An Assessment of Learning Management Systems Acceptance: A Case Study of Payamnoor and Farhangian

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ABSTRACT

Learning Management System (LMS), has played a significant role in education. The purpose of this study is to investigate the acceptance level of LMS amongst students of two Universities in Tehran, Payamnoor and Farhangian. The total number of participants was 200.

This study was directed based on a quantitative research method and data collection from questionnaire which was then interpreted according to accurate statistical procedures through SPSS software. Results presented that most students regardless their gender, age, and department were satisfied with the usage (acceptance level) of Payamnoor and Farhangian LMSs. Students believed that both Payamnoor and Farhangian LMSs have a considerable capacity for development. Moreover, the research findings disclosed that there is no significant relationship between LMS acceptance dimensions including perceived usefulness, behavioral intention to use technology, attitude towards using technology, actual technology use and learners' gender, age, and faculty. The studies revealed the freshman students facing more difficulties in using LMS.

Keywords: E-learning, LMS, TAM, Learners.

ÖZ

Son yıllarda Öğrenme Yönetim Sistemleri (ÖYS) eğitim alanında önemli bir rol almaya başlamıştır. Bu çalışmanın amacı Tahran'da (İran) yer almakta olan Farhangian ve Payamnoor üniversitelerinde okumakta olan öğrencilerin, Öğrenme Yönetim Sistemlerini Kabullenme seviyelerini incelemektedir. Çalışmada nicel araştırma yöntemi benimsenmiş, veri toplama aracı olarak anket kullanılmış ve uygun istatistiki teknikler kullanılarak veriler, SPSS yazılımı ile analiz edilmiştir. Araştırmanın çalışma grubunu, daha önceden ÖYS'i deneyim etmiş olan 200 öğrenci oluşturmuştur.

Çalışma sonucunda, Payamnoor ve Farhangian şehirlerinde bulunan üniversitelerde okuyan öğrencilerin cinsiyet, yaş ve bölümü fark etmeksizin ÖYS kabullenme seviyelerinin yüksek olduğu tespit edilmiştir. Ayrıca, Payamnoor ve Farhangian şehirlerinde bulunan üniversitelerde okuyan öğrencilerin, ÖYS'nin kendilerinin gelişiminde çok büyük etkisi olduğuna inandıkları belirlenmiştir. Ek olarak araştırma sonuçlarında, ÖYS memnuniyet boyutlarından; algılanan fayda, teknolojiyi kullanmak için davranışsal niyet ve gerçek teknoloji kullanımı ile, öğrencilerin cinsiyeti, yaşı ve fakülte teknolojisini kullanmayı algılama ve teknolojinin kullanışlılığı da dahil olmak üzere birbirleri arasında anlamlı bir ilişki olmadığı ortaya çıkmıştır. Ayrıca çalışmada, birinci sınıf öğrencilerinin ÖYS sistemini kullanırken daha fazla zorluklarla karşı karşıya kaldıkları, üst sınıflarda bu zorlukları aştıkları saptamıştır.

Anahtar Kelimeler: E-eğitim, ÖYS, TAM, Öğrenme.

DEDICATION

This thesis is dedicated to Almighty God and to my lovely family especially my beloved parents Karim Shayan and Shahnaz Naseri for making me be who I am and also my dear friends for supporting me during this work.

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INTRODUCTION

Nowadays, the impact of Information Technology (IT) on education is undeniable since it plays a significant role in training. Technology has changed the learning styles and it seems there is no borderline in the classroom (Siang and Santoso, 2015). Technology usage has changed traditional classrooms to e-learning courses, where lecturers and students can communicate via internet. Learning Management System (LMS) is an application software has played a significant role in education. Such software can be designed to augment and facilitate instructional activities including registration and management of education courses, analyzing skill gaps, and reporting and delivery of electronic courses simultaneously (Gilhooly, 2001). In the private section, an LMS can also be helpful to maintain and develop the business by training employees.

On the other hand, there are many applications and e-learning tools most of which are free e-learning courses. As a matter of fact, internet plays an important role in education providing such free e-learning tools through all kinds of educational sites such as YouTube or Facebook. Learners can have their own learning options, according to their interests. This method is recognized as personal learning environment (PLE) (EDUCAUSE Learning Initiative, 2009). PLE offers many options to learners by providing full customization of their learning environment. Since an education system needs to have mechanisms of access control, communication and

results monitoring, an LMS can be considered as a solution. It is a platform with diverse resources and various educational activities that is embedded within courses. It provides opportunities to monitor each learner's activities with different types of tests, assignments, and documents. Moreover, it provides easy communication and collaboration between instructors and students via discussion forums (Milošević, Zećirović and Krneta, 2014).

An LMS, as a framework, can handle the learning process. In other words, it operates as an infrastructure in order to administer and distribute the instructional content, classify and evaluate learning objectives, follow the development of training goals, and collect data for managing the education process (Szabo & Flesher, 2002).

There are different categories of LMS such as VLE (Virtual Learning Environment) and LCMS ("C" meaning Content). However, in this study, LMS is introduced as a platform that provides online courses for institutions using various sources as well as communication and administrative tools (Pirani, 2014).

LMS is a software application which allows instructors to create online courses, and training courses. Along with creating, managing and delivering e-courses to their learners, instructors can also track their learners' progress by accessing detailed reports and statistics that LMS software provides. Another important aspect of an LMS is that it provides learners with online classrooms where they can interact and learn in an interactive environment. To create such an environment, LMS allows instructors to upload all their courses and training materials such as videos, presentations, PDFs or even live web content such as wikis and blogs to a central location, i.e. the online classroom (Stracke, 2014).

This facilitates anywhere and anytime learning, as learners can easily access the materials by logging on to the online classroom via any device with internet access. In addition to this, learners can access these classrooms anytime even after they have finished taking courses, ensuring consistency and continuity in learning and training. An LMS has also some features to help instructors to manage their learners better. For instance, they can organize learners into groups or classes to centralize reporting and assignment or quizzes. With advanced reports and statistics, tracking the progress of large groups or individual learners would be easy. Moreover, instructors save valuable time in grading tests, and assessing the results. As the LMS automates, grading of hundreds of test papers is facilitated and therefore students can instantly see the results (Caballeroet al, 2014).

In addition, an LMS can help training managers in companies to reduce high travel costs and lodging expenses or administrative and scheduling problems associated with corporate training. Training managers using the LMS can easily create training programs and reuse them to train multiple batches of employees (Stefanova, Spasov, & Zdravev, 2014).

The following features for LMS is introduced as a learning tool:

- Learning purposes are attached to individual courses;
- Modules are synthesized into the systematized curriculum;
- Courseware expands some score levels in a reliable way;
- An LMS gathers the consequences of pupil performance;
- Lessons are usually delivered according to each student's learning progress (Bailey, 1993).

The American Society for Training and Development commends the following practical requirements for LMS:

- Integration between LMS and the human resource system;
- Management of users' registration, development of users' profile, introduction of the curriculum and certification path, dedicated teachers and educational content, budget management and schedule preparation for instructors and students;
- Accessibility to course content including media, method and learners;
- Development of content including compilation, maintenance and storage;
- Integration of course content with third-party modules;
- Evaluation of learners' proficiency gaps and management of skills attainment;
- Arrangement for provision authoring of assessments;
- Following standards such as AICC and SCORM;
- Supporting system configuration to provide the security of LMS such as encryption and passwords (Learning Circuits, 2006).

Although LMS has created huge changes in the education system and has significantly facilitated the learning process, there are still some challenges in the design and implementation of the system. For instance, the presence of different infrastructures including an IT infrastructure, cultural and legal skills is necessary.

Watson and Watson (2007) in "Information Age Appropriate Paradigm", itemized a series of recommendations towards improving LMS. It is recommended that LMS should have constructivist-based instruction which means that LMS needs to emphasize more on flexibility, learner-defined objectives and cooperative learning. Similarly, Wang, Sierra, and Folger (2003) discussed that LMS can develop a social

constructivist method in which instructors can increase students' engagement in their own learning process.

