91	**13**	.91
7	.91		

Since Cronbach Alpha for the whole section is $\alpha = .91$ and any item deletion does not increase this alpha value, this section of the "Questionnaire of LMS Participants" was decided to remain as it was.

Table 3.14.

Validity Analysis (Varimax - Kaiser Normalization Method) of Perceived Usefulness in the Questionnaire of LMS Participants

Items	Component		Items	Component	
	1	2		1	2
1	*.65*	.41	**8**	.13	*.77*
2	.52	*.62*	**9**	-	*.79*
3	*.91*	-	**10**	*.60*	.29
4	*.92*	-	**11**	.14	*.80*
5	*.89*	.14	**12**	.23	*.82*
6	*.70*	.29	**13**	.51	*.59*
7	*.27*	*.77*			

As it is shown in Table 3.14, there appear two factors in the "Perceived Usefulness" section of the questionnaire. The italic values indicates in which component is the item. 1st, 3rd, 4th, 5th, 6th, and 10th items are listed in one factor, which can be defined as the "General Aspects and Operations' Usefulness". 2nd, 7th, 8th, 9th, 11th, 12th, and 13th items are listed in the second factor, and this factor can be defined as the "Specific Operations' Usefulness". As a final decision both factors are decided to remain in the dimension of "Perceived Usefulness".

3.5.1.3 Perceived Ease of Use of LMS

This section was developed to retrieve data about the perceived ease of use of participants in the survey. In the "Questionnaire of LMS Participants", 1st, 4th, 6th, 7th, 11th, 13th and 14th items of this section are original items. The researcher added 2nd, 3rd, 5th, 8th, 9th, 10th and 12th items. Reliability and validity analysis of this section were conducted as below.

Table 3.15.

Reliability Analysis (Scale Alpha) of Perceived Ease of Use in the Questionnaire of LMS Participants

Items	Alpha If Item Deleted	Items	Alpha If Item Deleted
1	.84	**8**	.84
2	.86	**9**	.83
3	.84	**10**	.84
4	.84	**11**	.83
5	.85	**12**	.86
6	.84	**13**	.84
7	.84	**14**	.83

Since Cronbach Alpha for the whole section is $\alpha = .85$ and item 2's and 12's deletion increases this alpha value to $\alpha = .86$. Therefore, these items were decided not to be included in the further statistical analysis.

Table 3.16.

Validity Analysis (Varimax - Kaiser Normalization Method) of Perceived Ease of Use in the Questionnaire of LMS Participants

Items	Component		Items	Component	
	1	2		1	2
1	.17	*.74*	**8**	*.78*	-
3	*.63*	-	**9**	*.79*	.15
4	*.63*	.16	**10**	*.71*	.21
5	-	*.82*	**11**	*.75*	.41
6	.22	*.80*	**13**	*.68*	-
7	*.50*	.17	**14**	*.65*	.33

As it is shown in the table, there appear three factors in the "Perceived Ease of Use" section of the questionnaire. The italic values indicate in which component is the item. 3rd, 4th, 7th, 8th, 9th, 10th, 11th, 13th, and 14th items are listed in the first component, and this factor can be defined as "General Aspects of Ease of Use". 1st, 5th, and 6th items are listed in the second factor due to the negative meanings they have. As a final decision two factors are decided to remain in the dimension of "Perceived Ease of Use".

3.5.1.4 Attitudes toward the Use of LMS

This section was developed to retrieve data about the attitudes of the participants toward the use of LMS. In the "Questionnaire of LMS Participants", 1st, 3rd, 5th, 6th, 7th, 8th, 9th, 10th, 11th, and 12th items of this section are original

items. The 2nd, and 4tt items were added by the researcher. Reliability and validity analysis of this section were conducted as below.

Table 3.17.

Reliability Analysis (Scale Alpha) of Attitudes toward the Use of LMS in the Questionnaire of LMS Participants

Items	Alpha If Item Deleted	Items	Alpha If Item Deleted
1	.84	**7**	.83
2	.84	**8**	.83
3	.85	**9**	.84
4	.86	**10**	.83
5	.84	**11**	.83
6	.84	**12**	.85

Since Cronbach Alpha for the whole section is $\alpha = .85$ and item 4's deletion increases this alpha value to $\alpha = .86$. Therefore, this item was decided not to be included in the further statistical analysis.

Table 3.18.

Validity Analysis (Varimax - Kaiser Normalization Method) of Attitudes toward the Use of LMS in the Questionnaire of LMS Participants

Items	Component		Items	Component	
	1	2		1	2
1	.25	*.77*	**8**	*.78*	.26
2	.26	*.78*	**9**	*.45*	.39
3	*.69*	-	**10**	*.84*	.19
5	.11	*.78*	**11**	*.68*	.38
6	-	*.79*	**12**	*.72*	-
7	*.78*	.21			

As it is shown in the table, there appear three factors in the "Attitudes toward the Use of LMS" section of the questionnaire. The italic values indicate in which component is the item. 3rd, 7th, 8th, 9th, 10th, 11th, and 12th items are listed in the first component, and this factor can be defined as "General Attitudes toward the use of LMS". 1st, 2nd, 5th, and 6th items are listed in the second component, which can be defined as the "Self-confidence on LMS usage". As a final decision two factors are decided to remain in the dimension of "Attributes toward the use of LMS".

3.5.2 Questionnaire of LMS Department Managers and Office Users

The "Questionnaire of LMS Department Managers and Office Users" is composed of four main sections. Reliability and validity analysis for these sections was conducted in the same way as in "Questionnaire of LMS Participants". After the deletion of the items according to the reliability and validity analysis final Cronbach Alpha value for the whole questionnarie is $\alpha = .96$.

3.5.2.1 Demographics

This section aims at gathering information in terms of gender, age, educational status, seniority, title and department in the survey of department managers and office users.

3.5.2.2 Perceived Usefulness of LMS

This section was developed to retrieve data about the perceived usefulness of the department managers and office users in the survey. In the "Questionnaire of LMS Department Managers and Office Users", 1st, 2nd, 3rd, 4th,

5th, 6th, 7th, and 16th items of this section are original items. The researcher added 8th, 9th, 10th, 11th, 12th, 13th, 14th, and 15th items. Reliability and validity analysis of this section were conducted as below.

Table 3.19.

Reliability Analysis (Scale Alpha) of Perceived Usefulness in the Questionnaire of LMS Department Managers and Office Users

Items	Alpha If Item Deleted	Items	Alpha If Item Deleted
1	.95	**9**	.94
2	.94	**10**	.95
3	.94	**11**	.94
4	.94	**12**	.94
5	.94	**13**	.94
6	.94	**14**	.94
7	.94	**15**	.94
8	.94	**16**	.94

Since Cronbach Alpha for the whole section is $\alpha = .95$ and any item deletion does not increase this alpha value, this section of the "Questionnaire of LMS Department Managers and Office Users" was decided to remain as it was.

Table 3.20.

Validity Analysis (Varimax - Kaiser Normalization Method) of Perceived Usefulness in the Questionnaire of LMS Department Managers and Office Users

Items	Component			Items	Component		
	1	2	3		1	2	3
1	.11	.18	*.79*	**9**	.47	*.64*	.17
2	*.87*	.29	.17	**10**	.36	*.67*	-
3	*.72*	.18	.49	**11**	*.72*	.39	.24
4	*.64*	.14	.59	**12**	*.49*	.41	.29
5	.27	.30	*.70*	**13**	-	*.79*	.40
6	*.79*	.23	.70	**14**	.18	*.66*	.34
7	*.84*	.27	.27	**15**	.31	.27	*.69*
8	.24	*.82*	.16	**16**	*.54*	*.54*	.40

As it is shown in the table, there appear three factors in the "Perceived Usefulness" section of the questionnaire. The italic values indicate in which component is the item. 2nd, 3rd, 4th, 6th, 7th, 11th, 12th, and 16th items are listed in one factor. 8th, 9th, 10th, 13th, and 14th items are listed in the second component. And 1st, 5th, and 15th items are listed in the third component. When the 1st item and 5th item were excluded from this section, the factor analysis output was as below.

Table 3.21.

Validity Analysis (Varimax - Kaiser Normalization Method) of Perceived Usefulness (without Item1 and 5) in the Questionnaire of LMS Department Managers and Office Users.

Items	Component		Items	Component	
	1	2		1	2
2	*.81*	.31	**10**	.30	*.68*
3	*.85*	.25	**11**	*.71*	.42
4	*.84*	.21	**12**	*.55*	.44
6	*.77*	.32	**13**	.24	*.83*
7	*.85*	.31	**14**	.29	*.70*
8	.22	*.84*	**15**	*.62*	.35
9	.44	*.66*	**16**	*.64*	.59

As Table 3.21 shows, 2nd, 3rd, 4th, 6th, 7th, 11th, 12th, 15th, and 16th items are listed in one factor which can be defined as the "General Aspects and Operations' Usefulness". 8th, 9th, 10th, 13th, and 14th items are listed in the second component and this factor can be defined as the "Specific Operations' Usefulness". As a final decision item 1 and 5 are decided to be deleted from the section of "Perceived Usefulness".

3.5.2.3 Perceived Ease of Use of LMS

This section was developed to retrieve data about the perceived ease of use of the department managers and office users in the survey. In the "Questionnaire of LMS Department Managers and Office Users", 1st, 4th, 6th, 7th, 14th, 16th and 17th items of this section are original items. The 2nd, 3rd, 5th, 8th, 9th, 10th, 11th, 12th, 13th, an 15th items were added by the researcher. Reliability and validity analysis of this section were conducted as below.

Table 3.22.

Reliability Analysis (Scale Alpha) of Perceived Ease of Use in the Questionnaire of LMS Department Managers and Office Users

Items	Alpha If Item Deleted	Items	Alpha If Item Deleted
1	.91	**10**	.90
2	.91	**11**	.91
3	.90	**12**	.91
4	.90	**13**	.91
5	.90	**14**	.90
6	.90	**15**	.92
7	.90	**16**	.90
8	.90	**17**	.90
9	.90		

Since Cronbach Alpha for the whole section is $\alpha = .91$ and item 15's deletion increases this alpha value to $\alpha = .92$, this item was decided not to be included in the further statistical analysis.

Table 3.23.

Validity Analysis (Varimax - Kaiser Normalization Method) of Perceived Ease of Use in the Questionnaire of LMS Department Managers and Office Users

Items	Component				Items	Component			
	1	2	3	4		1	2	3	4
1	-	-	*.83*	-	**9**	.37	*.82*	-	.15
2	*.74*	-	.12	-	**10**	*.62*	.27	-	.40
3	*.69*	-	.50	.13	**11**	-	.26	.18	*.83*
4	*.63*	.30	.41	.14	**12**	-	*.71*	.20	.37
5	.28	.29	*.73*	-	**13**	.33	-	-	*.74*
6	.51	.25	*.53*	-	**14**	*.63*	.52	.28	-
7	.46	-	*.56*	.41	**16**	*.71*	-	-	.38
8	.24	*.82*	.19	.12	**17**	*.64*	.52	.34	-

As it is shown in the Table 3.23, there appear four factors in the "Perceived Ease of Use" section of the questionnaire. The italic values indicate in which component is the item. 2nd, 3rd, 4th, 10th, 14th, 16th, and 17th items are listed in the first component. 8th, 9th, and 12th items are listed in the second factor. 1st, 5th, 6th, and 7th items are listed in the third factor and 11th, and 13th items are listed in the fourth component. When the 8th, 11th, and 12th, items were excluded from this section, the factor analysis output was as below.

Table 3.24.

Validity Analysis (Varimax - Kaiser Normalization Method) of Perceived Ease of Use (without Items 8, 11, and 12) in the Questionnaire of LMS Department Managers and Office Users.

Items	Component		Items	Component	
	1	2		1	2
1	*.74*	-	**9**	.33	*.62*
2	.41	*.48*	**10**	.27	*.75*
3	*.70*	.43	**13**	-	*.73*
4	*.67*	.46	**14**	*.59*	.57
5	*.81*	.12	**16**	.25	*.77*
6	*.68*	.36	**17**	*.65*	.54
7	*.62*	.41			

As Table 3.24 illustrates, 1st, 3rd, 4th, 5th, 6th, 7th, 14th, and 17th, and 16th items are listed in one factor which can be defined as the "General Ease of Use". 2nd, 9th, 10th, 13th, and 16th items are listed in the second component and this factor can be defined as the "Ease of Use of Specific Operations'". As a final decision item 8th, 11th, 12th and 15th are decided to be deleted from the section of "Perceived Ease of Use".

3.5.2.4 Attitudes toward the Use of LMS

This section of both questionnaires has the same items and the reliability and validity analysis were conducted previously for the "Questionnaire of LMS Participants". Besides, Cronbach Alpha for this section of the "Questionnaire of LMS Department Managers and Office Users" is $\alpha = .89$.

3.6 Data Collection Procedures

For data collection the institutional permission was required. The researcher prepared an "Information Letter" about the study, which comprises information about LMS, purpose, method and instruments of the study. At first, this letter was approved by the Training and development Division Manager to be sent to the General Manager of the Human Resources Department. Then, the General Manager permitted the study and data collection process through self-reported questionnaires.

The "Questionnaire of LMS Participants" was sent by e-mail to the participants who recently completed training programs. The e-mail addresses of the participants of the training programs were retrieved manually by the researcher. The "Questionnaire of LMS Department Managers and Office Users" was sent to all general manager assistants, and managers in the Head Office and all managers, manager assistants in the Branches and all staff dealing with LMS in the Training and Development Division of the CBRT.

The receivers of the questionnaires were requested to fill the questionnaire and reply it to the researcher. It took three weeks to send the questionnaires and retrieved them back. As a result, the researcher received a total of 240 of questionnaires. Mostly, the retrieved questionnaires were appropriate for the study without any missing fields. Few had many missing values. Therefore, 231 questionnaires were evaluated in the study.