Although understanding the characteristics of LMS can be useful, as a system application, it includes many features which can be proposed by preparing the overall structure of the learning process. Therefore, clarity will be achieved in contrast with related technologies (Watson and Watson, 2007).

The concept of Technology Acceptance Model (TAM) was introduced by Davis (1989) in order to examine students' acceptance of LMSs in the university. This model is designed and built upon the Theory of Reasoned Action (TRA) which is considered as a foundation for both Technology Acceptance Model (TAM) and Theory of Planned Behavior (TPB). TPB explains the influence of a belief on attitudes towards forming, directing and dictating of behaviors (Fishbein & Ajzen, 1975).

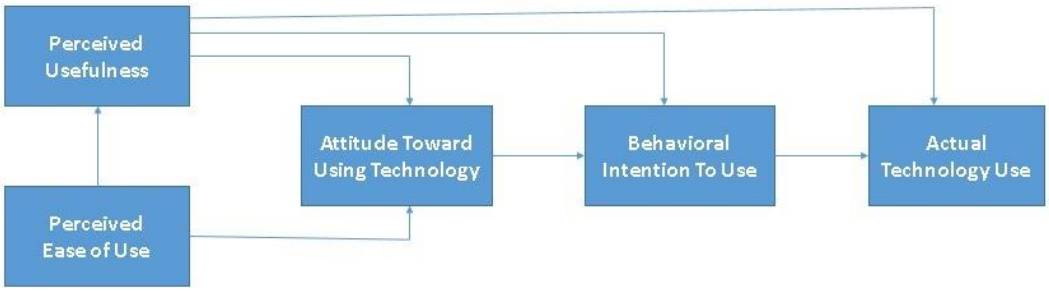

Figure 1. Technology Acceptance Model (Davis, 1989)

As it is illustrated in Figure 1, according to the research conducted by Davis (1989), Perceived Ease of Use (PEU), Perceived Usefulness (PU), and Attitude Towards Using Technology (ATUT) have a considerable impact on Actual Technology Use (ATU).

Literature provides a wide range of perspectives on LMSs. In some cases, an LMS is used exclusively for managing the course content. In other cases, it is focused more on the utilization of interactive learning with the aim of enhancing communication and collaboration between instructors and students. In other words, most experts believe that an LMS should be more based on peer interaction so that learners can improve their skills by learning from each other and taking advantages of other students' knowledge (Lonn, 2009).

In considering the above, in Iran universities, students can easily interact with professors and curriculum planners through discussion forums in the LMSs. For examples, Payamnoor and Farhangian LMSs facilitate the exchange of information and communication between the students and instructors anytime and anywhere. These two LMSs are knowns as the powerful LMS providers in Iran, specially, Payamnoor, founded by Payamnoor university with the aim of e-learning. Although both Payamnoor and Farhangian LMSs have been successful in e-learning, there are still some technical issues in using them. It is in light of this fact that the study seeks to find out the different viewpoint of Iranian students about Payamnoor and Farhangian LMSs (PNUNews, 2014).

1.1 Aim

The main aim of this research is to investigate the acceptance of LMS amongst Iranian students of two Universities in Tehran, Farhangian and Payamnoor.

1.2 Research Questions

This study will be carried out using the following research questions as mentioned below:

1. What is the LMS satisfaction level of the students according to the current LMS model?
    1.1 Is there any relationship between LMS level satisfaction of students and gender?
    1.2 Is there any relationship between LMS level satisfaction of students and age?
    1.3 Is there any relationship between LMS level satisfaction of students and grade?
    1.4 Is there any relationship between LMS level satisfaction of students and department?
    1.5 What is the LMS satisfaction level of the students according to perceived usefulness, perceived ease of use, behavioral intention to use technology, attitude toward using technology, and actual technology use?
        1.5.1 Is there any relationship between LMS satisfaction of students' perceived usefulness and gender?
        1.5.2 Is there any relationship between LMS satisfaction of students' perceived usefulness and age?
        1.5.3 Is there any relationship between LMS satisfaction of students' perceived usefulness and grade?
        1.5.4 Is there any relationship between LMS satisfaction of students' perceived usefulness and department?
        1.5.5 Is there any relationship between LMS satisfaction of students' perceived ease of use and gender?
        1.5.6 Is there any relationship between LMS satisfaction of students' perceived ease of use and age?
        1.5.7 Is there any relationship between LMS satisfaction of students' perceived ease of use and grade?

1.5.8 Is there any relationship between LMS satisfaction of students' perceived ease of use and department?

1.5.9 Is there any relationship between LMS satisfaction of students' behavioral intention to use technology and gender?

1.5.10 Is there any relationship between LMS satisfaction of students' behavioral intention to use technology and age?

1.5.11 Is there any relationship between LMS satisfaction of students' behavioral intention to use technology and grade?

1.5.12 Is there any relationship between LMS satisfaction of students' behavioral intention to use technology and department?

1.5.13 Is there any relationship between LMS satisfaction of students' attitude toward using technology and gender?

1.5.14 Is there any relationship between LMS satisfaction of students' attitude toward using technology and age?

1.5.15 Is there any relationship between LMS satisfaction of students' attitude toward using technology and grade?

1.5.16 Is there any relationship between LMS satisfaction of students' attitude toward using technology and department?

1.5.17 Is there any relationship between LMS satisfaction of students' actual technology use and gender?

1.5.18 Is there any relationship between LMS satisfaction of students' actual technology use and age?

1.5.19 Is there any relationship between LMS satisfaction of students' actual technology use and grade?

1.5.20 Is there any relationship between LMS satisfaction of students' actual technology use and department?

1.3 Significance of the Study

This study aims at giving an in-depth understanding of the current position of LMSs in Iranian universities. In other words, this survey tries to examine the level of students' satisfaction considering the use of LMSs in different fields in two Tehran universities, Farhangian and Payamnoor.

For the purpose of proper development of LMS, this study when successfully carried out will help identify the obstacles that prevent the success of LMSs with the use of opinions of Iranian students. In short, this will enable the researcher to proffer possible solutions, through which it is believed to offer contributions to the development of LMSs in Iran universities.

1.4 Limitation

The limitation of the study was time and two university students.

1.5 Definition of Key Terms

Virtual Learning Environment (VLE): VLE is a set of teaching and learning tools designed to enhance a student's learning experience by including computers and the Internet in the learning process (McIntosh, 2015).

Personal Learning Environment (PLE): PLE is the term which referring to the tools, communities, and services that constitute the individual educational platforms learners use to direct their own learning and pursue educational goals (EDUCAUSE Learning Initiative, 2009).

Learning Management Systems (LMSs): LMS is web-based software application platform used to plan, implement, and assess learning processes related to online and offline training administration and performance management (Boggs, 2010).

Technology Acceptance Model (TAM): TAM is an information systems theory that models how users have to accept and use a technology (Davis, 1989).

Perceived Usefulness (PU): PU can be described as the users' confidence to make decisions to utilize an LMS as an information system (Jogiyanto, 2007)

Perceived Ease of Use (PEU): PEU is discussed as the extent to which individuals believe that using an LMS would be free of corporeal and cerebral efforts (Davis, 1989).

Attitude Towards Using Technology (ATUT): ATUT is associated with the individuals' point of view towards using technology (Siang & Santoso, 2015).

Behavioral Intention to Use Technology (BIT): BIT refers to the users' interest rate in employing an LMS (Siang & Santoso, 2015).

Actual Technology Use (ATU): ATU is associated with the system performance. It accounts for the extent to which the LMS capabilities can meet the users' needs (Siang & Santoso, 2015).

Theory of Reasoned Action (TRA): TRA defines the links between beliefs, attitudes, norms, intentions, and behaviors of individuals (Fishbein & Ajzen, 1975).

Theory of Planned Behavior (TPB): TPB is a theory that links beliefs and behavior (Fishbein & Ajzen, 1975).