After the analysis of the retrieved data with questionnaires, one interview was conducted. It was conducted with training researches and office staff. The nominal group technique was used in the interview in which 5 participants were divided into two groups, one group of 3 and one group of 2. 5 questions prepared by the researcher were asked to the participators in the interview. The groups discussed each of the questions at first, then the groups verbally reflected their answers and the researcher wrote the answers of both groups via the Word Processor and projected them on the screen. Finally, each participant voted the answers of each question according to the significance of the items (most

significant = 5, least significant = 1). At the end of the interview the researcher collected the participants' voting.

3.7 Data Analysis Approaches

The data collected through the questionnaires were entered into SPSS (release 10.0.1). At first, the characteristics of the sample were defined. Prior to the analysis, the reliability and validity analysis were conducted for each technology acceptance factor in both questionnaires. Required deletions of the items were done accordingly.

With respect to the research questions, statistical data analysis was performed. The scores LMS acceptance factors of the participants and department managers-office users were calculated separately in terms of their individual and organization related individual differences. To identify the effect of independent variables such as gender, title and department on the acceptance of LMS in the Bank, ANOVA was used as statistical analysis method. Before ANOVA was conducted, each section in the questionnaires was analyzed whether data was normally distributed or not. According to the Kolmogorov-Simirnov Test, for each section of both questionnaires, the statistical assumption of ANOVA was verified. And, to identify the effect of continuous variables such as age and seniority to the acceptance of LMS in the Bank, correlation analysis was conducted. In the case significant correlations, ANOVA was conducted across the sub groups, which have close sizes.

3.8 Limitations and Assumptions of the Study

The study focused on all the participants', and department managers - office users' perceptions about and attitudes toward the use of LMS in the CBRT in terms of technology acceptance factors. On the other hand, this study is

limited to the subjects who were sent the questionnaires with regard to convenience sampling.

Using self-reports for the data collection, it is assumed that all the subjects responded to the items of the questionnaires sincerely and kindly. Validity of this study is limited to the honesty of the subjects' responses to the instruments.

Another limitation is due to the development of the instruments. A pilot study could not be performed due to the size of the group of convenience responders and time limitations. Therefore, the validity and reliability analysis of the instruments were conducted after the data collection.

One more limitation of this research is in terms of the sample size. There is heterogeneity in the sample sizes of the categorized groups in both participants and department managers-office users. While equal variances assumption is verified in each ANOVA, the heterogeneity in sub groups' sized may affect the ANOVA results.

Another limitation of the study is due to the number of participants in the interview group. Regarding the organizational reasons, managers' interview was postponed, and the general manager assistants were decided not to be invited due to their high level managerial situations in the Bank.

The result of this study is limited to the sample chosen in the CBRT. Therefore, it is difficult to generalize the findings to the other institutions in Turkey. Due to the nature of case study, extra care should be taken when applying the findings to similar settings.

CHAPTER 4

RESULTS

The purpose of this study is to find out the effects of the individual and organization related individual differences of Bank employees such as gender, age, seniority, title, and department on their acceptance of LMS with regard to perceived ease of use of technology, perceived usefulness of technology, and attitudes toward the use of LMS. Furthermore, the study aim to find the reasons of the "significantly different" cases in the study, and the activities and adjustments to be done to improve the LMS acceptance of the sub groups which reflect lower scores in these cases and generally in the Bank.

This chapter presents the findings of the study from questionnaires and the group interview. First section examined the findings of technology acceptance factors in terms of perceived usefulness of LMS, ease of use of LMS, and attitude toward use of LMS. In the second section, the effects of individual differences on the acceptance of LMS were analyzed while in the third section the effects of organization related individual differences on the acceptance of LMS were investigated.

The results of the interview, which was conducted with training researchers and office staff in the Training and Development Division of the CBRT, were added to the Appendix (see Appendix C).

4.1 Technology Acceptance Factors

Perceived usefulness of LMS, perceived ease of use of LMS, and attitudes toward the use of LMS of the "Participants" and "Department Managers and Office Users" are presented in this section.

4.1.1 Participants' Perceived Usefulness of LMS

Participants' perceptions of the usefulness of LMS were collected with the second part of the "Questionnaire of LMS Participants". There were 13 items, which aim to identify the participants' perceived usefulness of LMS. All the items were included to the analysis. As Table 4.1 shows, participants' perceived usefulness was found as 4,09. This value indicated high level of perceived usefulness, and it shows that the participants in the CBRT have positive perceptions about the usefulness of LMS.

Table 4.1.

Participants' Perceived Usefulness of LMS

Participants' Perceived Usefulness of LMS	
Mean	4,09
Std. Deviation	,53
Skewness	-,36
Kurtosis	,22

4.1.2 Participants' Perceived Ease of Use of LMS

Participants' perceptions about the ease of use of LMS were collected with the third part of the "Questionnaire of LMS Participants". There were 14

items, which of two were excluded from the questionnaire during the reliability analysis. Consequently, 12 items were included to this analysis. As Table 4.2 shows, participants' perceived ease of use was found as 4,04. This value indicated high level of perceived ease of use, and it shows that the participants in the CBRT have positive perceptions about the ease of use of LMS.

Table 4.2.

Participants' Perceived Ease of Use of LMS

Participants' Perceived Ease of Use of LMS	
Mean	4,04
Std. Deviation	,51
Skewness	-,48
Kurtosis	1,26

4.1.3 Participants' Attitudes toward the Use of LMS

Participants' attitudes toward the use of LMS were collected with the fourth part of the "Questionnaire of LMS Participants". There were 12 items, which of one was excluded from the questionnaire during the reliability analysis. Consequently, 11 items were included to this analysis. As Table 4.3 shows, participants' perceived ease of use was found as 3,99. This value indicated positive attitudes of participants toward the use of LMS.

Table 4.3.

Participants' Attitudes toward the Use of LMS

Participants' Attitudes toward the Use of LMS	
Mean	3,99
Std. Deviation	,51
Skewness	-,06
Kurtosis	,17

4.1.4 Department Managers and Office Users' Perceived Usefulness of LMS

Department managers and office users' perceptions of the usefulness of LMS were collected with the second part of the "Questionnaire of LMS Department Managers and Office Users". There were 16 items, which of two were excluded from the questionnaire during the validity analysis. Consequently, 14 items were included to this analysis. As Table 4.4 illustrates, department managers' and office users' perceived usefulness was found as 4,07. This value indicated high level of perceived usefulness, and it shows that the department managers and office users in the CBRT have positive perceptions about the usefulness of LMS.

Table 4.4.

Department Managers and Office Users' Perceived Usefulness of LMS

Department Managers' and Office Users' Perceived Usefulness of LMS	
Mean	4,07
Std. Deviation	,65
Skewness	-,73
Kurtosis	,49

4.1.5 Department Managers and Office Users' Perceived Ease of Use of LMS

Department managers and office users' perceptions about the ease of use of LMS were collected with the third part of the "Questionnaire of LMS Department Managers and Office Users". There were 17 items, which of four were excluded from the questionnaire during the reliability and validity analysis. Consequently, 13 items were included to this analysis. As Table 4.5 illustrates, department managers and office users' perceived ease of use was found as 3,86. This value indicated good level of perceived usefulness, and it shows that the department managers and office users in the CBRT have positive perceptions about the ease of use of LMS.

Table 4.5.

Department Managers and Office Users' Perceived Ease of Use of LMS

Department Managers' and Office Users' Perceived Ease of Use of LMS	
Mean	3,86
Std. Deviation	,62
Skewness	-,58
Kurtosis	,09

4.1.6 Department Managers and Office Users' Attitudes toward the Use of LMS

Department managers and office users' attitudes toward the use of LMS were collected with the fourth part of the "Questionnaire of LMS Department Managers and Office Users". There were 12 items, which of one was excluded

from the questionnaire during the reliability analysis. Consequently, 11 items were included to this analysis. As Table 4.6 shows, department managers and office users' perceived ease of use was found as 3,92. This value indicated positive attitudes of department managers and office users toward the use of LMS.

Table 4.6.

Department Managers and Office Users' Attitudes toward the Use of LMS

Department Managers' and Office Users' Attitudes toward the Use of LMS	
Mean	3,92
Std. Deviation	,57
Skewness	-,21
Kurtosis	,06

4.2 Effects of Individual Differences on the Acceptance of LMS

The effects of individual differences on LMS acceptance in CBRT will be analyzed in this section. Analyzes were conducted among "participants" and "department managers and office users" separately.

4.2.1 Effects of Participants' Individual Differences on the Acceptance of LMS

Throughout this section, the effects of individual differences of the participants on the acceptance of the LMS will be investigated. ANOVA was conducted to investigate the effect of gender of participants on the acceptance of LMS while correlation analysis and ANOVA were used to examine the effect of age on the acceptance of LMS. In each ANOVA, the independent variable was

one of the two individual characteristics (age, and gender) and the dependent variables were the factors of LMS acceptance, which are perceived usefulness of LMS, perceived ease of use of LMS, and attitude toward the use of LMS. 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.

4.2.1.1 The Effect of Participants' Gender on the Acceptance of LMS

ANOVA was conducted to investigate the effect of participants' gender on their acceptance of LMS.

Table 4.7.

Participants' Perceived Usefulness, Perceived Ease of Use, and Attitudes toward the use of LMS Scores in terms of their Gender

LMS Acceptance Factors	Gender	N	Mean	Std. Deviation
Perceived Usefulness	Female	74	4,10	0,54
	Male	93	4,08	0,53
Perceived Ease of Use	Female	74	4,07	0,50
	Male	93	4,01	0,53
Attitudes toward the Use of LMS	Female	74	3,99	0,49
	Male	93	3,99	*0,52*

As Table 4.7 shows, the means and the standard deviation of the LMS acceptance factors of females and males are close to each other.

Table 4.8.

Participants' Perceived Usefulness, Perceived Ease of Use, and Attitudes toward the Use of LMS Scores in terms of their Gender - ANOVA Table

		Sum of Squares	df	Mean Square	F	Sig.
Participants' Perceived Usefulness of LMS	Between Groups (Combined)	1,173E-02	1	1,173E-02	0,041	0,840
	Within Groups	47,416	165	0,287		
	Total	47,428	166			
Participants' Perceived Ease of Use of LMS	Between Groups (Combined)	0,167	1	0,167	0,631	0,428
	Within Groups	43,774	165	0,265		
	Total	43,941	166			
Participants' Attitudes toward the Use of LMS	Between Groups (Combined)	3,161E-04	1	3,161E-04	0,001	0,972
	Within Groups	43,061	165	0,261		
	Total	43,062	166			

As Table 4.8 shows, there were no significant differences between male and female participants with respect to their perceived usefulness of LMS, perceived ease of use of LMS, and attitude toward the use of LMS.

4.2.1.2 The Effect of Participants' Age on the Acceptance of LMS

In this section the correlation between participants' ages and the LMS acceptance factors was analyzed.

Table 4.9.

Descriptive Analysis of Participants' Perceived Usefulness, Perceived Ease of Use, Attitudes toward the Use of LMS, and their Ages

	Mean	Std. Deviation	N
Perceived Usefulness	4,09	0,53	167
Perceived Ease of Use	4,04	0,51	167
Attitude toward the Use	3,99	0,51	167
Age	33,72	0,51	162

As Table 4.9 shows, means and standard deviations of the participants regarding technology acceptance factors were close to each other.

Table 4.10.

Correlation Scores of Age and Participants'Perceived Usefulness, Perceived Ease of Use, Attitudes toward the Use of LMS - Correlation Table

		Perceived Usefulness	Perceived Ease of Use	Attitude toward the Use
Age	Pearson Correlation	0,202**	-0,036	0,077
	Sig. (2-tailed)	0,10	0,651	0,330
	N	162	162	162

***. Correlation is significant at the 0.01 level (2-tailed)*

As Table 4.10 indicates, there were no significant correlation between the participants' ages and perceived ease of use of LMS and attitude toward the use of LMS. On the other hand, the correlation between age and perceived usefulness of LMS was significant (r = 0.202). There found little correlation between age and perceived usefulness of LMS and in order to make further analysis, ANOVA was decided to be conducted. The ages of participants were categorized for the ANOVA analysis, yet three sub groups regarding the intervals as 36-40, 51-55 and 56-60 were excluded from the analysis due to their small sizes.

Table 4.11.

Participants' Perceived Usefulness, Perceived Ease of Use, and Attitudes toward the use of LMS Scores in terms of their Age Ranges

LMS Acceptance Factors	Age	N	Mean	Std. Deviation
Perceived Usefulness	20-25	14	4,15	0,48
	26-30	74	3,96	0,55
	31-35	20	4,03	0,52
	41-45	18	4,46	0,50
	46-50	22	4,15	0,51
Perceived Ease of Use	20-25	14	4,01	0,43
	26-30	74	4,06	0,51
	31-35	20	3,93	0,56
	41-45	18	4,19	0,51
	46-50	22	3,96	0,55
Attitudes toward the Use of LMS	20-25	14	4,01	0,45
	26-30	74	3,94	0,48
	31-35	20	3,89	0,59
	41-45	18	4,25	0,53
	46-50	22	3,95	0,52

As Table 4.11 shows, standard deviations of the subgroups are very close to each other.

Table 4.12.

Participants' Perceived Usefulness, Perceived Ease of Use, and Attitudes toward the use of LMS Scores in terms of their Age - ANOVA Table

		Sum of Squares	df	Mean Square	F	Sig.
Participants' Perceived Usefulness of LMS	Between Groups (Combined)	4,009	4	1,002	3,596	0,008
	Within Groups	39,852	143	0,279		
	Total	43,860	147			
Participants' Perceived Ease of Use of LMS	Between Groups (Combined)	0,806	4	0,202	0,754	0,557
	Within Groups	38,241	143	0,267		
	Total	39,047	147			
Participants' Attitudes toward the Use of LMS	Between Groups (Combined)	1,603	4	0,401	1,560	0,118
	Within Groups	36,725	143	0,257		
	Total	38,328	147			

Table 4.12 shows that there were no significant differences across the sub groups in terms of perceived ease of use of LMS and attitudes toward the use of LMS. On the other hand, there was a significant difference with regard to the perceived usefulness of LMS. F (4,143) = 3,60, p = 0,008. In order to analyze pair wise differences, Post Hoc Tests were conducted. Since the assumption of equal variances were realized, Tukey test results were used which indicated that there was a statistically mean difference between the participants who were between 26 and 30 years old (n = 74, μ = 3,96) and participants who were

between 41 and 45 years old (n= 18, μ = 4,46). Since the mean of the latter group was very high, the participants' between the ages 26 and 30 perceptions about the usefulness of LMS was found significantly less than the participants' between the ages 41 and 45.

4.2.2 Effects of Department Managers and Office Users' Individual Differences on the Acceptance of LMS

In this section, the effects of individual differences of the department managers and office users on the acceptance of the LMS were investigated. ANOVA was conducted to investigate the effect of gender of department managers and office users on the acceptance of LMS while correlation analysis was used to examine the effect of age on the acceptance of LMS. In each ANOVA, the independent variable was one of the two individual characteristics (age, and gender) and the dependent variables were the factors of LMS acceptance, which are perceived usefulness of LMS, perceived ease of use of LMS, and attitude toward the use of LMS. 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.

4.2.2.1 The Effect of Department Managers and Office Users' Gender on the Acceptance of LMS

A one-way analysis of variance was conducted to investigate the effect of department managers and office users' gender on their acceptance of LMS.

Table 4.13.

Department Managers and Office Users' Perceived Usefulness, Perceived Ease of Use, and Attitudes toward the use of LMS Scores in terms of their Gender

LMS Acceptance Factors	Gender	N	Mean	Std. Deviation
Perceived Usefulness	Female	17	3,88	0,80
	Male	47	4,14	0,58
Perceived Ease of Use	Female	17	3,70	0,79
	Male	47	3,92	0,55
Attitudes toward the Use of LMS	Female	17	3,82	0,66
	Male	47	3,96	0,54

As Table 4.13 shows, the means and the standard deviation of the LMS acceptance factors of females and males are close to each other.

Table 4.14.

Department Managers and Office Users' Perceived Usefulness, Perceived Ease of Use, and Attitudes toward the Use of LMS Scores in terms of their Gender - ANOVA Table

		Sum of Squares	df	Mean Square	F	Sig.
Department Managers and Office Users' Perceived Usefulness of LMS	Between Groups (Combined)	0,874	1	0,874	2,094	0,153
	Within Groups	25,872	62	0,417		
	Total	26,745	63			
Department Managers and Office Users' Perceived Ease of Use of LMS	Between Groups (Combined)	0,603	1	0,603	1,570	0,215
	Within Groups	23,791	62	0,384		
	Total	24,393	63			
Department Managers and Office Users' Attitudes toward the Use of LMS	Between Groups (Combined)	0,241	1	0,241	0,731	0,396
	Within Groups	20,433	62	0,330		
	Total	20,674	63			

As Table 4.14 shows, there were no significant differences between male and female department managers and office users with respect to their perceived usefulness of LMS, perceived ease of use of LMS, and attitude toward the use of LMS.

4.2.2.2 The Effect of Department Managers and Office Users' Age on the Acceptance of LMS

In this section the correlation between department managers and office users' ages and the LMS acceptance factors was analyzed.

Table 4.15.

Descriptive Analysis of Department Managers and Office Users' Perceived Usefulness, Perceived Ease of Use, Attitudes toward the Use of LMS, and their Ages

	Mean	Std. Deviation	N
Perceived Usefulness	4,07	0,65	64
Perceived Ease of Use	3,86	0,62	64
Attitude toward the Use	3,92	0,57	64
Age	46,81	6,87	63

As Table 4.15 shows, means and standard deviations of the participants regarding technology acceptance factors were close to each other.

Table 4.16.

Correlation Scores of Age and Department Managers and Office Users' Perceived Usefulness, Perceived Ease of Use, Attitudes toward the Use of LMS - Correlation Table

		Perceived Usefulness	Perceived Ease of Use	Attitude toward the Use
Age	Pearson Correlation	0,152	0,046	0,073
	Sig. (2-tailed)	0,234	0,722	0,571
	N	63	63	63

Table 4.16 shows that there were no significant correlation between the age of department managers and office users and the LMS acceptance factors.

4.3 Effects of Organization Related Individual Differences on the Acceptance of LMS

The effects of organization related individual differences on LMS acceptance in the CBRT will be analyzed in this section. Analyzes were conducted among "participants" and "department managers and office users" separately.

4.3.1 Effects of Participants' Organization Related Individual Differences on the Acceptance of LMS

Throughout this section, the effects of organization related individual differences of the participants on the acceptance of the LMS will be investigated. Two one-way analysis of variance were conducted to investigate the effects of title and department of participants on the acceptance of LMS while correlation analysis and when needed, ANOVA were used to examine the effect of seniority

on the acceptance of LMS. In each ANOVA, the independent variable was one of the three organization related individual characteristics (seniority, title and department) and the dependent variables were the factors of LMS acceptance, which are perceived usefulness of LMS, perceived ease of use of LMS, and attitude toward the use of LMS. 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.

4.3.1.1 The Effect of Participants' Seniority on the Acceptance of LMS

The correlation between participants' seniority (continuous data) and the LMS acceptance factors was analyzed.

Table 4.17.

Descriptive Analysis of Participants' Perceived Usefulness, Perceived Ease of Use, Attitudes toward the Use of LMS, and their Seniority

	Mean	Std. Deviation	N
Perceived Usefulness	4,09	0,53	167
Perceived Ease of Use	4,04	0,51	167
Attitude toward the Use	3,99	0,51	167
Seniority (years)	9,56	9,35	166

Table 4.18.

Correlation Scores of Seniority and Participants' Perceived Usefulness, Perceived Ease of Use, Attitudes toward the Use of LMS - Correlation Table

		Perceived Usefulness	Perceived Ease of Use	Attitude toward the Use
Seniority	Pearson Correlation	0,264**	0,016	0,128
	Sig. (2-tailed)	0,001	0,837	0,101
	N	166	166	166

***. Correlation is significant at the 0.01 level (2-tailed)*

As Table 4.18 indicates, there were no significant correlation between the participants' seniority and perceived ease of use of LMS and attitude toward the use of LMS. On the other hand, the correlation between seniority and perceived usefulness of LMS was significant (r = 0.264). There found little correlation. For further analysis, ANOVA was conducted. The seniority of participants were categorized for the ANOVA analysis, yet three sub groups regarding intervals as 11-15, 16-20 and 26-30 were excluded from the analysis due to their small sizes.

Table 4.19.

Participants' Perceived Usefulness, Perceived Ease of Use, and Attitudes toward the Use of LMS Scores in terms of their Seniority

LMS Acceptance Factors	Seniority	N	Mean	Std. Deviation
Perceived Usefulness	1-5	95	4,00	0,50
	6-10	12	3,86	0,82
	21-25	35	4,36	0,53
Perceived Ease of Use	1-5	95	4,06	0,49
	6-10	12	3,78	0,71
	21-25	35	4,09	0,60
Attitudes toward the Use of LMS	1-5	95	3,95	0,46
	6-10	12	3,90	0,72
	21-25	35	4,13	0,58

Table 4.20.

Participants' Perceived Usefulness, Perceived Ease of Use, and Attitudes toward the Use of LMS Scores in terms of their Seniority - ANOVA Table

		Sum of Squares	df	Mean Square	F	Sig.
Participants' Perceived Usefulness of LMS	Between Groups (Combined)	3,908	2	1,954	6,730	0,002
	Within Groups	40,359	139	0,290		
	Total	44,267	141			
Participants' Perceived Ease of Use of LMS	Between Groups (Combined)	0,949	2	0,474	1,636	0,199
	Within Groups	40,300	139	0,290		
	Total	41,249	141			
Participants' Attitudes toward the Use of LMS	Between Groups (Combined)	0,959	2	0,479	1,797	0,170
	Within Groups	37,062	139	0,267		
	Total	38,020	141			

As the ANOVA table above indicates, there were no significant differences across the sub groups in terms of perceived ease of use of LMS and attitudes toward the use of LMS. On the other hand, there was a statistically significant difference with regard to the perceived usefulness of LMS. F (2,139) = 6,73, p = 0,002. In order to analyze pair wise differences, Post Hoc Tests were conducted the results of which indicated that there was a statistically mean difference between the participants in the sub group having 1-5 years seniority (n = 95, μ = 4,00) and participants in the subgroup having 21-25 years seniority (n = 35, μ = 4,36). The mean of the latter group was high, and the participants having seniority between 1 and 5 found LMS less useful than the participants

having seniority between 21 and 25. Furthermore, there was a statistically mean difference between the participants in the sub group having 6-10 years seniority ($n = 12$, $\mu = 3,86$) and participants in the subgroup having 21-25 years seniority ($n = 35$, $\mu = 4,36$). The mean of the latter group was high, and the participants having seniority between 6 and 10 found LMS less useful than the participants having seniority between 21 and 25.

4.3.1.2 The Effect of Participants' Title on the Acceptance of LMS

A one-way analysis of variance was conducted to investigate the effect of participants' title on their acceptance of LMS. Since some title groups' size is very small, categorization was done among the titles. Expert opinion and organizational structure were taken into consideration during this process. The experts, expert assistants, computer experts, and system experts were categorized in one group as "experts". On the contrary, technicians, operators, cashiers and security staff could not be grouped in a group. And, since their ungrouped sizes were too small to conduct the mean differences, they were excluded from the analysis. Finally, the ANOVA test was conducted across the sub groups as "Officers", "Chief Assist.", "Chiefs", "Department Chiefs", and "Experts".

Table 4.21.

Participants' Perceived Usefulness, Perceived Ease of Use, and Attitudes toward the Use of LMS Scores in terms of their Title

LMS Acceptance Factors	Title	N	Mean	Std. Deviation
Perceived Usefulness	Officers	90	4,01	0,49
	Chief Assistants	13	4,02	0,87
	Chiefs	14	4,34	0,58
	Department Chiefs	15	4,24	0,49
	Experts	17	4,05	0,47
Perceived Ease of Use	Officers	90	4,02	0,51
	Chief Assistants	13	3,88	0,73
	Chiefs	14	4,05	0,58
	Department Chiefs	15	4,13	0,48
	Experts	17	4,11	0,51
Attitudes toward the Use of LMS	Officers	90	3,94	0,49
	Chief Assistants	13	3,88	0,77
	Chiefs	14	4,03	0,57
	Department Chiefs	15	4,10	0,47
	Experts	17	4,14	0,42

As Table 4.21 shows, means and standard deviation are close to each other.

Table 4.22.

Participants' Perceived Usefulness, Perceived Ease of Use, and Attitudes toward the use of LMS Scores in terms of their Title - ANOVA Table

		Sum of Squares	df	Mean Square	F	Sig.
Participants' Perceived Usefulness of LMS	Between Groups (Combined)	1,743	4	0,436	1,511	0,202
	Within Groups	41,528	144	0,288		
	Total	43,271	148			
Participants' Perceived Ease of Use of LMS	Between Groups (Combined)	0,578	4	0,144	0,505	0,732
	Within Groups	41,154	144	0,286		
	Total	41,732	148			
Participants' Attitudes toward the Use of LMS	Between Groups (Combined)	0,969	4	0,242	0,911	0,459
	Within Groups	38,287	144	0,266		
	Total	39,257	148			

Table 4.22 shows that there were no significant differences across the sub groups in terms of perceived usefulness of LMS, perceived ease of use of LMS and attitudes toward the use of LMS according to the titles of the participants.

4.3.1.3 The Effect of Participants' Departments on the Acceptance of LMS

A one-way analysis of variance was conducted to investigate the effect of participants' departments on their acceptance of LMS. The departments in the CBRT were categorized into two major groups as Head Office and Branches.

Table 4.23.

Participants' Perceived Usefulness, Perceived Ease of Use, and Attitudes toward the Use of LMS Scores in terms of their Departments

LMS Acceptance Factors	Department	N	Mean	Std. Deviation
Perceived Usefulness	Head Office	58	4,03	0,50
	Branches	108	4,12	0,55
Perceived Ease of Use	Head Office	58	3,98	0,50
	Branches	108	4,07	0,52
Attitudes toward the Use of LMS	Head Office	58	4,00	0,47
	Branches	108	3,99	0,53

As Table 4.23 illustrates, means and standard deviation are close to each other.

Table 4.24.

Participants' Perceived Usefulness, Perceived Ease of Use, and Attitudes toward the Use of LMS Scores in terms of their Departments - ANOVA Table

		Sum of Squares	df	Mean Square	F	Sig.
Participants' Perceived Usefulness of LMS	Between Groups (Combined)	0,356	1	0,356	1,252	0,265
	Within Groups	46,573	164	0,284		
	Total	46,928	165			
Participants' Perceived Ease of Use of LMS	Between Groups (Combined)	0,294	1	0,294	1,107	0,294
	Within Groups	43,601	164	0,266		
	Total	43,896	165			
Participants' Attitudes toward the Use of LMS	Between Groups (Combined)	2,733E-03	1	2,733E-03	0,01	0,919
	Within Groups	43,028	164	0,262		
	Total	43,031	165			

As the ANOVA table indicated, there were no significant differences across the sub groups in terms of participants' perceived usefulness of LMS, perceived ease of use of LMS and attitudes toward the use of LMS according to the participants' departments.

4.3.2 Effects of Department Managers and Office Users' Organization Related Individual Differences on the Acceptance of LMS

In this section, the effects of organization related individual differences of the department managers and office users' on the acceptance of the LMS will

be investigated. Three one-way analysis of variance were conducted to investigate the effects of seniority, title and department of department managers and office users on the acceptance of LMS. In each ANOVA, the independent variable was one of the three organization related individual characteristics (seniority, title and department) and the dependent variables were the factors of LMS acceptance, which are perceived usefulness of LMS, perceived ease of use of LMS, and attitude toward the use of LMS. 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.

4.3.2.1 The Effect of Department Managers and Office Users' Seniority on the Acceptance of LMS

In this section the correlation between department managers and office users' seniority and the LMS acceptance factors was analyzed.

Table 4.25.