Learning Content Management System (LCMS): LCMS is a system designed to create and manage teaching materials for blended learning such as distance or classroom-based ones (McIntosh, 2015).

Sharable Content Object Reference Model (SCORM): SCORM is a set of specifications that are applied to course content and produce small, reusable e-learning objectives (Boggs, 2010).

Aviation Industry Computer Committee (AICC): AICC are standards applied to the development, delivery, and evaluation of training courses that are delivered via technology, i.e., more often than not, through Learning Management Systems (Boggs, 2010).

Chapter 2

LITERATURE REVIEW

In this chapter scholarly opinions of previous researchers and how they support the aim of current study is reviewed. It is guided by the purposes as outlined in chapter one and will establish differed opinions, theoretical approach and how the entire literature relates to this study.

2.1 Technology Acceptance Model (TAM)

TAM has been developed by Davis (1989). It is one of the most popular theories that is used widely to explain Information System usage. Many studies have been conducted to facilitate the TAM in LMSs. Following a comprehensive study of the literature in relation to TAM, it has been indicated that both PEU and PU can play an effective and decisive role on people's tendency to use of technology. The results of the studies conducted in conjunction with TAM have indicated PU as the main factor in attracting people to utilize the technology. Whereas PEU is considered as a determining factor but of a lesser degree of importance compared to PU. Generally, TAM consists of five main components: PU, PEU, ATUT, BIT, and ATU (Venkatesh and Davis, 2000).

2.1.1 Perceived Usefulness (PU)

PU is the degree to which a person believes that using a particular system would enhance his or her job performance. According to Jogiyanto (2007), "As high the values, the user is able to make the decisions using the support of the information systems".

2.1.2 Perceived Ease of Use (PEU)

According to PEU definition, LMS should be user-friendly and easy to use so that users are attracted to the system. Otherwise, if they feel that using the LMS burdens them with too much effort and energy, the system shall not be trusted (Jogiyanto, 2007).

2.1.3 Attitude Towards Using Technology (ATUT)

ATUT is associated with the individuals' point, the extent to which users believe that using an LMS is enjoyable, joyful and desirable is referred to as ATUT (Siang & Santoso, 2015).

2.1.4 Behavioral Intention to Use Technology (BIT)

It is related to the tendency of users to use the LMS, if the users tend to utilize the LMS frequently or they just prefer occasional uses of the system or just in times of need (Siang & Santoso, 2015).

2.1.5 Actual Technology Use (ATU)

The concept evaluates the efficiency and the effectiveness of the LMS according to the individuals' requirements (Siang & Santoso, 2015).

2.2 Learning Management System (LMS)

An LMS is a term utilized to describe a web-based technology in order to design, implement and evaluate a particular learning process. An LMS is usually used as a platform and interface to set e-learning materials to the net. Generally, an LMS enables instructors to create and deliver instructional content, monitor students' activities, and evaluate students' performance (Tinschert, 2006).

According to Brandon Hall (2015), an LMS is a software that automates the administration of training events. All LMSs manage registered users log-ins, manage course catalogs, record data from learners, and provide reports to management.

LMSs have been extensively used particularly in the realm of modern education. Regardless of the education approach, distance or traditional learning, LMSs have contributed considerably to the progress of higher education in colleges and universities. With the advent of LMSs as well as the increasing growth of using computers in both personal and professional areas, numerous students and instructors have been attracted to e-learning (Falvo & Johnson, 2007). LMSs have greatly focused on students' learning needs and instructors' requests related to instructional tasks (Iqbal & Qureshi, 2011).

2.3 Features of LMS

The primal criterion characterizing of a good LMS is the flexibility. This feature enables users to access the course content anytime and anywhere. Because of asynchrony of the courses, each user can participate a course according to his or her daily schedule, thus, they can enroll in their favorable courses and still continue their regular hours of work. Moreover, it helps learners to save time and cost of transportation due to the possibility of on line attendance, in addition to accessing the course content and up-to-date materials via Internet. Furthermore, users can communicate with each other and take advantage of other participants' knowledge regardless of their geographical locations. Being convenient is another key feature of an LMS since it allows learners to repeat each lecture as many times as they want. For instance, all types of media including audio and video lessons can be played frequently enough meeting users' needs. Additionally, there are some advantages for the business

section. Although the implementation of such a system can be heavily costly, employees' training costs will be reduced dramatically. Courses can be held multiple times without paying further costs to the service providers (Watson & Jenifer, 2015).

2.4 Limitations of LMS

According to the academics' experiences, there are some points to be considered when the choice is to utilize an LMS. First, the process of selection and then implementation of a course as a key factor should be considered. Second, utilizing LMS in theoretical approaches makes it challenging for attending courses. Third, some conflicting requirements and a variety of expectations pose other considerable issues upon LMS. There are some other problems associated with learning processes using an LMS such as learners' isolation due to lack of class attendance. Another issue concerns students' motivation. Since there is no scheduled class like traditional classrooms, learners' progress is not assured if they are not motivated and disciplined (Watson & Jenifer, 2015).

2.5 Choosing of LMS

The development and implementation of an LMS is a very important decision to be made in higher education. It demands great consideration of financial costs. That is why institutions should be very careful while selecting LMS over other modes of instruction.

Universities should consider what they exactly need and the goals they desire to achieve through the LMS. In the other words, before employing a system, universities should specify the objectives they seek to attain through an LMS. Iqbal and Qureshi (2011) recommended the following features as the most important factors to be taken into account when they are choosing such System: objectives and organizational goals,

technical characteristics, design specifications, user-friendly interfaces. Moreover, they are required to decide on a system which provides easy course administration, users' interaction, and comprehensive assessment and feedback. Considering all these criteria would guarantee a successful and efficient LMS.

After choosing an appropriate LMS, the other issue concerns the proper approach to utilize the system as it can result in a desirable return for both instructors and students. There are many studies on how to optimize the application of such System. Universities should implement diverse strategies in order to take advantage of the selected LMS. Such strategies may comprise encouraging collaboration between students and instructors via discussion forums and virtual chats, collaborative tests with instant feedback, or attractive learning using multimedia tools. Utilizing an LMS can reinforce students' learning capability and also encourage them to get further engaged in the course content (Watson & Jennifer, 2015).

2.6 Classification of LMS

There are now different types of LMS used by organizations and universities to manage e-learning process. It is important for institutions to consider their needs. After that, they can choose an appropriate LMS according to their requirements and expectations. Some types of LMS are described below:

2.6.1 Free/Open Source

The software of this type of LMS is open-source and it can be modified easily for each organization. Since most free LMS products lack system support, they are not reliable (Salaria, 2012).

2.6.2 Commercial

It costs money but it offers users a support staff. There are two main forms of commercial LMSs: Installed, or the cloud-based. A locally installed LMS offers users the ability to individualize and customize their LMS. While, in cloud-based LMS, the data is stored in the cloud and accessible from anywhere. Since the product is sold as a service, it offer trainers more flexibility for scaling up or down (Stracke, 2014).

2.6.3 Course-creating

It allows trainers and designers to develop their course contents. While, other LMS vendors offer separate course-creation tools for purchase (Salaria, 2012).

2.6.4 Integrated

This type of LMS provides the ability for the system to integrate with other applications such as internal calendars, email, or social networks like Facebook and Twitter (Pirani, 2014).

2.7 LMS in Payamnoor and Farhangian

It should be noted that, the type of LMSs used in Iran universities including the LMSs of Payamnoor and Farhangian universities are commercial ones. They are usually produced and supported by Iranian IT Companies and also the name of the university LMS is derived from the name of that university. The two universities studied in this research, Payamnoor and Farhangian universities, named their LMSs as Payamnoor and Farhangian, respectively (PNUNews, 2014).

Figure 2. Payamnoor LMS

As it is demonstrated in Figure 2, The Payamnoor University was established based on e-learning in 1988. Payamoor LMS is one of the pioneers of e-learning in Iran whose name means ‘The message of Light’ in Persian (PNUNews, 2014).