Descriptive Analysis of Department Managers and Office Users' Perceived Usefulness, Perceived Ease of Use, Attitudes toward the Use of LMS, and their Seniority

	Mean	Std. Deviation	N
Perceived Usefulness	4,07	0,65	64
Perceived Ease of Use	3,86	0,62	64
Attitude toward the Use	3,92	0,57	64
Seniority (years)	22,16	7,56	63

As Table 4.25 shows, means and standard deviations of the participants regarding technology acceptance factors were close to each other.

Table 4.26.

Correlation Scores of Seniority and Department Managers and Office Users' Perceived Usefulness, Perceived Ease of Use, Attitudes toward the Use of LMS - Correlation Table

		Perceived Usefulness	Perceived Ease of Use	Attitude toward the Use
Seniority	Pearson Correlation	0,193	-0,036	-0,014
	Sig. (2-tailed)	0,129	0,782	0,910
	N	63	63	63

Table 4.26 shows that there were no significant correlation between the seniority of department managers and office users and the LMS acceptance factors.

4.3.2.2 The Effect of Department Managers and Office Users' Title on the Acceptance of LMS

A one-way analysis of variance was conducted to investigate the effect of department managers and office users' title on their acceptance of LMS. Since some sub groups' size is very small, new categorization was done among titles of the department managers and office users. Expert opinion and organization related individual structure was taken into consideration during this process. The system experts, training experts, computer teacher, and training researchers were categorized in one group. One department chief was excluded from the analysis since there was no appropriate group for this title. Finally, the ANOVA test was

conducted across the sub groups as “General Manager Assistants”, “Managers”, “Manager Assistants”, and “Experts”.

Table 4.27.

Department Managers and Office Users’ Perceived Usefulness, Perceived Ease of Use, and Attitudes toward the Use of LMS Scores in terms of their Title

LMS Acceptance Factors	Title	N	Mean	Std. Deviation
Perceived Usefulness	General Manager Assistants	7	4,02	0,52
	Managers	27	3,97	0,78
	Manager Assistants	22	4,28	0,36
	Experts	7	4,10	0,72
Perceived Ease of Use	General Manager Assistants	7	3,95	0,46
	Managers	27	3,66	0,69
	Manager Assistants	22	4,00	0,54
	Experts	7	4,03	0,66
Attitudes toward the Use of LMS	General Manager Assistants	7	3,91	0,45
	Managers	27	3,80	0,64
	Manager Assistants	22	4,02	0,52
	Experts	7	4,04	0,64

As Table 4.27 illustrates, means and standard deviation are close to each other.

Table 4.28.

Department Managers and Office Users' Perceived Usefulness, Perceived Ease of Use, and Attitudes toward the Use of LMS Scores in terms of their Title - ANOVA Table

		Sum of Squares	df	Mean Square	F	Sig.
Department Managers and Office Users' Perceived Usefulness of LMS	Between Groups (Combined)	1,275	3	0,425	1,082	0,364
	Within Groups	23,177	59	0,393		
	Total	24,451	62			
Department Managers and Office Users' Perceived Ease of Use of LMS	Between Groups (Combined)	1,787	3	0,596	1,569	0,207
	Within Groups	22,401	59	0,380		
	Total	24,188	62			
Department Managers and Office Users' Attitudes toward the Use of LMS	Between Groups (Combined)	0,728	3	0,243	0,718	0,545
	Within Groups	19,940	59	0,338		
	Total	20,668	62			

Table 4.28 shows that there were no significant differences across the sub groups in terms of department managers and office users' perceived usefulness of LMS, ease of use of LMS and attitudes toward the use of LMS according to their title.

4.3.2.3 The Effect of Department Managers and Office Users' Departments on the Acceptance of LMS

A one-way analysis of variance was conducted to investigate the effect of department managers and office users' departments on their acceptance of LMS. The departments in the CBRT were categorized into two groups as Head Office and Branches likewise the departments of participants.

Table 4.29.

Department Managers and Office Users' Perceived Usefulness, Perceived Ease of Use, and Attitudes toward the Use of LMS Scores in terms of their Departments

LMS Acceptance Factors	Department	N	Mean	Std. Deviation
Perceived Usefulness	Head Office	34	3,86	0,76
	Branches	29	4,33	0,38
Perceived Ease of Use	Head Office	34	3,66	0,66
	Branches	29	4,09	0,50
Attitudes toward the Use of LMS	Head Office	34	3,77	0,60
	Branches	29	4,11	0,50

Table 4.30.

Department Managers and Office Users' Perceived Usefulness, Perceived Ease of Use, and Attitudes toward the Use of LMS Scores in terms of their Departments - ANOVA Table

		Sum of Squares	df	Mean Square	F	Sig.
Department Managers and Office Users' Perceived Usefulness of LMS	Between Groups (Combined)	3,447	1	3,447	9,028	0,004
	Within Groups	23,292	61	0,382		
	Total	26,740	62			
Department Managers and Office Users' Perceived Ease of Use of LMS	Between Groups (Combined)	2,924	1	2,924	8,310	0,005
	Within Groups	21,462	61	0,352		
	Total	24,385	62			
Department Managers and Office Users' Attitudes toward the Use of LMS	Between Groups (Combined)	1,781	1	1,781	5,793	0,019
	Within Groups	18,752	61	0,307		
	Total	20,533	62			

As the ANOVA table indicated, there were significant differences with regard to the department managers and office users' perceived usefulness of LMS, ease of use of LMS, and attitudes toward the use of LMS.

According to the results, there was statistically mean difference between the department managers and office users working in the Head Office (n = 34, μ

= 3,86), and department managers and office users working in the Branches (n = 29, μ = 4,33) with regard to their perceived usefulness of LMS. *F* (1,61) = 9,03, p = 0,004. Staff in the Head Office considered LMS less useful than the staff in Branches.

Another significant mean difference was between the department managers and office users working in the Head Office (n = 34, μ = 3,66), and department managers and office users working in the Branches (n = 29, μ = 4,09) with regard to their perceived ease of use of LMS. *F* (1,61) = 8,31, p = 0,005. Staff in the Head Office considered the use of LMS more difficult than the staff in Branches.

Finally, there found significant mean difference between the department managers and office users working in the Head Office (n = 34, μ = 3,77), and department managers and office users working in the Branches (n = 29, μ = 4,11) with regard to their attitudes toward the use of LMS. *F* (1,61) = 5,79, p = 0,019. Staff's attitudes toward the use of LMS in the Branches were more positive than the staff in Head Office.

4.3.2.4 The Effect of Role Groups of Users on the Acceptance of LMS

The effects of role groups on LMS acceptance in the CBRT were analyzed in this section. Analyzes were conducted between "participants" and "department managers and office users". Since the items for perceived usefulness and perceived ease of use of LMS were different in the "Questionnaire of LMS Participants" and "Questionnaire of LMS Department Managers and Office Users", this analyze was conducted with the items in "Attitude toward the use of LMS" sections of the questionnaires.

Table 4.31.

LMS Users' Attitudes toward the Use of LMS Scores in terms of their Role Groups

LMS Acceptance Factors	Role Groups	N	Mean	Std. Deviation
Attitudes toward the Use of LMS	Participants	167	3,97	0,51
	Department Managers and Office Users	64	3,89	0,58

Table 4.32.

LMS Users' Attitudes toward the Use of LMS Scores in terms of their Role Groups - ANOVA Table

		Sum of Squares	df	Mean Square	F	Sig.
LMS Users' Attitudes toward the Use of LMS	Between Groups (Combined)	0,279	1	0,279	0,991	0,320
	Within Groups	64,483	229	0,282		
	Total	64,762	230			

Table 4.32 shows that there was no significant difference between the role groups of LMS in terms of attitudes toward the use of LMS.

4.4 Summary of Results

In this sub section, the summary of the results regarding the significantly different cases in ANOVA anaysis was illustrated.

Table 4.33.

Summary of Results Table - ANOVA Table

		Sum of Squares	df	Mean Square	F	Sig.
Participants' Perceived Usefulness of LMS in terms of Their Age	Between Groups (Combined)	4,009	4	1,002	3,596	0,008
	Within Groups	39,852	143	0,279		
	Total	43,860	147			
Participants' Perceived Usefulness of LMS in terms of Their Seniority	Between Groups (Combined)	3,908	2	1,954	6,730	0,002
	Within Groups	40,359	139	0,290		
	Total	44,267	141			
Dept. Managers and Office Users' Perceived Usefulness of LMS in terms of their Depts.	Between Groups (Combined)	3,447	1	3,447	9,028	0,004
	Within Groups	23,292	61	0,382		
	Total	26,740	62			
Dept. Managers and Office Users' Perceived Ease of Use of LMS in terms of their Depts.	Between Groups (Combined)	2,924	1	2,924	8,310	0,005
	Within Groups	21,462	61	0,352		
	Total	24,385	62			
Dept. Managers and Office Users' Attitudes toward the Use of LMS in terms of their Depts.	Between Groups (Combined)	1,781	1	1,781	5,793	0,019
	Within Groups	18,752	61	0,307		
	Total	20,533	62			

CHAPTER 5

CONCLUSION AND DISCUSSION

Throughout the final chapter, conclusions of the study, discussions for the results, and implications for practice and further research were presented.

5.1 Conclusions

The purpose of this study is to investigate the effects of the individual and organization related individual differences of Bank employees on their acceptance of institutional web based LMS. The study also aims to find out whether there are differences in the perceived usefulness, perceived ease of use, and attitudes toward the use of LMS in terms of their individual and organization differences such as gender, age, seniority, title, department, and LMS role group. Furthermore, the study aims to find out what kind of reasons may cause the "significantly different" cases in the study, and what kind of activities and adjustments can be done to improve the LMS acceptance of the sub groups, which reflect lower scores in these cases and generally in the Bank.

Due to the different LMS role groups namely participants and department managers and office users in the system, investigations were conducted within the same LMS role group. The first main research question was "What is the effect of the CBRT's employees' individual differences such as gender, and age on their acceptance of LMS of the Bank?". There were six sub questions related to this main question and the answers were searched through a consideration of

perceived usefulness of LMS, perceived ease of use of LMS, and attitudes toward the use of LMS regarding gender and age of employees. The answers of the sub questions were expected to give the answer to the main question. Among the *participants*, it was found that age affected participants' LMS acceptance by only affecting their perceived usefulness of LMS, not the other factors. There is little positive correlation between the age and perceived usefulness scores of participants. As the ages of participants increase in the sample, the scores of perceived usefulness of LMS increase. According to the results of further investigation across categorized sub groups, it was found that the participants, who were between 26 and 30 years old, have lower perceptions about usefulness of LMS than the participants between 41 and 46 years old. The reasons why younger participants consider LMS less useful might be due to the higher expectations of the younger staff, which will be discussed in the following "Discussion" section. On the other hand, among the *department managers and office users*, it was found that neither gender nor age affects their LMS acceptance.

The second main research question was "What is the effect of the CBRT's employees' organization related individual differences such as seniority, title, department, and LMS role group on their acceptance of LMS of the Bank?". There were seven sub questions related to this main question and the answers were searched through a consideration of perceived usefulness of LMS, perceived ease of use of LMS, and attitudes toward the use of LMS regarding seniority, title, department, and LMS role group of employees. Among the *participants*, it was found that seniority affected participants' LMS acceptance by affecting only their perceived usefulness of LMS, not the other factors. There is little positive correlation between the seniority and perceived usefulness scores of participants. Likewise the age, as the seniority of participants increase in the sample, the scores of perceived usefulness of LMS increase. According to the result of further investigation across categorized sub groups, it was found that the participants, who have seniority between 1 and 5 years, have lower perceptions

about usefulness of LMS than the participants, having seniority between 21 and 25 years. Also, participants, who have seniority between 6 and 10 years, have lower perceptions about usefulness of LMS than the participants, having seniority between 21 and 25 years. The reasons why lower level participants consider LMS less useful might be due to the lack information that may help them to compare the previous and current systems. These reasons will be discussed in the following "Discussion" section. Additionally, among *the department managers and office users*, it was found that department managers and office users' departments affected LMS acceptance by affecting their perceived usefulness, perceived ease of use, and attitude toward the use of LMS. Staff in the Head Office considered LMS less useful and more difficult than the staff in Branches in the sample. Besides, regarding attitudes toward the use of LMS, staff working in the Head Office is less positive than the staff working in Branches. The reasons of these significantly different cases will be discussed in detailed in the following "Discussion" section. And according to the result of final sub question, no effect of LMS role group on the acceptance of LMS was found between the participants and department and office users in terms of attitude toward the use of LMS.

Finally the third major research question was "What kind of reasons may cause the "significantly different" cases in the study, and what kind of activities and adjustments can be done to improve the LMS acceptance of the sub groups which reflect lower scores in these cases and generally in the Bank?". According to the participators of the interview, the reason (voted with highest points) why department managers and office users in Head Office considered LMS less useful than the staff in Branches might be due to hierarchical structure regarding LMS operations. The Head Office Units have more steps to complete the required operations in LMS than Branches, which might effect the perceptions and attitudes of department managers in the Head Office. Next, the reasons why department managers and office users in Head Office considered LMS more difficult than the staff in Branches might be due to the organizational conditions

(number of managers in the Head Office Unit), which might prevent them to get help about the usage of LMS frequently. On the other hand, in the Branches, there are at most 3 managers and manager assistants, and almost all of them can get help and feedback about the usage of LMS from the Training and Development Division. Finally, regarding attitudes toward the use of LMS, the reasons why staff working in the Head Office is less positive than the staff working in Branches might be due to the technical problems in the information systems infrastructure which effect the LMS operations in the Head Office Units. Also, some of the activities and adjustments that may be performed in order to improve the acceptance of LMS of department managers and office users in Head Office are assigning one to three people who will be responsible of the whole unit's LMS operations in the Head Office, solving the technical problems rapidly in case any occurs in the information system infrastructure, preparing an advertisement and a training packet regarding the usage of LMS, improving current LMS guide with adding interactive features to it in electronic environment.

On the other hand, according to the participators of the interview, the reasons why younger and lower level participants considered LMS less useful might be due to the higher expectations of the younger and lower level participants who additionally have little information to compare the previous and current systems. Conversely, the older and senior participants have the opportunity to compare the current system with the previous work flows in the Bank. And, the activities and adjustments that may be performed in order to improve the acceptance of LMS of younger participants is to improve the features of LMS for the participators by developing LMS Module-3.