Figure 3. Farhangian LMS

As it is presented in Figure 3, Farhangian University is a university of teacher education and human resources development. It was established in 2012. Both Payamnoor and Farhangian LMSs have common features including electronic registration, access to courses content, the possibility of communication between curriculum planners and students, interaction between instructors and students through discussion forums, video conference, exam results, and university announcements (PNUNews, 2014).

2.8 Related Research Studies

The body of research on TAM illustrates that there is a significant and direct relationship between users' perceived usefulness and their perceived ease of use. In other words, PEU can have a substantial impact on the perceived usefulness of the technology as the result of several studies have proved this concept. This means the easier and more convenient use of technology is, the more practical way that will sound to people. As people spend more time on the use of technology, the decisive value of PEU on PE will descend. Consequently, according to the previous studies, PEU can indirectly influence users' tendency. Therefore, developers should focus more on the key factor of the system usefulness and the ease of use as a secondary component (Cowen, 2009).

Several studies have examined TAM as a model to explain how people accept and use e-learning. PU can be defined as the degree to which a student believes using e-learning will increase his or her learning. Meanwhile PEU is defined as the degree to which one believes using e-learning will be free of cognitive effort. (Selim, 2003).

According to TAM, one's actual use of a technology system is influenced directly or indirectly by the user's behavioral intentions, attitude, perceived usefulness of the system, and perceived ease of the system. TAM also proposes that external factors affect intention and actual use through mediated effects on PU and PEU (Davis, 1989).

As mentioned, an LMS is an environment where developers can create, store, reuse, manage and deliver learning content. In the other words, an LMS is a software application or a Web-based platform used for the purpose of facilitating access to learning contents and administration. It allows universities and organizations to offer courses electronically, to create electronic learning materials, to test and evaluate the students remotely, and to develop student databases in which student results and progress can be classified (Karrer, 2007).

Since the research is focused on commercial LMSs, will be discussed more on this types of LMS. There are numerous commercial LMSs, but according to a survey, Moodle, BlackBoard, WebCT, FirstClass, and Lotus Learning Space have been more popular than the others (Selimi & Veliu, 2010). Although there are a lot of commercial LMSs, organizations have preferably used the Home Edition of an LMS due to economic matters, linguistic issues and the better support for the users' requirements (Holmes & Gardner, 2006).

Nowadays, most universities have invested in LMS to deliver course materials and content to students. According to some studies conducted to assess LMS effectiveness, can be seen an increase in student satisfaction, a decrease in costs, and a reduction in dropout rates among students (Suradi and Abdulrani, 2013). Similar results were also obtained by other researchers (Min, Yamin & Ishak, 2012; Naveh, Tubin & Pliskin,

2012). In addition, there is no significant relationship between students' satisfaction level of using LMS and their gender (Chua & Montalbo, 2014; Marmon, Vanscoder & Gordesky, 2014). Some studies show that, age has no substantial impact on students' level of satisfaction (Tajuddin, Baharudin & Hoon, 2013; Cakir, 2014). However, some other researchers believe that older respondents are more satisfied with regard to the LMS compared to younger ages (Chua and Montalbo, 2014). On the other hand, most researches show that students' grades play a major role on their satisfaction level (Cakir, 2014). Moreover this result is supported by other investigators findings in the literature (Dahlstorm, Brooks & Bichsel, 2014). According to some studies, department has no remarkable impact on students' gratification level of using LMS ((Dahlstorm, Brooks & Bichsel, 2014). Additionally, the result is supported by other investigators findings in the literature (Rubin, Fernandes, Avgerinou & Moore, 2009).

As can be seen a lot of studies have been carried out to facilitate the TAM in LMSs. Here, the researcher examines the relationship between students' satisfaction level of using LMS and the components of TAM such as PU, PEU, BIT, ATUT, and ATU according to different literature. Some studies show that there is not any considerable relationship between gender and students' perceived usefulness (Shen, Luo & Sun, 2015; Raman, 2011). Moreover, based on some researches, age has no considerable influence on students' perceived usefulness level of using the LMS (Tajuddin, Baharudin & Hoon, 2013; Cakir, 2014). However, some researchers mentioned that the greater the age of users, the greater their understanding of usefulness of the LMS (Claar, Dias and Shields, 2014). The findings demonstrate that the students' grades have a significant effect on their perceived usefulness level (Cakir, 2014). Moreover, this result is supported by other investigators findings in the literature (Dahlstorm, Brooks & Bichsel, 2014). According to the studies, the department the students study

in has not had any significant impact on the students' perceived usefulness level of using LMS (Alharbi & Drew, 2014; Dahlstorm, Brooks & Bichsel, 2014).

Many researches show that there is no substantial difference between male and female students' perceived ease of use (Shen, Luo & Sun, 2015; Raman, 2011).Whereas, age has a significant impact on the students' perceived ease of use level of using the LMS (Claar, Dias & Shields, 2014; Kurkinen, 2013). Furthermore, there is a remarkable effect of students' grades on their perceived ease of use level (Cakir, 2014; Dahlstorm, Brooks & Bichsel, 2014). On the other hand, department type has no noteworthy impact on students' perceived ease of use (Alharbi & Drew, 2014). In addition, this result is in line with other investigators' findings in the literature (Dahlstorm, Brooks & Bichsel, 2014).

Similarly, there is no considerable relationship between the students' gender and their behavioral intention to use technology (Shen, Luo & Sun, 2015; Raman, 2011). Moreover, the findings determine that there is not any significant relationship between age and the students' behavioral intention to use technology (Alharbi & Drew, 2014; Tajuddin, Baharudin & Hoon, 2013; Cakir, 2014). Furthermore, the findings show that there is no notable relationship between grade and students' behavioral intention to use the LMS (Park, 2009; McCombs, 2011). According to the studies, the department type has no significant impact on the students' behavioral intention to use the LMS (Alharbi & Drew, 2014; Dahlstorm, Brooks & Bichsel, 2014).

Studies show that there is not any considerable relationship between gender and the students' attitude toward using the LMS (Chua & Montalbo, 2014; Marmon, Vanscoder & Gordesky, 2014). In addition, age has no substantial influence on the

students' attitude toward using the LMS (Alharbi & Drew, 2014; Tajuddin, Baharudin & Hoon, 2013; Cakir, 2014). Whereas, findings demonstrate that there is a significant relationship between students' grades and their attitude toward using the LMS (Cakir, 2014; Dahlstorm, Brooks & Bichsel, 2014). According to the studies, department type has not any notable impact on the students' attitude toward using technology (Dahlstorm, Brooks & Bichsel, 2014; Rubin, Fernandes, Avgerinou & Moore, 2009).

In addition, there is no considerable relationship between gender and the students' actual technology use (Chua & Montalbo, 2014; Marmon, Vanscoder & Gordesky, 2014). Moreover, the findings reveal that there is not any relation between age and the students' actual technology use (Marmon, Vanscoder & Gordesky, 2014; Tajuddin, Baharudin & Hoon, 2013; Cakir, 2014). Whilst, there is a significant effect of students' grades on students' actual use of the LMS level (Cakir, 2014; Lim, Zha, Tondeur, Chai & Tsai, 2013). According to the researches, there is no notable relation between the department the students study in and their actual technology use (Dahlstorm, Brooks & Bichsel, 2014; Alharbi & Drew, 2014).

Chapter 3

METHODOLOGY

This chapter provides a detailed information of the practical and theoretical concepts including research method, sample, data collection, and data analysis procedures employed in the survey.

3.1 Research Method

This study is designed in the form of a survey to probe into the research questions which means this investigation has made use of a quantitative approach as its data collection procedure.

The survey is a multipurpose piece of research and is generally used for mere and practical research which covers the whole range of tasks (Rose, Spinks & Canhoto, 2015). Often, the design of research content is not considered but it can have a decisive role in the response survey. The word of survey is used in research work in various ways. In most cases, it is used as a synonym for a questionnaire or in some cases, it refers to a research project. While the questionnaires are engaged extensively in research design, their use does not specify the design features. Instead, a survey can be recognized with the following three properties (Rose, Spinks, & Canhoto, 2015):

1 It produces quantitative data based on the variables of the studied population; the population can be persons, groups, or institutions. Time horizon, depending on the survey, can be repeated during the time.