5.2 Discussion

The research of e-learning has evolved passing through some stages in the meantime. During the emergence of e-learning, the interest was focused on

the comparison of web based and online education applications with the traditional face to face education. Much of the research on e-learning compared the outcomes of these two approaches and investigated anecdotal experiences of learners and teachers (Carswell & Venkatesh, 2002) (as cited in Pituch & Lee, 2006). And, since e-learning systems are increasingly being used; the need of theory based research has arisen. In this manner, the studies have concentrated on developing principles and quality checklists for e-learning systems, while assessment, design, development, and evaluation stages of such systems were considered in details (Wagner, 1999).

Recently, there have been some studies, which consider e-learning implementations in terms of diffusion of innovations, and at this point, Roger's (2003) diffusion of innovations theory provides a useful framework for educational technology implementations. Indeed, the superiority of the technologies and excellent designs do not always guarantee the success of technology-based systems in educational contexts. Unless the users accept and use the system, the systems, meeting the high standards, can be useless. Therefore, user acceptance and actual usage of these systems gain importance.

Accordingly, this study tries to point out the importance of combining educational technologies and diffusion theories to assess technology acceptance, and predict the future usage of such technologies. In particular, in this study, the determinants and factors of technology acceptance are investigated within TAM, which is a variant of diffusion theories. TAM provides a well-respected and flexible model for the examination of external variables as the determinants and perceived usefulness, perceived ease of use, attitude toward the use of, and actual usage of the technology as the technology acceptance factors.

In this study, it has been tried to shed light on individual and organization related individual differences as determinants of technology acceptance factors of web based institutional LMS in the CBRT. In fact, there are studies in information systems examining some of these external variables as determinants. For example, the findings of the study (Buron-Jones & Hubana, 2005)

demonstrate that staff seniority, age and education level affect technology acceptance, and the study emphasizes the importance of the individual differences on the actual usage of the target system. According to Hodgson and Aiken (1998), the empirical research demonstrated that attitudes toward 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. Further, demographic variables such as age, position in a company and the length of employment were found significant contributors to acceptance of a Bank's Treasury (Adamson & Shine, 2003). And, accordingly, in this thesis study, the set of individual and organization related individual differences were considered as gender, age, educational background, seniority, title, department and LMS role group.

Among these variables the most popular one is the variable of gender, which has been investigated separately and repeatedly in various studies. There are many studies examine gender's effect on technology acceptance in information systems while not many studies particularly deal with the LMS acceptance. The study conducted by Ong and Lai (2006) found that men's perceived usefulness, perceived ease of use, and behavioral intention to use e-learning are all higher than women's. On the other hand, Morris, Venkatesh and Ackerman (2005) suggest that old stereotypes which represent technology as a male-oriented domain may be disappearing especially in younger employees. Actually, whether gender affects the acceptance of technology in educational contexts or not is still on debate.

If the variables different from gender are examined, there are not many specific studies in the literature for the other individual differences such as age, title, seniority, department, and LMS role, yet there are assumptions related to these variables. Below, the findings of this study will be discussed regarding those assumptions as far as they meet the case.

The study separated the users of LMS in the CBRT according to their LMS roles. Participants of LMS were considered as one major group and

department managers in the Head Office and Branches and office users in the Training and Development Division were considered as second major group since both department managers and office users deal with the organization and management of the training programs.

According to the survey conducted among *participants* in the sample*;* gender, title, department as external variables did not affect the LMS acceptance while age and seniority had effect on acceptance in terms of perceived usefulness of LMS. As discussed above, arguments about gender have still continued and the effect of gender on target system acceptance might depend on the case. Therefore, this finding of the study about the gender is acceptable. On the other hand, since title indirectly reflects the educational level in the CBRT, its not affecting the acceptance might be an unexpected result in the participants' survey. In the literature, it is assumed that the education level positively related with the perceived usefulness of the system (Garson, 2006). And also, the finding that departments of participants did not affect the LMS acceptance might be acceptable since the result depends on the case. The departments in the CBRT were categorized into two as Head Office in Ankara, and Branches in other cities in Turkey. Although in the literature it is assumed that diffusion (therefore acceptance) is faster in urban than in rural settings (Garson, 2006), the categorization in the CBRT might not fit this model since the Branches category includes both urban and rural settings. And finally, the findings of participants' survey demonstrated that as age and seniority increased, the perceptions of participants about the usefulness of LMS were increased. Similarly, Buron-Jones and Hubana (2005) found in their study that senior staff perceived the target system (in their study, it is e-mail system) to be more useful than the lower level staff. This might be due to the task and technology fit in that case. Whether the senior or the lower level staff's perceptions will be higher regarding the usefulness of the target system depends on the task-technology fit. Therefore, since the older and senior participants know the previous work flow and previous "technology" of the Bank, they consider LMS more realistically. Yet, from

another perspective, this result might be due to the higher expectations of the younger and lower level participants about the LMS usefulness. Since the younger and lower level staff is assumed to be more technology oriented, they might expect higher-level usefulness of LMS. Further, the lack of information about the previous workflows regarding training issues in the Bank might make their expectations be higher.

Next, according to the survey conducted among department managers and *office users* in the sample; gender, age, title, and seniority as external variables did not affect the LMS acceptance while department had effect on acceptance in terms of perceived usefulness, perceived ease of use and attitude toward the use of LMS. As discussed in the participants' survey, the finding that gender had no effect on LMS acceptance might be acceptable. Likewise, the findings about age, title, and seniority are also acceptable since different from the participants, the ages, titles, and seniorities are grouped in few close sub groups in the survey of department managers and office users. On the other hand, the effect of department on the LMS acceptance is an interesting finding in this survey. As mentioned above, the departments in the CBRT were categorized into two as Head Office in Ankara, and Branches in other cities in Turkey. The findings represented that Head Office staff considered LMS less useful and more difficult than the staff in Branches and regarding attitudes toward the use of LMS, staff working in the Head Office is less positive than the staff working in Branches. Indeed, this is an unexpected result due to the literature assumptions as:

- The closer a unit is to an adopter, the more likely it is to adopt itself,
- The larger and/or more important the unit, the more likely it is to be an early adopter,
- The more strategic the goals of the unit, the more likely it is to be an early adopter,
- Diffusion is faster in diverse than in homogenous settings (Garson, 2006, p. 5).

Following the order of the assumptions above, since The Head Office staff are closer to the Training and Development Division which is the initiator of LMS, since the Head Office Units are larger and more important in the Bank regarding dealing with the principal tasks of the Bank, since Head Office Units have more strategic goals than the Branches have, and since the diversity in Head Office is more than the diversity in Branches, the findings are unexpected. On the other hand, as the participants of the interview reflected, the difference between hierarchical structures in virtual environment regarding LMS operations in Head Office Units and Branches might cause such findings. Further, the number people that deal with LMS also might affect the acceptance. In Branches there are only up to 3 managers and manager assistants who deal with the quota, enrollment and training approval operations of LMS. In contrast, in the units of Head Office, there are general managers, general manager assistants and approximately five department managers who deal with the LMS management operations. Therefore, since the hierarchy in both virtual environment and organizational structure in the Head Office is more complex than in the Branches, the scores about the LMS of Head Office are lower. According to the informative notes that some of the department managers wrote in their questionnaire, the staff in Head Office expected that LMS would decrease the bureaucracy compared with the previous processes and operations about training issues. On the other hand, initial impression of department managers in the Head Office Units about LMS might be different from this expectation.

Finally, in terms of the LMS roles, there found no significant difference between *participants* and *department managers and office users* regarding the attitude toward the use of LMS. Both groups have positive attitudes toward the LMS usage, and this result was expected due to the feedback of the users about LMS during the official applications.

5.3 Implications for Practice

This study presented the profile of employees in the CBRT, in terms of their individual and organization related individual differences and their web based institutional LMS acceptance. The results indicated that, both participants and department managers and office users have high level LMS acceptance in terms of the acceptance factors which are perceived usefulness, perceived ease of use and attitude toward the use of LMS.

According to the findings, there seem two issues that could be intervened. To begin with, lower level and younger participants considered LMS less useful. One of the reasons of this situation might be due to their higher expectations. Therefore, the findings might imply that if the LMS usefulness were improved in terms of the functions and features for the participants of LMS, their perceptions about the LMS usefulness could have improved as well. Actually, before the design and development of LMS, the initial purpose of developing an institutional LMS was to serve online courses and instructional materials through the system. Then during the planning phase, the development stages were considered as modules. As previously mentioned, these modules are Module – 1 which is for the collection of the training requests of the Bank employees, Module – 2 which comprises several operations for the organization and management of the training programs, and Module – 3 through which online courses and e-learning material is planned to be served to the Bank employees. In fact, the participants have not met Module – 3 yet, which will provide different kinds of functions and features especially for the participants. Therefore, the implication of LMS Module – 3 will make participants take advantage of other features. And, this might improve their perceived usefulness about LMS.

Secondly, the results of the survey regarding department manager and office users demonstrate that practical results are different from theoretical assumptions. The department managers and office users in Head Office

considered LMS less useful and more difficult than the staff in Branches and regarding attitudes toward the use of LMS, staff working in the Head Office is less positive than the staff working in Branches. As discussed above, this might be due to the involvement of general managers and general managers' assistants to the LMS operations. Before the LMS initialization, the processes were performed with correspondences, which require little involvement of these people, and generally the things were done with the help of their secretaries, a specific person in the department or a department manager. But, when LMS processes initialized and LMS accounts with username and password are required for LMS operations, the general managers, general manager assistants, and managers do have to involve the training processes more actively. This might effect the perceptions about and attitude toward the LMS negatively in the Head Office Units. Then, as the participants of the interview indicated that selecting one to three LMS agents in the Head Office Units and allow these people to perform the quota and enrolment operations might help things done better and faster. These LMS agents are not alike to the Rogers' (2003) change agents. They will not try to persuade general managers, general manager assistants and department managers to use LMS; rather they will handle the operations of LMS on behalf of them until these managers are willing to use LMS. In fact, considering these managers as late adopters as Rogers (2003) identified, excluding the general managers, general manager assistants and managers from LMS operations might help to reduce the bureaucratic steps during the initial applications of LMS and this might improve perceptions and attitudes of others users of LMS in the CBRT.

And as final recommended practices, changing the current guides of LMS into an interactive and electronic material, which emphasize the uses of the system, might be helpful to improve the acceptance of LMS in the Bank. Then, organizing meetings in the Training and Development Division with the division staff will help to revise the workflow of LMS operations. Since the staff in the Training and Development Division has key roles in the implementation of LMS

in the Bank, such meetings might support both the usage of LMS in the division and indirectly in other departments. Finally, organizing training programs to the Bank staff about LMS usage might be improve the acceptance of LMS in the Bank.

5.4 Implications for Further Research

This study conducted a survey, based on quantitative data. Indeed, some further studies could be conducted for Bank employees to gain more insight about the acceptance of LMS including reasons of the cases in which LMS is highly accepted and used or accepted with lower level scores.

Accordingly, interviews, which are based on qualitative data, could be conducted for training staff, managers, and participants in the Bank. These structured or semi-structured face-to-face interviews might strengthen the interpretations of this study and provide more information, which will help to increase the number and effectiveness of recommended practices.

The findings of these studies will shed some more light on the knowledge about determinants of LMS acceptance and knowledge about the implications to improve the acceptance of LMS in the case of the CBRT. Further, all these studies on the case of acceptance of LMS in the CBRT will hopefully provide helpful information for the instructional technologists and information system researchers.

Even though this study aimed to examine the acceptance of an institutional web-based LMS as a media, in the frame of instructional technology, the instructional methods that this media would present to the learners are essential as well. Since the LMS in CBRT has not presented any instructional modules yet, such methods are naturally out of this study. On the other hand, in the near future, online courses will be served in the Bank through LMS. Therefore, the identification and analysis of instructional methods will gain importance at that time. In other words, while emphasizing media regarding

LMS, this study may be a starter for the future research, which focuses on instructional methods served through LMS in the Bank.

REFERENCES

Adamson, I., & Shine, J. (2003). Extending the New Technology Acceptance Model to Measure the End User Information Systems Satisfaction in a Mandatory Environment: A Bank's Treasury. *Technology Analysis and Strategic Management,15* (4), 441-455.

Al-Gahtani, S. S. (2002). Extending the Technology Acceptance Model Beyond Its Country of Origin: A Cultural Test in Western Europe. In M. Khosrowpour (Ed.), *Advanced Topics in Information Reseources Management.* (pp. 158-167). Hershey, PA, USA: Idea Groups Publishing. Retrieved June 2006, from http://site.ebrary.com/lib/tcmb/Doc?id=10019223&ppg=171

Alshare, K., Grandon, E., & Miller, D. (2004). Antecedents of Computer Technology Usage: Considerations of the Technology Acceptance Model in the Academic Environment. *Journal of Computing Sciences in Colleges*, *19* (4), 164-180.

Association for Educational Communications and Technology. (1977). *The Definition of Educational Technology.* Washington, D.C.

Association for Educational Communications and Technology's. (2004). *The Definition of Educational Technology.* Washington, D.C.

Burkman, E. (1987). Factors Affecting Utilization. In R. M. Gagne (Ed.), *Instructional Technology: Foundations* (pp. 429-455). London: Lawrence Erlbaum Associates.

Burton-Jones, A., & Hubona, G. S. (2005). Individual Differences and Usage Behavior: Revisiting a Technology Acceptance Model Assumption. *Advances in Information Systems*, *36* (2), 58-77.

Çınar, A. (2002). Teachers' computer use at basic education schools: identifying contributing factors. Master's Thesis, Middle East Technical University.

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User Acceptance of Computer Technology: A Comparison of Two Theoretical Models. *Management Science, 35,* 982-1003.

Diffusion of Innovations. (n.d.). Retrieved August 06, 2007, from http://www.ciadvertising.org/studies/student/99_fall/theory/millman/Diffusion.htm

Diffusion of Innovations. (2007). In Wikipedia. (chap.) Retrieved August 06, 2007, from http://en.wikipedia.org/wiki/Diffusion_of_innovations

Ely, D. P. (2002). *Trends in Educational Technology.* (5th ed.). Syracuse, NY: ERIC Clearinghouse on Information and Technology.