2 Information is gathered by means of predefined processes and structured data collection methods. A questionnaire is often used to collect data but then the secondary structured data can also be used. In some studies, employed sources are two or more.

3 Data is collected from the target sample and is analyzed by the use of statistical analysis methods. The findings, then, are generalized to the larger population. The term of census is used when instead of a sample, the total population is studied.

This survey was directed based on a quantitative research method and data collection from questionnaire which was then interpreted according to accurate statistical procedures. The choice of quantitative research method was due to the fact that in quantitative method, efforts are made to increase objectivity, reliability, and ability to generalize findings (Howell et al, 2002). Setting the survey goals is the first step in the research process. Researchers are required to have a precise definition of the project objectives and then determine the key questions for the research. According to the purpose of the study, for each research question, one or more survey questions should be expressed (Hox and Dillman, 2007).

3.2 Population and Sample

The population of this study, were Iranian students from different faculties of two universities in Tehran which are Farhangian and Payamnoor in the academic year of 2015-2016, fall semester. The total population was over 700 people and the total number of candidates was 200 including those Iranian students who had already had the experience of working with an LMS. All participants had Iranian nationality and their native language was Persian (Farsi). Since the survey was quantitative research, convenience sampling technique was used. Convenience sampling is one of the most

common sampling methods is made up of people who are easy to reach (Farrokhi, 2012). The students were from different grades and levels and were selected from different faculties. The Iranian students' demographic information is shown in Table1 below:

Table 1. Students' Demographic Information Frequencies

	Frequency(f)	**Valid Percent (%)**
Gender		
Male	141	70.5
Female	59	29.5
Total	200	100
Age		
20-30	182	91
31-40	7	3.5
41& above	11	5.5
Grade		
1	9	4.5
2	63	31.5
3	63	31.5
4	39	19.5
Graduate Student(Master/PhD)	26	13

As Table 1 presents, the total candidates were 200. They were selected amongst students of two universities in Tehran, Farhangian and Payamnoor. While 29.5 % (59) of the candidates were female, 70.5 % (141) of them were male. The age range of the

participants was examined and the results obtained showed that 91 % (182) of them were in the age range of 20 to 30, 3.5 % (7) of them were in between 31 to 40, and 5.5 % (11) of them were over 40 years old. As it can be seen, 4.5 % (9) of the candidates were freshman, both 2nd and 3rd grade students comprise the same portion of the sample, by 31.5 % (63) participants, while 19.5 % (39) of the candidates were senior and the population of the graduate students was 13 % (26) of the total.

3.3 Data Collection Instruments

For this survey, the applied method to collect data was the quantitative research in the format of a questionnaire.

3.3.1 Questionnaire

In order to collect quantitative data, a close-ended questionnaire (Appendix A) was used. In this study, the applied questionnaire was divided into two parts: The first one contained demographic information (gender, age, grade, and department) and the second part was extracted from Siang and Santoso (2015). It consisted of 30 items using a five point Likert scale. The Likert scale items comprised strongly disagree (1), disagree (2), agree (3), strongly agree (4) and neutral (5).

3.4 Data Analysis

Quantitative data gathered from the questionnaire was analyzed through SPSS software, Version 22.0. Autonomous sample t-tests were also conducted to determine the differences between genders (Sekaran, 2003). In order to test the relationship between each variable in contrast to the student's status, ANOVA and LSD were employed.

In addition, Descriptive analysis has been employed in order to provide statistical analysis. Descriptive analysis examines both individuals' characteristics and range of

subjects. It provides useful information to respond to the local problems (Salaria, 2012).

The survey employed scientific methods with the aim of analyzing the source materials, interpreting data, creating a framework for data processing, examination of findings, and finally clarification of the results.

3.5 Validity and Reliability of Results

Wainer and Braun (1998) defined the validity as "construct validity" in quantitative research. The construct is the basic concept, question or theory that determines what kinds of data need to be gathered and how they should be collected. They also believed that quantitative research, using test or other processes, dynamically, influences the transaction between the construct and data in order to validate the survey. Generally, reliability and validity in quantitative research disclose two features: First, if there are any duplicates on the reliability of the results, and second, whether the measurement tools are accurate and to what extent they evaluate what they are supposed to measure. However, qualitative researchers have expressed different definitions for the concepts of validity and reliability and believe that the concepts defined in quantitative terms are insufficient and need to be investigated further (Golafshani, 2003).

Table 2. Overview Statistics Result

	AVE	Composite Reliability	R Square	α
ATU	0.585232	0.908027	0.418542	0.882350
ATUT	0.608817	0.903059	0.612458	0.871126
BIT	0.595598	0.854259	0.424390	0.771428
PEU	0.624012	0.892189		0.848471
PU	0.608465	0.902827		0.870218

In this survey, with published materials validity is proved and it is reliable. As can be seen from Table 2, for each construct Cronbach Alpha was > 0.7 and Cronbach Alpha for our sample was 0.846 > 0.7 as well. Similarly, the total amount of Cronbach Alpha was 0.923 > 0.7, which means that the questionnaire is acceptable in terms of reliability since it is greater than 0.7. Consequently, all constructs are considered reliable (Siang & Santoso, 2015).

Chapter 4

FINDINGS AND DISCUSSIONS

The current study examines the level of students' satisfaction from using an LMS according to the available model. The extracted quantitative data were analyzed to attain information on the students' degree of satisfaction.

4.1 Students' Level of Satisfaction of Using LMS

In this section, students' satisfaction level was inspected. As Table 3 illustrates, the minimum score is 30, while the maximum score is 120.

Table 3. Students' satisfaction levels

	N	Min	Max	X	Sd
Students' satisfaction	200	30	200	63.53	24.2

As indicated in Table 3, the satisfaction level of the students is 63.53 (52.93 %). According to the result; it was revealed that students were satisfied with the use of LMSs. The result is consistent with the results obtained by Suradi and Abdulrani (2013) and it supported by other researchers (Min, Yamin & Ishak, 2012; Naveh, Tubin & Pliskin, 2012). According to the data acquired in the questionnaire, the majority of the respondents were satisfied with the use of LMS. This is because, they believed that LMSs are essential to their learning. Moreover, they agreed that not only was provided information practical and appropriate, but also the designed course materials met their needs. It is believed that the respondents not only continue using the system also encourage others to do so. Although most students were satisfied with

the utilization of the LMS, there were some who were negative towards it or complained about the system. Generally, despite some opposing viewpoints around LMS, most students were pleased with the use of LMS and they had a positive attitude about it, since they were convinced that the LMSs provide students a user-friendly environment to easily access all lectures, courses, and materials via the internet. However, according to dissatisfied users, there are some technical issues in the use of LMS such as slow internet speed, system platform and systematic design that needs to be investigated.

4.1.1 Relationship between Students' LMS Satisfaction Level and Gender

In this section, students' satisfaction level by gender was examined. T-tests revealed the relationship between students' satisfaction level and gender, as shown in Table 4.

Table 4. Students' satisfaction level based on gender

Gender	**N**	**X**	**SS**	**Sd**	**t**	**P**
Female	59	43	28.4	70	1.78	0.079
Male	141	58.5	23.9			

As it is shown in Table 4, there was no significant difference between male or female students' degree of satisfaction in which, $t(70) = 1.78$ and $p = 0.079 > 0.05$. Therefore, it can be said that there was no considerable relationship between students' satisfaction degree and gender which is supported by other investigations in the literature (Chua & Montalbo, 2014; Marmon, Vanscoder & Gordesky, 2014).

4.1.2 Relationship between Students' LMS Satisfaction Level and Age

A one-way ANOVA was applied to examine the statistical relationship among the students' different age groups and their satisfaction level of using LMS. Table 5 provides, descriptive statistics of satisfaction level based on age.

Table 5. Descriptive statistics of satisfaction level based on age

Age	N	X	Std. Deviation
20-30	182	62.5055	24.37727
31-40	7	64.4286	27.21432
41 +	11	79.8182	11.90645
Total	200	63.5250	24.19933

In this section, students' satisfaction level by age was inspected. The results is shown in Table 6:

Table 6. Students' satisfaction level based on age

Variance Source	Sum of Squares	Sd	Mean Square	F	p.
Between Groups	3115.030	2	1557.515		
Within Groups	113420.845	197	575.740	2.705	0.069
Total	116535.875	199			

As can be seen from Tables 5 and 6 age has not had any significant impact on students' level of satisfaction from using the LMS [F (2.197) = 2.71, p=0.69>0.05]. The findings determined that there was not any relation between age and students' satisfaction. These findings are consistent with the other research results in the literature (Marmon, Vanscoder & Gordesky, 2014). In addition, this result is supported by other investigators' findings in the literature (Tajuddin, Baharudin & Hoon, 2013; Cakir, 2014). However, Chua and Montalbo (2014), mentioned that older respondents are more satisfied with regard to the LMSs compared to younger ages.

4.1.3 Relationship between Students' LMS Satisfaction Level and Their Grade

A One-way ANOVA was conducted to test students' satisfaction level based on their grades. Descriptive statistics of satisfaction level associated with age groups is given in Table 7 below.

Table 7. Descriptive statistics of satisfaction level based on grade

Grade	N	X	Std. Deviation
1	9	43.0000	28.39454
2	63	58.5079	23.87256
3	63	64.0952	21.63533
4	39	74.3846	23.57141
Master and PhD	26	65.1154	24.12853
Total	200	63.5250	24.19933

In this section, students' satisfaction level according to grade was examined. The result is shown in Table 8 below:

Table 8. Students' satisfaction level based on grade

Variance Source	Sum of Squares	Sd	Mean Square	F	P	Significant Difference
Between Groups	10062.816	4	2515.704	4.607	0.001	3 / 1
Within Groups	106473.059	195	546.016			4 / 1
Total	116535.875	199				Master and PhD / 1

As shown in Tables 7 and 8, students' grades play a significant role on their satisfaction level ($p<0.05$) of using LMS [$F(4.195) = 4.61$, $p=0.001$]. Post hoc comparisons with the LSD test specified that the mean score for the 3rd grade students group (X=64.09, SD=21.64) was dramatically different from the 1st grade students group (X=43.00, SD=28.39). Moreover, the mean score for the 4th grade students group (X=74.38, SD=23.57) was significantly different from that of the 1st grade students group (X=43.00, SD=28.39). In addition, there was a considerable difference between the Master and PhD group (X=65.12, SD=24.13) and the 1st grade students group (X=43.00, SD=28.39). The results also revealed that the 4th grade students had the highest satisfaction level in using LMS and the master and PhD students were on the second place of satisfaction level. After that, the 3rd and the 1st grade students were

placed on the next positions of satisfaction level accordingly. Generally, it can be concluded that the higher the grade, the more the satisfaction level in using the LMS. As it can be seen, master and PhD groups as well as 4th grade student group had the highest satisfaction level in using LMSs. These findings are also supported by the results attained in the previous research (Cakir, 2014). Moreover, this result is supported by other investigators' findings in the literature (Dahlstorm, Brooks & Bichsel, 2014). It is because of the level of students' knowledge. 3rd grade and 4th grade students as well as master and PhD students have more experience than 1st grade students in communication with the LMS. Consequently, they know how to use an LMS and its resources compared with the freshman students. It can be said that the higher the grade of students, the more the satisfaction level of LMS.

4.1.4 Relationship between Students' Satisfaction Level of LMS and the Department They Study In

A one-way ANOVA test was applied to examine the statistical relationship between different faculty groups and satisfaction level of using LMS. As it can be seen in Table 9, descriptive statistics of students; satisfaction level according to department is shown.

Table 9. Descriptive statistics of satisfaction level based on department

Department	**N**	**X**	**Std. Deviation**
Science	76	64.6316	23.89301
Engineering	123	62.7724	24.54264
Total	200	63.5250	24.19933

In this section, students' satisfaction level according to their departments was examined. The result is shown in Table 10 below:

Table 10. Students' satisfaction level based on department

Variance Source	Sum of Squares	Sd	Mean Square	F	P
Between Groups	234.565	2	117.282		
Within Groups	116301.310	197	590.362	0.199	0.820
Total	116535.875	199			

As can be seen from Tables 9 and 10, the department has no significant impact on students' satisfaction level of using LMS [F (2.197) = 0.199, p=0.82>0.05]. The findings, reinforced by the other research results (Dahlstorm, Brooks & Bichsel, 2014) indicate that there was no relation between the department type and students' satisfaction. Additionally, the result is supported by other investigators findings in the literature (Rubin, Fernandes, Avgerinou & Moore, 2009). It is because of the use of a common LMS for the entire university. On the other hand, all students of a university regardless their faculty, use the same LMS.

4.1.5 Students' LMS Satisfaction Level in term of the dimensions: Perceived Usefulness, Perceived Ease of Use, Behavioral Intention to Use Technology, Attitude Toward Using Technology, and Actual Technology Use

In this part, LMS satisfaction dimensions including PU, PEU, BIT, ATUT, and ATU were examined. As it can be seen in Table 11, PU had 6 items (min= 6, max= 24), PEU had 5 items (min=5, max= 20), BIT 4 items (min= 4, max= 16), ATUT had 8 items (min= 8, max= 32), and ATU had 7 items (min= 7, max= 28), respectively.

Table 11. Satisfaction dimensions' scores

Dimensions	N	X	%	Std. Deviation
Perceived Usefulness	200	12.74	53.08	6.15
Perceived Ease of Use	200	10.22	51.1	5.05
Behavioral Intention to Use Technology	200	9.04	56.5	4.26
Attitude Toward Using Technology	200	17.63	55.09	8.08
Actual Technology Use	200	13.90	49.64	6.50

According to the statistical information given in Table 11, most of the students were satisfied with the LMS dimensions. The students' satisfaction level is 12.74 (53%) at LMS perceived usefulness. According to these results, it was specified that students were satisfied with the LMS. Similar results can be seen in the research by Islam (2012), which makes the results of this study more valid. In a study done by Kripanont (2007), it was indicated that in order to reach effective and efficient results on LMSs, PU should be precisely examined.

The students' satisfaction level is 10.22 (51.1%) at LMS dimension perceived ease of use. According to these results, it was specified that students were satisfied with the LMS. Similar results can be seen in the study by Islam (2012). Therefore, it can be said that LMSs actually influenced students' progress (Kripanont, 2007).

The students' satisfaction level at behavioral intention to use technology of LMSs is 9.04 (56.5%). This means that students were satisfied with the LMS. Similarly, Park (2009), mentioned that students' intention to use technology has a positive effect on

user satisfaction. (Tsai, 2012) has found that BIT had a significant effect on the students' satisfaction.

The students' satisfaction level is 17.63 (55%) at attitude toward using technology of LMS. This means that students were satisfied with the LMSs. Metin et al (2012), have found that the ATUT was positive. Also, this study is similar to (Al-Zaidiyeen, Mei & Fook, 2010).

The students' satisfaction level at actual technology use of LMSs is 13.90 (49.64%). According to these results, it was specified that students were satisfied with the LMS. This result is supported by Liyanagunawardena (2008). In addition, the study of Psycharis, Chalatzoglidis and Kalogiannakis (2011), supported that there was a positive relationship between ATU and user satisfaction.

4.1.5.1 Relationship between Students' Perceived Usefulness Level and Gender

T-test results showed dimensions of the LMS satisfaction level of students by gender, as shown in Table 12.

Table 12. Students' perceived usefulness level based on gender

Gender	N	X	SS	Sd	T	P
Female	59	12.34	5.55	198	0.59	0.552
Male	141	12.91	6.39			

As can be seen from Table 12, there was no significant difference on the students' perceived usefulness between male and female [t (198) =0.59, p=0.552>0.05]. This result shows that there was not any considerable relationship between gender and students' perceived usefulness. This result is supported by other investigations in the literature (Shen, Luo & Sun, 2015; Raman, 2011).