Frazee, R. W. (2002). Technology Adoption: Bringing Along the Latecomers. In A. Rossett (Ed.), *The ASTD E-Learning Handbook Best Practices, Strategies, and Case Studies for an Emerging Field.* (pp. 263-277). U.S.: McGraw-Hill Companies, Inc.

Furneaux, B. (2005). *Theories Used in IS Research Diffusion Of Innovations.* http://www.istheory.yorku.ca/diffusionofinnovations.htm : York University, Appalachian State University.

Garland, K. P. (1995). Diffusion and Adoption of Instructional Technology. In G. J. Anglin (Ed.), *Instructional Technology: Past, Present, and Future* (2nd ed., pp. 282-287). Englewood, CO: Libraries Unlimited, Inc.

Garson, D. (2006). *Diffusion Theory.* Retrieved August 07, 2007, from http://www2.chass.ncsu.edu/garson/pa765/diffusion.htm

Gentry, C. G. (1995). Educational Technology: A question of meaning. In G. J. Anglin (Ed.), *Instrcutional Technology: Past, Present, and Future* (2nd ed., pp. 1-10). Englewood, CO: Libraries Unlimited, Inc.

Herrington, A., Herrington, J., Oliver, R., Stoney, S., & Willis, J. (2001). Quality guidelines for online courses: The development of an instrument to audit online units. In G. Kennedy, M. Keppell, C. McNaught, & T. Petrovic (Eds.), *Meeting at the crossroads: Proceedings of ASCILITE 2001*, (pp 263-270). Melbourne: The University of Melbourne.

Hodgson, L., & Aiken, P. (1998). Organizational change enabled by the mandated implementation of new information systems technology: A modified technology acceptance model. *Special Interest Group on Computer Personnel Research Annual Conference.* (pp. 205-213). New York: ACM Press.

Horton, W. (2006). Technology for E-Learning - and Beyond. In M. J. Rosenberg (Ed.), *Beyond E-Learning. Approaches and Technologies to Enhance Organizational Knowledge, Learning, and Performance* (pp. 99-104). U.S.: Pfeiffer.

Innovation. In *Merriam-Webster's Online Dictionary*. Retrieved August 06, 2007, from http://www.merriam-webster.com/dictionary/innovation

International Society for Performance Improvement. (n.d.). Retrieved July 31, 2007, from http://www.ispi.org/hpt_institute/#What

International Society for Performance Improvement. (2000). Retrieved July 31, 2007, from http://www.ispi.org/services/whatshptmodel.pdf

Khan, B. (2005). Institutional Issues. *Managing E-Learning Strategies. Design, Delivery, Implementation, and Evaluation* (pp. 23-48). Hershey, London: Information Science Publishing.

Legris, P., Ingham, J., & Collerette, P. (2003). Why do people use information technology?: a critical review of the technology acceptance model. *Information and Management,40* (3), 191-205.

Mager, R. F. (1999). Foreword to the Second Edition. In J. A. Pershing (Ed.), *Handbook of Human Performance Technology* (3rd ed.). San Francisco: International Society for Performance Improvement.

Morris, M. G., Venkatesh, V., & Ackerman, P. L. (2005). Gender and Age Differences in Employee Decisions About New Technology: An Extension to the Theory of Planned Bahavior. *IEEE Transactions on Engineering Management. 52*(1), 69-83.

O'Banion, T. (1997). *A Learning College for the 21st Century.* Retrieved July 31, 2007, from http://www.blinn.edu/faculty_dev/A%20Learning%20College%20for%20the%2021st%20Century.pdf

Ong, C., & Lai, J. (2006). Gender differences in perceptions and relationships among dominants of e-learning acceptance. *Computers in Human Behavior. 22*, 816-829.

Özdemir, D. (2004). The Effect of Educational Ideologies on Technology Acceptance. Master's Thesis, Middle East Technical University.

Pan, C. C., Gunter, G., Sivo, S., & Cornell, R. (2005). End-User Acceptance of a Learning Management System in Two Hybrid Large-Sized Introductory Undergraduate Courses: A Case Study. *Educational Technology Systems, 33*(4)*,* 355-365.

Papazafeiropoulou, A., Gandecha, R., Stergioulas, L. (2005). *Interpretive Flexibility along the Innovation Decision Process of the UK NHS Care Records Service (NCRS). Insights from a Local Implementation Case Study.* In Proceedings of the Thirteenth European Conference on Information Systems (Bartmann, D., Rajola, F., Kallinikos, J., Avison, D., Winter, R., Ein-Dor, P., Becker, Jr., Bodendorf, F., Weinhardt, C. Eds.), 1067-1078, Regensburg, Germany.

Paulsen, M. F. (2003). Experiences with Learning Management Systems in 113 European Institutions. *Educational Technology & Society, 6* (4), 134-148. Retrieved July 31, 2007, from http://ifets.ieee.org/periodical/6_4/13.pdf

Pershing, J. A. (2006). Human Performance Technology Fundamentals. In Pershing J. A. (Ed.), *Handbook of Human Performance Technology* (3rd ed., pp. 5-34). San Francisco: International Society for Performance Improvement.

Pituch, K. A., & Lee, Y. (2006). The Influence of System Characteristics on E-learning Use. *Computers & Education, 47,* 222-244.

Reiser, R. A. (2002). What Field Did You Say You Were In? Defining and Naming Our Field. In R. A. Reiser, & J. V. Dempsey (Eds.), *Instructional Design and Technology* (pp. 5-15). New Jersey: Pearson

Ritchie, D. (1999). The Future of Instructional Design: Results of a Delphi Study. *Educational Technology,* January-February, 35-42.

Roca, J. C., Chiu, C., & Martinez, F. J. (2006). Understanding E-learning Continuance Intention: An extension of the Technology Acceptance Model. *Human-Computer Studies, 64,* 683-696.

Rogers, E. M. (2003). Diffusion of Innovations. *Elements of Diffusion* (5th ed., pp. 1-38). New York: The Free Press.

Rosenberg, M. J. (1996). Human Performance Technology. In Robert, C. (Ed.), *The ASTD Training and Development Handbook* (4th ed.). New York: McGraw-Hill Companies, Inc.

Rosenberg, M. J., Coscarelli, W. C., & Hutchinson, C.S. (1999). The Origins and Evolution of the Field. In Stolovitch, H. D., & Keeps, E.J. (Eds.) *Handbook of Human Performance Technology* (2nd ed.). San Francisco: Jossey-Bass, Pfeiffer.

Rosenberg, M. J. (2006). *Beyond E-Learning: Approaches and Technologies to Enhance Organizational Knowledge, Learning and Performance.* San Francisco: Pfeiffer.

Rossett, A. (2002). Walking in the Night and Thinking About E-Learning. In A. Rossett (Ed.), *The ASTD E-Learning Handbook Best Practices, Strategies, and Case Studies for an Emerging Field.* (pp. 3-18). U.S.: McGraw-Hill Companies, Inc.

Scales, G. R. (1994). *Trends in Instructional Technology: Educational Reform and Electronic Performance Support Systems.* Paper presented at the meeting of Proceedings of Selected Research and Development Presentations at the 1994 National Convention of the Association for Educational Communications and Technology Sponsored by the Research and Theory Division

Second Industrial Revolution.. In *Wikipedia* (chap.) Retrieved July 31, 2007, from http://en.wikipedia.org/wiki/Second_Industrial_Revolution

Seels, B.B., & Richey, R.C. (1994). *Instructional Technology: The definition and Domains of the Field.* Washington, DC: AECT

Simmons, D.E. (2002). The Forum Report: E-Learning Adoption Rates and Barriers. In A. Rossett (Ed.), *The ASTD E-Learning Handbook Best Practices, Strategies, and Case Studies for an Emerging Field.* (pp. 19-23). U.S.A.: McGraw-Hill Companies, Inc.

Surry, D. W., & Ely, D. P. (2002). Adoption, Diffusion, Implementation, and Institutionalization of Instructional Design and Technology. In R. A. Reiser, & J. V. Dempsey (Eds.), *Instructional Design and Technology* (pp. 183-193). New Jersey: Pearson.

The Status of E-learning.. In *UNESCO.* Retrieved August 01, 2007, from http://www2.unescobkk.org/education/ict/v2_2/info.asp?id=11041

Wagner, E. D. (1999). Beyond Distance Education. In Stolovitch, H. D., & Keeps, E.J. (Eds.) *Handbook of Human Performance Technology* (2nd ed.). San Francisco: Jossey-Bass, Pfeiffer.

Wixom, B. H., & Todd, P. A. (2005). A Theorotical Integration of User Satisfaction and Technology Acceptance. *Information Systems Research,16* (1), 85-102.

Wolski, S., & Jackson, S. (1999). Technological Difusion within Educational Institutions: Applying the Technology Acceptance Model. *Society for Information Technology & Teacher Education International Confererence.* Educational Resources Information Center (ERIC).

Yates, B. L. (2001). *Applying Diffusion Theory: Adoption of Media Literacy Programs in Schools.* Paper presented to the Instructional and Developmental Communication Division, International Communication Association Conference.

Zemsky, R., & Massy, W. F. (2004). Thawarted Innovation What Happened to e-learning and Why. *A Final Report for the Weatherstation Project of The Learning Alliance at the University of Pennsylvania in cooperation with the Thomspn Corporation.* U.S.: University of Pennsylvania, The Learning Alliance at the University of Pennsyvlania.

APPENDIX A

MAIN OPERATIONS AND SCREENSHOTS OF LMS MODULE-2

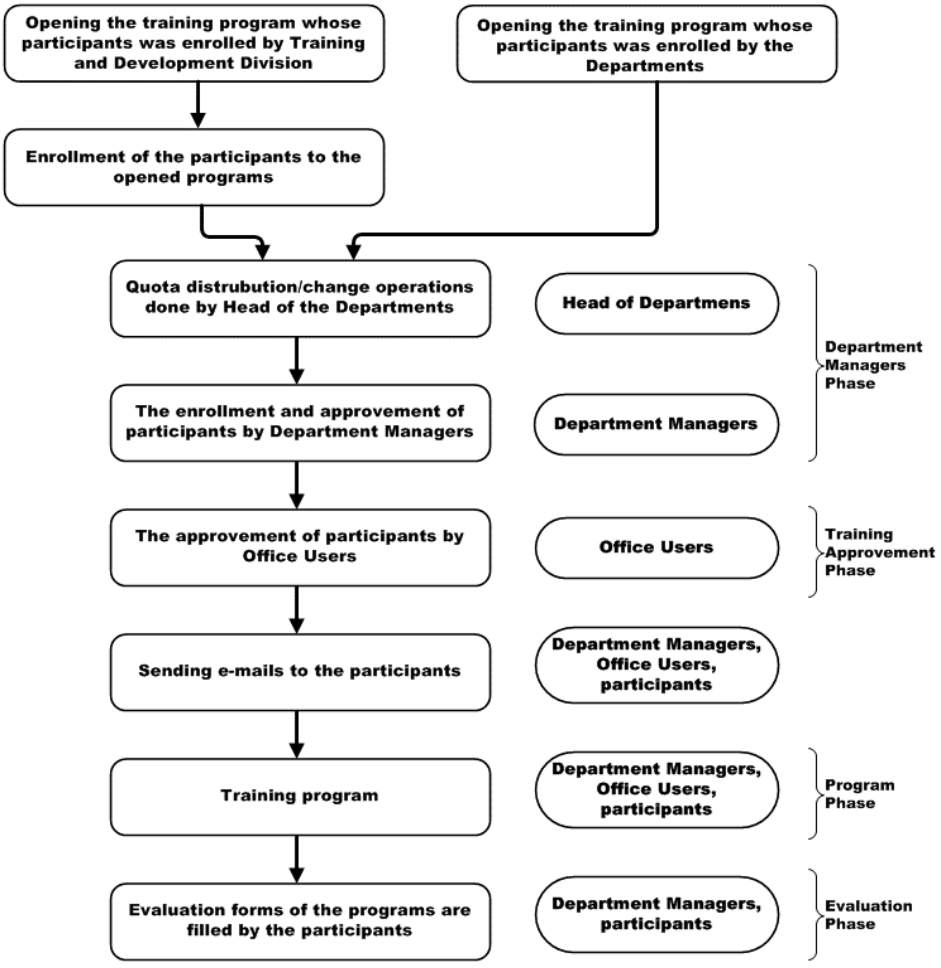

Figure A.1. Main Operations in LMS Module-2 (Source: The Training and Development Division, CBRT, 2007)

The Department Managers' Main Screen

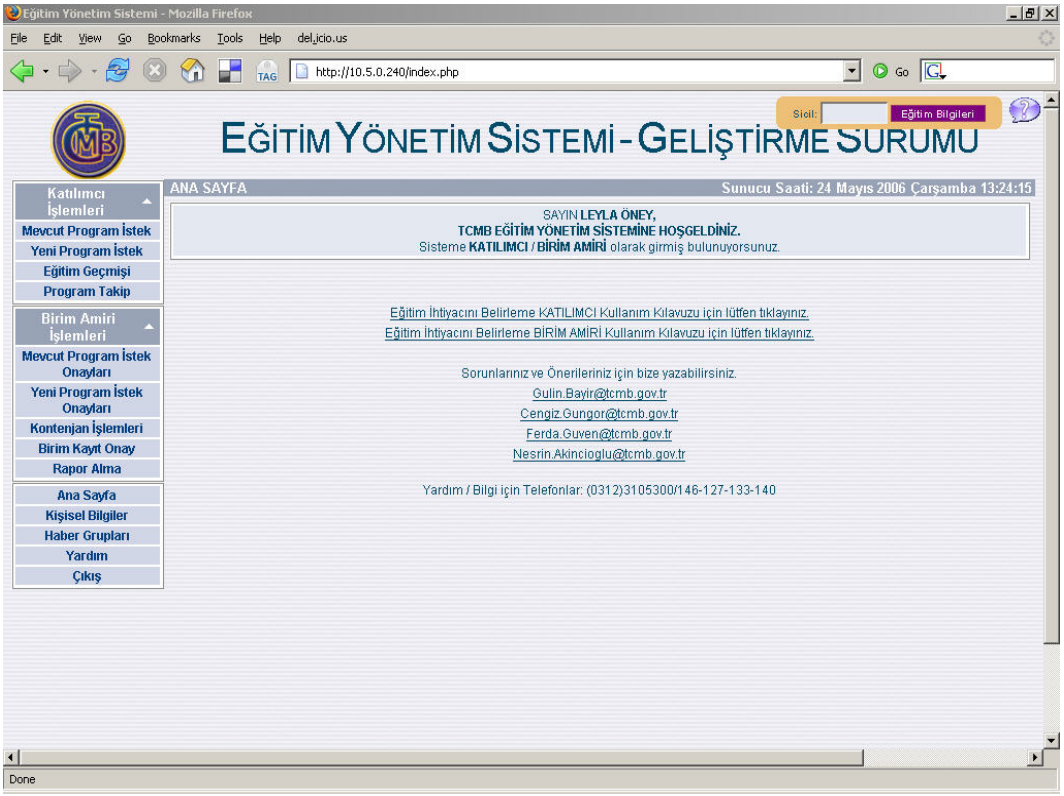

Figure A.2. Screenshot of Mainpage for Department Managers (Source: The Training and Development Division, CBRT, 2007)