4.1.5.2 Relationship between Students' Perceived Usefulness Level and Age

A one-way ANOVA test was conducted to show statistical information regarding the students' satisfaction for dimensions of the LMS in different age groups as shown in Table 13 below:

Table 13. Descriptive statistics of students' perceived usefulness level based on age

Age	N	X	Std. Deviation
20-30	182	12.4890	6.13633
31-40	7	12.4286	6.55381
41 +	11	17.0909	4.76350
Total	200	12.7400	6.14747

In this section, students' perceived usefulness level by age was inspected. The results is presented in Table 14:

Table 14. Students' perceived usefulness level based on age

Variance Source	Sum of Squares	sd	Mean Square	F	p.
Between Groups	220.379	2	110.189		
Within Groups	7300.101	197	37.056	2.974	0.053
Total	7520.480	199			

As can be seen from Tables 13 and 14, age has no significant impact on students' perceived usefulness level of using the LMS [F (2.197) = 2.97, p=0.053>0.05]. The findings determine that there was not any relation between age and students' level of perceived usefulness. Furthermore, these findings are reinforced by another research results in the literature (Alharbi & Drew, 2014). In addition, these results are supported by other investigators' findings in the literature (Tajuddin, Baharudin & Hoon, 2013; Cakir, 2014). However, Claar, Dias and Shields (2014), mentioned that the greater the age of users, the greater their understanding of usefulness of the LMS. This is because,

LMSs for all users with different age groups can be useful and meet learners' needs. However, this result requires further studies. It might be best to increase the number of participants and also change or correct some questions while maintaining reliability of the questionnaire.

4.1.5.3 Relationship between Students' Perceived Usefulness Level and Their Grades

A One-way ANOVA was run to test the students' satisfaction for dimensions of the LMS on different grade groups to examine the relationship between the students' perceived usefulness and their grades. Descriptive statistics of the students' perceived usefulness based on grade is given in Table 15.

Table 15. Descriptive statistics of students' perceived usefulness level based on grade

Grade	N	X	Std. Deviation
1	9	5.3333	7.77817
2	63	11.9206	5.50748
3	63	12.3175	5.94823
4	39	15.7949	5.36156
Master and PhD	26	13.7308	6.10939
Total	200	12.7400	6.14747

In this section, students' perceived usefulness level according to their grades was examined. The results is given in Table 16 below:

Table 16. Students' perceived usefulness level based on grade

Variance Source	Sum of Squares	Sd	Mean Square	F	P	Significant Difference
Between Groups	936.752	4	234.188	6.936	0.000	3 / 1
Within Groups	6583.728	195	33.763			4 / 1
Total	7520.480	199				Master and PhD / 1

As can be seen from Tables 15 and 16, a one-way ANOVA approach has been employed to study the relationship between the students' perceived usefulness level and their grades. The findings show that the students' grades have a remarkable effect on their perceived usefulness level ($p<0.05$) of using LMS [$F(4.195) = 6.94$, $p=0.000$]. Post hoc comparisons with the LSD test specified that the mean score for the third grade students group ($X=12.32$, $SD=5.95$) was dramatically different from that of the first grade students group ($X=5.33$, $SD=7.78$). Moreover, the mean score for the fourth grade students group ($X=15.79$, $SD=5.36$) was significantly different from that of the first grade students group ($X=5.33$, $SD=7.78$). In addition, there was a considerable difference between the master and PhD group ($X=13.73$, $SD=6.11$) and the first grade students group ($X=5.33$, $SD=7.78$). These results showed that the fourth grade students had the highest perceived usefulness level of using LMS followed by the master and PhD students who were on the second level. The third and the first grade students were placed on the next positions of perceived usefulness level, accordingly. Generally, the results showed that the higher the students' grade is, the more their perceived usefulness level of using LMS is. As it can be seen the master and PhD group as well as fourth grade students group had the highest perceived usefulness level of using the LMSs. These findings are also supported by the other research results (Cakir, 2014). Moreover, this result is supported by other investigators findings in the literature (Dahlstorm, Brooks & Bichsel, 2014). The level of students' knowledge play a major role in their gratification. This is because, the master and PhD students as well as the 3rd grade and 4th grade students are more familiar with the features and functionality of an LMS than 1st grade students. That is why, the LMS is not useful enough for the 1st grade students. Instructors are required to put effort into designing courses utilizing the LMS so that the freshman students will be able to learn effectively.

4.1.5.4 Relationship between Students' Perceived Usefulness Level and the Department They Study In

A one-way ANOVA test has directed to examine the students' satisfaction for dimensions of the LMS in different. A one-way ANOVA test focused to examine the statistical relationship between different faculty groups and students' perceived usefulness.

Table 17. Descriptive statistics of Students' perceived usefulness level based on department

Department	**N**	**X**	**Std. Deviation**
Science	76	13.5395	6.33602
Engineering	123	12.2683	6.02328
Total	200	12.7400	6.14747

Table 17 shows the descriptive statistics of students' perceived usefulness level based on department. Students' perceived usefulness level according to department is shown in Table 18:

Table 18. Students' perceived usefulness level based on department

Variance Source	**Sum of Squares**	**sd**	**Mean Square**	**F**	**P**
Between Groups	83.452	2	41.726		
Within Groups	7437.028	197	37.751	1.105	0.333
Total	7520.480	199			

As can be seen from Table 17 and 18, the department the students study in has not had any significant impact on the students' perceived usefulness level of using LMS. [F (2.197) = 1.105, p=0.33>0.05]. The findings determine that there was no relation between the department type and students' perceived usefulness level. These findings are reinforced by the other research results (Alharbi & Drew, 2014; Dahlstorm, Brooks

& Bichsel, 2014). This result can be due to the use of the same LMS by users. It might be better if there was different LMS in each department. Further studies will need to be conducted to better understand the cause.

4.1.5.5 Relationship between Students' Perceived Ease of Use Level and Gender

A T-test was run to show the effect of the students' gender on their perceived ease of use, the second dimension of the LMS satisfaction, and the results are described in Table 19.

Table 19. Students' perceived ease of use level based on gender

Gender	N	X	SS	Sd	t	P
Female	59	10.53	4.91	198	0.56	0.576
Male	141	10.09	5.12			

As it can be seen from Table 19, there was no significant difference between male and female students' perceived ease of use [t (198) =0.56, p=0.576>0.05]. The results show that there was not any considerable relationship between gender and the students' perceived ease of use. This result is supported by other investigators' findings in the literature (Shen, Luo & Sun, 2015; Raman, 2011). There are many reasons for a lack of statistical significance between gender and students' perceived ease of use, further studies will need to be accomplished to understand the reason. It might be due to the questionnaire instrument or the number of participants.

4.1.5.6 Relationship between Students' Perceived Ease of Use Level and Age

A one-way ANOVA test was conducted to provide statistical information regarding the students' satisfaction from the second dimension of the LMS in different age groups as shown in Table 20 below:

Table 20. Descriptive statistics of students' perceived ease of use level based on age

Age	N	X	Std. Deviation
20-30	182	9.9396	5.04364
31-40	7	10.7143	5.64843
41 +	11	14.4545	2.73363
Total	200	10.2150	5.05436

In this section students' perceived ease of use level according to their age is presented in Table 21 below:

Table 21. Students' perceived ease of use level based on age

Variance Source	Sum of Squares	sd	Mean Square	F	p.
Between Groups	220.379	2	106.632		
Within Groups	7300.101	197	24.723	4.313	0.015
Total	7520.480	199			

As can be seen from Tables 20 and 21, a one-way ANOVA was employed to examine the impact of age on the students' perceived ease of use. According to the results, age had a significant impact on the students' perceived ease of use level of using the LMS [F (2.197) = 4.31, p=0.015<0.05]. The findings determined that there was a considerable relationship between age and students' perceived ease of use. Furthermore, these findings are reinforced by the other research results in the literature (Claar, Dias & Shields, 2014; Kurkinen, 2013). As the results show, working with LMSs is easier for older users than younger users. This is because, they have more experience in the use of such systems. Consequently, they are more convenient with the LMS in comparison with the younger learners.