The Office Users' Main Screen

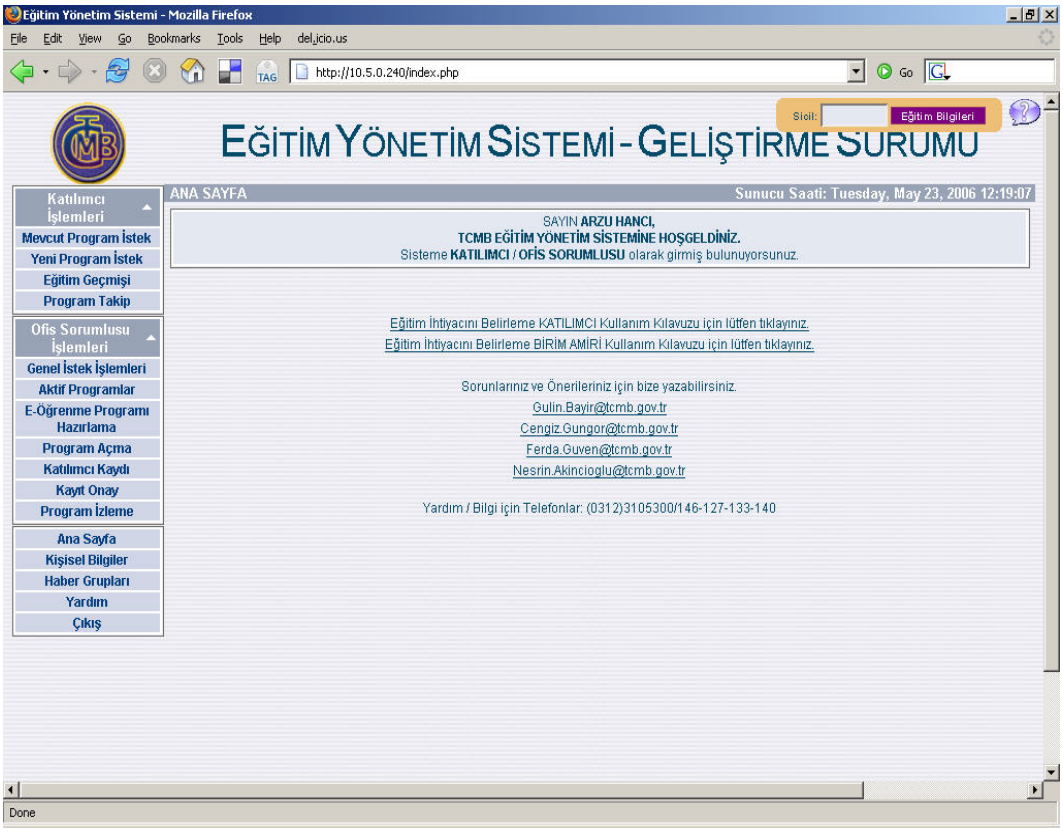

Figure A.3. Screenshot of Mainpage for Office Users (Source: The Training and Development Division, CBRT, 2007)

The Participants' Main Screen

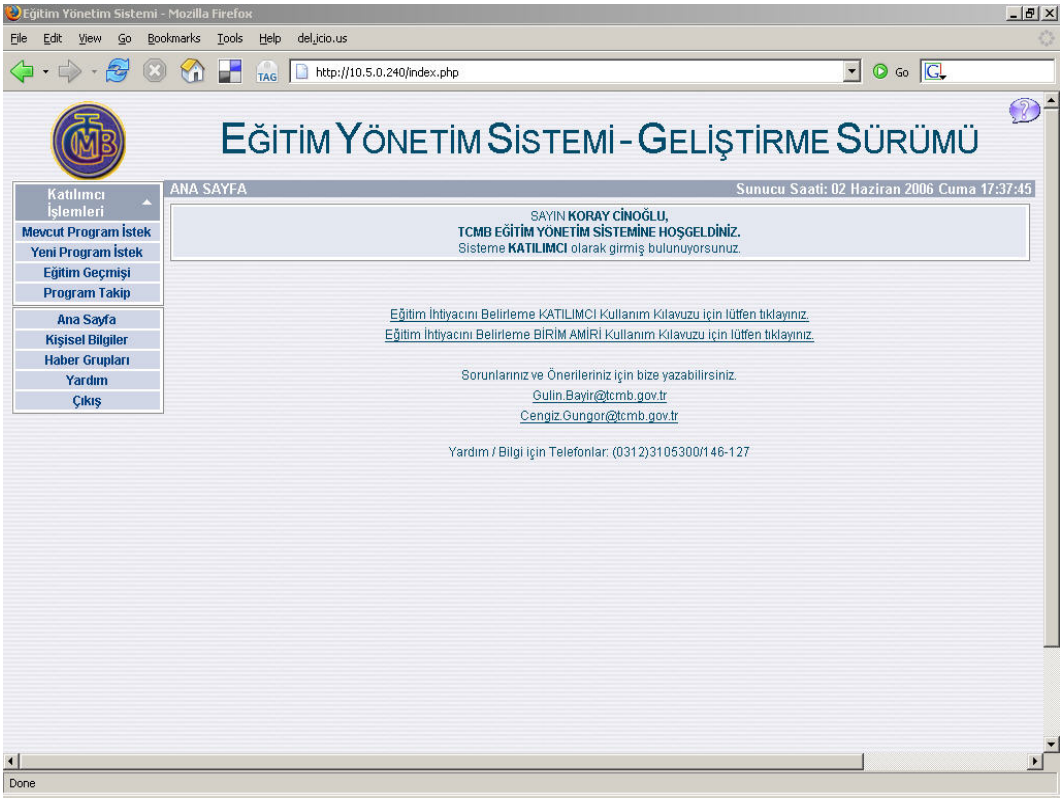

Figure A.4. Screenshot of Mainpage for Participators (Source: The Training and Development Division, CBRT, 2007)

APPENDIX B

QUESTIONNAIRE OF LMS PARTICIPANTS

Eğitim Yönetim Sistemi (EYS)
Katılımcı Anketi

Banka'da ilk olarak 2006 yılında, eğitim taleplerinin birimlerden toplanması amacıyla EYS kullanılmaya başlanmıştır. 2007 Ocak ayından itibaren, tüm eğitim programlarının açılış, kontenjan, birim kayıt onay, eğitim onay ve katılımcıların program değerlendirme işlemleri EYS üzerinden yapılmaktadır. Bir sonraki aşama olarak uzaktan eğitim materyallerinin EYS üzerinden kullanıma açılması planlanmaktadır. Yeni bir uygulama olan EYS'ye ilişkin kullanıcıların algı ve tutumlarını belirlemek amacıyla bir araştırma yapılmasına karar verilmiştir.

Araştırmanın amacı; katılımcı, birim amiri, eğitim sorumlusu ve ofis sorumlusu olarak EYS'yi kullanan Banka çalışanlarının, EYS'nin algılanan yararlılığı, algılanan kullanım kolaylığı ve EYS'ye ilişkin tutumlarını ölçmek ve cinsiyet, yaş, hizmet süresi, unvan, çalıştığı genel müdürlük ve müdürlük gibi farklılıkların EYS ile ilgili tutum ve görüşlere etkisinin olup olmadığını ortaya çıkarmaktır.

Bu araştırma kapsamında, sizden, ekte yer alan anketi gerçek durumunuzu yansıtacak şekilde doldurmanız, doldurduktan sonra kaydettiğiniz dosyayı aşağıda verilen e-posta adresine göndermeniz istenmektedir. Araştırma hakkında sormak istediğiniz soruları ve bilgi taleplerinizi aynı e-posta adresine iletebilirsiniz. Araştırmaya yaptığınız katkı için teşekkür ederiz.

PERSONEL GELİŞTİRME VE YETİŞTİRME MÜDÜRLÜĞÜ

İlgili Kişi: Arzu Hancı

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KİŞİSEL BİLGİLER

Yönerge: *Aşağıdaki sorular cinsiyet, yaş, eğitim durumu gibi kişisel özelliklerin, hizmet süresi, unvan, çalışılan genel müdürlük ve müdürlük gibi organizasyona dayalı kişisel özelliklerin tespiti amacıyla hazırlanmıştır. 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. Eğitim Durumunuz:

( ) Lise
( ) Önlisans
( ) Lisans
( ) Yüksek Lisans
( ) Doktora

4. Hizmet süreniz:

……**yıl** ……**ay**

5. Unvanınız, çalıştığınız Genel Müdürlük ve Müdürlük:

……

……

EYS İLE İLGİLİ TUTUM VE GÖRÜŞLER

Yönerge: *Aşağıdaki maddeler EYS ile ilgili algılanan yararlılık, kullanım kolaylığı ve EYS'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					
	EYS;					
1.	eğitimim üzerinde daha fazla kontrol sahibi olmamı sağlar.					
2.	eğitimim ile ilgili işlerimi daha çabuk yerine getirmemi sağlar.					
3.	eğitimimde verimliliğimi arttırır.					
4.	eğitimimde performansımı arttırır.					
5.	eğitimimde etkinliğimi arttırır.					
6.	eğitimimi kolaylaştırır.					
7.	eğitim taleplerimi iletmemi kolaylaştırır.					
8.	eğitim programı ve öğretim elemanının değerlendirilmesini kolaylaştırır.					
9.	geçmiş eğitim bilgilerimi izlememi kolaylaştırır.					
10.	Banka'daki eğitim ve öğretimin kalitesini artırır.					
11.	EYS e-postaları ile gönderilen program broşürleri eğitim öncesinde program hakkında bilgi edinmemi kolaylaştırır.					
12.	EYS e-postaları, eğitimim ile ilgili süreci takip etmemi kolaylaştırır.					
13.	Genelde, EYS'yi yararlı buluyorum.					
	Algılanan Kullanım Kolaylığı					
	EYS'yi kullanırken;					
1.	sıkça hata yaparım.					
2.	yaptığım hatalar kolaylıkla düzeltilir.					
3.	yapmak istediklerimi kolaylıkla yapabilirim.					

		1=Kesinlikle Katılmıyorum	2=Katılmıyorum	3=Kararsızım	4=Katılıyorum	5=Kesinlikle Katılıyorum
4.	karşılaştığım açıklamalar, bilgi/hata mesajları ve yönlendirmeler açık ve anlaşılırdır.					
5.	sıklıkla Kullanıcı Kılavuzu'ndan yardım alma ihtiyacı hissederim.					
6.	çok fazla zihinsel çaba harcamam gerekiyor.					
7.	işlemleri nasıl gerçekleştirmem gerektiğini hatırlamam kolaydır.					
8.	EYS üzerinden eğitim taleplerimi iletmem kolaydır.					
9.	EYS üzerinden değerlendirme formunu doldurmam kolaydır.					
10.	EYS e-postaları sayesinde, eğitimim ile ilgili süreci takip etmem kolaydır.					
11.	EYS'yi kullanmayı öğrenmek kolaydır.					
12.	EYS'yi etkin bir biçimde kullanabilmem için bir eğitim programına katılmam gerekir.					
13.	Almak istediğim eğitimler için EYS'yi kullanmayı daha kolay buluyorum.					
14.	Genelde, EYS'nin kullanımı kolaydır.					
	EYS'ye İlişkin Tutumlar					
1.	EYS kullanımı konusunda kendime güvenirim.					
2.	EYS'yi rahatlıkla kullanıyorum.					
3.	EYS ile çalışmak motivasyonumu artırır.					
4.	EYS kullanırken kendimi rahat hissetmiyorum.					
5.	EYS ile çalışırken zorlanıyorum.					
6.	EYS'nin yeni uygulamalarını öğrenmek bana zor gelir.					
7.	EYS'nin etkin bir eğitim aracı olduğuna inanıyorum.					
8.	EYS ile çalışmayı seviyorum.					
9.	Teknoloji ile çalışmayı seviyorum.					
10.	Banka'da EYS kullanımı faydalıdır.					
11.	EYS'nin geliştirilmesi için harcanan çabalar değerlidir.					
12.	EYS kullanım becerileri Banka çalışanları için önemlidir.					

Questionnaire of LMS Department Managers and Office Users

Eğitim Yönetim Sistemi (EYS)

Birim Amirleri Anketi

Banka'da ilk olarak 2006 yılında, eğitim taleplerinin birimlerden toplanması amacıyla EYS kullanılmaya başlanmıştır. 2007 Ocak ayından itibaren, tüm eğitim programlarının açılış, kontenjan, birim kayıt onay, eğitim onay ve katılımcıların program değerlendirme işlemleri EYS üzerinden yapılmaktadır. Bir sonraki aşama olarak uzaktan eğitim materyallerinin EYS üzerinden kullanıma açılması planlanmaktadır. Yeni bir uygulama olan EYS'ye ilişkin kullanıcıların algı ve tutumlarını belirlemek amacıyla bir araştırma yapılmasına karar verilmiştir.

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Bu araştırma kapsamında, sizden, ekte yer alan anketi gerçek durumunuzu yansıtacak şekilde doldurmanız, doldurduktan sonra kaydettiğiniz dosyayı aşağıda verilen e-posta adresine göndermeniz istenmektedir. Araştırma hakkında sormak istediğiniz soruları ve bilgi taleplerinizi aynı e-posta adresine iletebilirsiniz. Araştırmaya yaptığınız katkı için teşekkür ederiz.

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1. Cinsiyetiniz:

( ) Kadın
( ) Erkek

2. Yaşınız:

……

3. Eğitim Durumunuz:

( ) Lise
( ) Önlisans
( ) Lisans
( ) Yüksek Lisans
( ) Doktora

4. Hizmet süreniz:

……**yıl** ……**ay**

5. Unvanınız, çalıştığınız Genel Müdürlük ve Müdürlük:

……

……

EYS İLE İLGİLİ TUTUM VE GÖRÜŞLER

Yönerge: *Aşağıdaki maddeler EYS ile ilgili algılanan yararlılık, kullanım kolaylığı ve EYS'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					
	EYS, Banka'daki eğitim planlaması, organizasyonu ve takibinde;					
1.	daha fazla kontrol sahibi olmamı sağlar.					
2.	işlerimi daha çabuk yerine getirmemi sağlar.					
3.	verimliliği arttırır.					
4.	performansı arttırır.					
5.	kaliteyi artırır.					
6.	daha etkin olmamı sağlar.					
7.	işlerimi kolaylaştırır.					
	EYS;					
8.	Banka çalışanlarının eğitim taleplerini toplamayı kolaylaştırır.					
9.	katılımcı belirleme işlemlerini kolaylaştırır.					
10.	katılımcı belirleme işlemlerinin hatasız yapılmasını sağlar. (Bir programa daha önceden katılmış bir çalışanın aynı programa tekrar atanmasını engeller)					
11.	onay işlemlerini kolaylaştırır.					
12.	eğitim programı ve öğretim elemanının değerlendirilmesini kolaylaştırır.					
13.	eğitim programları ile ilgili rapor almamı kolaylaştırır.					
14.	EYS e-postaları ile gönderilen program broşürleri eğitim öncesinde programlar hakkında bilgi edinmemi kolaylaştırır.					

		1=Kesinlikle Katılmıyorum	2=Katılmıyorum	3=Kararsızım	4=Katılıyorum	5=Kesinlikle Katılıyorum
15.	EYS e-postaları, eğitim planlaması ve organizasyonu ile ilgili süreçleri takip etmemi kolaylaştırır.					
16.	Genelde, EYS'yi yararlı buluyorum.					
	Algılanan Kullanım Kolaylığı					
	EYS'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 Kullanıcı Kılavuzu'ndan yardım alma ihtiyacı hissederim.					
6.	çok fazla zihinsel çaba harcamam gerekiyor.					
7.	işlemleri nasıl gerçekleştirmem gerektiğini hatırlamam kolaydır.					
	EYS üzerinden;					
8.	Banka çalışanlarının eğitim taleplerini toplamak kolaydır.					
9.	katılımcı belirleme işlemlerini gerçekleştirmek kolaydır.					
10.	onay işlemlerini gerçekleştirmek kolaydır.					
11.	eğitim programı ve öğretim elemanı değerlendirme sürecini takip etmek kolaydır.					
12.	eğitim programları ile ilgili rapor almak kolaydır.					
13.	EYS e-postaları sayesinde, eğitim planlaması ve organizasyonu ile ilgili süreçleri takip etmem kolaydır.					
14.	EYS'yi kullanmayı öğrenmek kolaydır.					
15.	EYS'yi etkin bir biçimde kullanabilmem için bir eğitim programına katılmam gerekir.					
16.	Eğitim planlaması, organizasyonu ve takibinde yazışmalarla yürütülen sürece gore EYS'yi kullanmak daha kolaydır.					
17.	Genelde, EYS'nin kullanımı kolaydır.					

		1=Kesinlikle Katılmıyorum	2=Katılmıyorum	3=Kararsızım	4=Katılıyorum	5=Kesinlikle Katılıyorum
	EYS'ye İlişkin Tutumlar					
1.	EYS kullanımı konusunda kendime güvenirim.					
2.	EYS'yi rahatlıkla kullanıyorum.					
3.	EYS ile çalışmak motivasyonumu artırır.					
4.	EYS kullanırken kendimi rahat **hissetmiyorum**.					
5.	EYS ile çalışırken zorlanıyorum.					
6.	EYS'nin yeni uygulamalarını öğrenmek bana zor gelir.					
7.	EYS'nin etkin bir eğitim aracı olduğuna inanıyorum.					
8.	EYS ile çalışmayı seviyorum.					
9.	Teknoloji ile çalışmayı seviyorum.					
10.	Banka'da EYS kullanımı faydalıdır.					
11.	EYS'nin geliştirilmesi için harcanan çabalar değerlidir.					
12.	EYS kullanım becerileri Banka çalışanları için önemlidir.					

APPENDIX C

INTERVIEW QUESTIONS AND ANSWERS

One interview was conducted with training researches and office staff. Nominal group technique was used in the interview in which 5 participants were divided into two groups and the results of the quantitative survey and ways to improve the acceptance of LMS were discussed.

5 questions prepared by the researcher were asked to the participators in the interview. The groups discussed each of the questions at first, then the groups verbally reflected their answers and the researcher wrote the answers of both groups via the Word Processor and projected them on the screen. Finally, each participant voted the answers for each question according to the significance of the items (most significant = 5, least significant = 1).

The questions and the answers with their total points were as below.

Soru 1:

Banka'da EYS'yi "Katılımcı" olarak kullananların EYS'yi kabul etme düzeyleri 4.04 (5 üzerinden), "Birim Amiri" olarak kullananların ise 3.95 (5 üzerinden) olarak bulunmuştur. Bu değerler yeni bir sistemin kabulü kapsamında olumlu bir durumu gösteriyor olsa da, sizce genel olarak Banka'daki EYS kabulünü ve kullanımını artırmak için ne gibi etkinlikler ve düzenlemeler yapılabilir?

Table B.1.

The Answers and Their Total Points for Question 1

Grupların Yanıtları	**Oylamalar Sonucundaki Toplam Puan**
Özellikle Birim Amirlerine yönelik EYS ile ilgili tanıtım ve eğitim faaliyetlerinin artırılması.	**22**
İdare Merkezi Birimlerinde temelinde EYS'den sorumlu 1-3 kişinin görevlendirilmesi.	**20**
6-12 aylık periyotlarla Banka çalışanlarından EYS ile ilgili görüşlerin toplanması.	**11**
Önceden hazırlanmış EYS kılavuzunun elektronik ortamda etkileşimli olarak hazırlanması.	**10**

Soru 2:

EYS'yi "Birim Amiri" olarak kullanan Banka çalışanlarının, EYS'nin yararlılığı konusundaki algıları, İdare Merkezi'nde çalışanlar (n=34, μ =3.89) ile Şubeler'de çalışanlar (n = 29, μ =4.30) arasında anlamlı bir farklılık göstermektedir.

a. Sizce ne gibi etkenler bu farklılığa neden olmuş olabilir?

Table B.2.

The Answers and Their Total Points for Question 2a

Grupların Yanıtları	**Oylamalar Sonucundaki Toplam Puan**
Bilgisayar ortamında tutulan hiyerarşik yapılanmada Şubeler'in İdare Merkezi'ne göre daha az basamağı olması ve bu durumun Şubeler lehine EYS ile ilgili işlemleri kolaylaştırması.	**24**
Şube çalışanlarının, EYS'nin PGYM ve İK ile iletişimlerini hızlandırdığını düşünmeleri.	**22**

b. İdare Merkezinde çalışan Birim Amirlerinin EYS'nin yararlılığı konusundaki algılarının ve EYS'ye ilişkin tutumlarının daha olumlu olabilmesi için ne gibi düzenlemeler yapılabilir?

Tablo B.3.

The Answers and Their Total Points for Question 2b

Grupların Yanıtları	**Oylamalar Sonucundaki Toplam Puan**
İdare Merkezi Birimlerinde temelinde EYS'den sorumlu 1-3 kişinin görevlendirilmesi.	**24**
Genel bir EYS tanıtım paketinin ve EYS'nin kullanımı konusunda bir eğitim programının hazırlanması.	**20**

Soru 3:

EYS'yi "Birim Amiri" olarak kullanan Banka çalışanlarının, EYS'nin kullanım kolaylığı konusundaki algıları, İdare Merkezi'nde çalışanlar (n=34, μ=3.70) ile Şubeler'de çalışanlar (n=29, μ=4.09) arasında anlamlı bir farklılık göstermektedir.

a. Sizce ne gibi etkenler bu farklılığa neden olmuş olabilir?

Table B.4.

The Answers and Their Total Points for Question 3a

Grupların Yanıtları	**Oylamalar Sonucundaki Toplam Puan**
Şubeler'de çalışanlar, EYS'nin ilk uygulamaları sırasında, EYS kullanımı konusunda telefonla destek aldılar ve Şubeler EYS'yi daha etkin ve kullanabildiler. Bu durumun aksine, İdare Merkezi'nde birim amiri sayısının fazla olması EYS kullanımındaki etkinliği zorlaştırmıştır.	**22**
İdare Merkezinde Birim Onay işlemleri iki süreç içermesine rağmen, Şubeler'de tek süreçte gerçekleştiriliyor olması.	**21**
Bilişim sistemleri altyapısı ve Kimlik Yönetim Sistemi gibi diğer uygulamalar EYS'nin kullanımı İdare Merkezi'nde zorlaştırmıştır.	**14**

b. İdare Merkezinde çalışan Birim Amirlerinin EYS'nin kullanım kolaylığı konusundaki algılarının daha olumlu olabilmesi için ne gibi düzenlemeler yapılabilir?

Table B.5.

The Answers and Their Total Points for Question 3b

Grupların Yanıtları	**Oylamalar Sonucundaki Toplam Puan**
İdare Merkezi birimlerinde EYS kullanımında görevlendirilmesi hedeflenen 1-3 kişinin yetkileri genişletilerek, hem genel müdürlük ve genel müdür yardımcıları hem de müdürlerce yapılan işlemleri yürütebiliyor olmalarının sağlanması.	**22**
Önceden hazırlanmış EYS kılavuzunun elektronik ortamda etkileşimli olarak hazırlanması.	**21**
Bilişim sistemleri altyapısı ve diğer uygulamalardan kaynaklanan teknik sorunlara hızlı ve etkin çözüm üretilmesi.	**18**

Soru 4:

EYS'yi "Birim Amiri" olarak kullanan Banka çalışanlarının, EYS'ye ilişkin tutumları, İdare Merkezi'nde çalışanlar (n=34, μ =3.73) ile Şubeler'de çalışanlar (n=29, μ =4.09) arasında anlamlı bir farklılık göstermektedir.

a. Sizce ne gibi etkenler bu farklılığa neden olmuş olabilir?

Table B.6.

The Answers and Their Total Points for Question 4a

Grupların Yanıtları	**Oylamalar Sonucundaki Toplam Puan**
İdare Merkezi birimlerinde, bilgisayar ortamındaki hiyerarşi yapısı nedeniyle EYS'nin içselleştirilmesi ve benimsenmesi zorlaşmıştır.	**24**
Şubelerdeki yöneticilerin İdare Merkezi tarafından sunulan uygulamalara karşı daha ilgili olmaları.	**17**

b. İdare Merkezinde çalışan Birim Amirlerinin EYS'ye ilişkin tutumlarının daha olumlu olabilmesi için ne gibi düzenlemeler yapılabilir?

Table B.7.

The Answers and Their Total Points for Question 4b

Grupların Yanıtları	**Oylamalar Sonucundaki Toplam Puan**
Genel bir EYS tanıtım paketinin ve EYS'nin kullanımı konusunda bir eğitim programının hazırlanması.	**20**

Soru 5:

EYS'yi "Katılımcı" olarak kullanan Banka çalışanlarının, EYS'nin yararlılığı konusundaki algıları, yaş ile anlamlı pozitif korelasyon içindedir. Yaş arttıkça, algılanan yararlılığın arttığı gözlenmiştir (r = .20).

EYS'yi "Katılımcı" olarak kullanan Banka çalışanlarının, EYS'nin yararlılığı konusundaki algıları, kıdem ile anlamlı pozitif korelasyon içindedir. Hizmet süresi arttıkça, algılanan yararlılığın arttığı gözlenmiştir (r = .26).

a. Sizce ne gibi etkenler bu farklılığa neden olmuş olabilir?

Table B.8.

The Answers and Their Total Points for Question 5a

Grupların Yanıtları	**Oylamalar Sonucundaki Toplam Puan**
Banka'da yaşça büyük ve kıdemleri yüksek katılımcıların geçmiş dönemlerdeki iş süreçleri ile EYS'yi karşılaştırma olanaklarının olması ve bu nedenle EYS'ye daha olumlu yaklaşıyor olmaları.	**22**
Yaşça büyük ve kıdemleri yüksek katılımcıların, kuruma daha fazla bağlı olmalarından kaynaklanan kurum yenilikleri daha kolay kabul ediyor olmaları.	**20**
Yaşça küçük ve kıdemleri düşük katılımcıların, beklentilerinin daha fazla olması ve geçmiş dönemlerdeki iş süreçlerini bilmemeleri.	**16**
Yaşça büyük ve kıdemleri yüksek katılımcıların, EYS'deki bireysel etkileşimleri (program duyurularının e-posta adreslerine gliyor olması vb.) anlamlı bulmaları.	**13**

b. Daha genç ve hizmet süresi daha az olan katılımcıların EYS'nin yararlılığı konusundaki algılarının daha olumlu olabilmesi için neler yapılabilir?

Table B.9.

The Answers and Their Total Points for Question 5b

Grupların Yanıtları	**Oylamalar Sonucundaki Toplam Puan**
EYS'nin işlevliliğini ve etkileşimini katılımcılar için artıracak olan EYS Modül-3'ün devreye alınması.	**24**