4.1.5.7 Relationship between Students' Perceived Ease of Use Level and Their Grades

A One-way ANOVA was conducted to test if the students' grade has any significant effect on their perceived ease of use. The results are shown in Table 22.

Table 22. Descriptive statistics of students' perceived ease of use level based on grade

Grade	N	X	Std. Deviation
1	9	4.8889	5.01110
2	63	10.3175	4.74112
3	63	9.0000	5.31280
4	39	11.5897	4.18467
Master and PhD	26	12.6923	4.43413
Total	200	10.2150	5.05436

A one-way ANOVA test has been directed to examine the relationship between students' perceived ease of use and their grades. Table 22 reports the descriptive statistics of the students' perceived ease of use based on their grade. Students' perceived ease of use level based on their grade is shown in Table 23 below:

Table 23. Students' perceived ease of use level based on grade

Variance Source	Sum of Squares	sd	Mean Square	F	P	Significant Difference
Between Groups	936.752	4	145.560	6.305	0.000	3 / 1
Within Groups	6583.728	195	23.085			4 / 1
Total	7520.480	199				Master and PhD / 1

As can be seen from Table 22 and 23, there was a significant effect of students' grades on students' perceived ease of use level ($p<0.05$) in using LMS [$F(4.195) = 6.31$, $p=0.000$]. Post hoc comparisons with the LSD test specified that the mean score for

the third grade students group (X=9.00, SD=5.31) was dramatically different than the first grade students group (X=4.89, SD=5.01). Moreover, the mean score for the fourth grade students group (X=11.59, SD=4.18) was significantly different from that of the first grade students group (X=4.89, SD=5.01). In addition, there was a considerable difference between the master and PhD group (X=12.69, SD=4.43) and the first grade students group (X=4.89, SD=5.01). These results showed that master and PhD students have the highest perceived ease of use level in using LMS. Then, the fourth grade students were on the second rank. The third and the first grade students were placed on the next positions of perceived ease of use level, accordingly. Generally, the results have shown that the higher the grade the students study in is, the greater their perceived ease of use level in using LMS. As it can be seen the master and PhD group as well as the fourth grade students group have the highest perceived ease of use level in using LMSs. These findings are supported by the other research results (Cakir, 2014; Dahlstorm, Brooks & Bichsel, 2014). As already mention for the similar results, it is because of the students' awareness about the LMS. The master and PhD students as well as the junior and senior students are more familiar with the features and functionality of an LMS than freshman students. For this reason, they can easily use the LMS compared with the 1st grade students.

4.1.5.8 Relationship between Students' Perceived Ease of Use Level and the Department They Study In

A one-way ANOVA test was directed to examine how the students' level of perceived ease of use is affected by the department they study in and the results are Table 24 below:

Table 24. Descriptive statistics of Students' perceived ease of use level based on department

Department	N	X	Std. Deviation
Science	76	9.7237	4.78497
Engineering	123	10.4878	5.22034
Total	200	10.2150	5.05436

In this section the students' perceived ease of use level according to department is shown in Table 25:

Table 25. Students' perceived ease of use level based on department

Variance Source	Sum of Squares	Sd	Mean Square	F	P
Between Groups	41.826	2	20.913		
Within Groups	5041.929	197	25.594	0.817	0.443
Total	5083.755	199			

As can be seen from Table 24 and 25, the department type has no significant impact on students' perceived ease of use [F (2.197) = 0.817, p=0.44>0.05]. The findings showed that there was no relation between the department and students' perceived ease of use level. These findings are reinforced by the other research results (Alharbi & Drew, 2014). In addition, this result is in line with other investigators' findings in the literature (Dahlstorm, Brooks & Bichsel, 2014). It is because of the use of an LMS for the entire university. On the other hand, all students from different faculties, use the same LMS. That is why, the impact of department on students' perceived ease of use is not so perceptible. However, this result requires further studies. It might be best to increase the number of participants.

4.1.5.9 Relationship between Students' Behavioral Intention to Use Technology and Gender

T-test results, as shown in Table 26, revealed an insignificant relationship between the students' gender and their level of behavioral intention to use technology.

Table 26. Students' behavioral intention to use technology level based on gender

Gender	N	X	SS	Sd	T	P
Female	59	8.54	4.10	198	1.07	0.287
Male	141	9.25	4.33			

As can be seen from Table 26, there was no significant difference between male and female students' behavioral intention to use technology, t (198) =1.07, p=0.287>0.05. This result shows that there is no considerable relationship between the students' gender and their behavioral intention to use technology. Furthermore, this result is supported by other researchers' findings in the literature (Shen, Luo & Sun, 2015; Raman, 2011).

4.1.5.10 Relationship between Students' Behavioral Intention to Use Technology and Age

A one-way ANOVA test was used to examine the statistical relationship between the different age groups of the students and their behavioral intention to use technology. The descriptive statistics of the students' behavioral intention to use technology level based on age is given in Table 27.

Table 27. Descriptive statistics of students' behavioral intention to use technology level based on age

Age	**N**	**X**	**Std. Deviation**
20-30	182	8.9670	4.26330
31-40	7	8.5714	5.22357
41 +	11	10.5455	3.69767
Total	200	9.0400	4.26372

In this section students' behavioral intention to use technology according to their age is shown in Table 28:

Table 28. Students' behavioral intention to use technology level based on age

Variance Source	**Sum of Squares**	**Sd**	**Mean Square**	**F**	**p.**
Between Groups	27.436	2	13.718		
Within Groups	3590.244	197	18.225	0.753	0.472
Total	3617.680	199			

As can be seen from Tables 27 and 28, a one-way ANOVA has been employed to examine the impact of age on the students' behavioral intention to use technology. According to the results, age has no significant impact on the students' behavioral intention to use the LMS [F (2.197) = 0.75, p=0.472>0.05]. The findings determined that there was not any significant relationship between age and the students' behavioral intention to use technology. These findings are reinforced by the other research results in the literature (Alharbi & Drew, 2014; Tajuddin, Baharudin & Hoon, 2013; Cakir, 2014). As can be seen, most of the ANOVA results involving age were not significant. This is because, regardless learners' age, there are a lot of factors can affect the students' intention to use technology. It is believed that the key factor is the effectiveness and the efficiency of technology. As the technology of an LMS can meet

the users' requirements, certainly, it will be fascinate for many users of different age groups.

4.1.5.11 Relationship between Students' Behavioral Intention to Use Technology and Their Grades

A One-way ANOVA was conducted to test the students' different, if so, behavioral intention to use the LMS on different grade groups. The results are shown on Table 29.

Table 29. Descriptive statistics of students' behavioral intention to use technology level based on grade

Grade	N	X	Std. Deviation
1	9	8.8889	5.84047
2	63	8.0794	3.91565
3	63	9.9365	3.85157
4	39	9.5641	4.52359
Master and PhD	26	8.4615	4.76849
Total	200	9.0400	4.26372

Students' behavioral intention to use technology level based on grade is shown in Table 30 below:

Table 30. Students' behavioral intention to use technology level based on grade

Variance Source	Sum of Squares	sd	Mean Square	F	P	Significant Difference
Between Groups	128.391	4	32.098	1.794	0.132	3 / 1
Within Groups	3489.289	195	17.894			4 / 1
Total	3617.680	199				Master and PhD / 1

As can be seen from Tables 29 and 30, a one-way ANOVA test approach has been employed to study the relationship between students' behavioral intention to use technology level and their grades. The findings showed that there was no considerable

relationship between grade and students' behavioral intention to use the LMS ($p>0.05$) [$F(4.195) = 1.794$, $p=0.132$]. Post hoc comparisons with the LSD test specified that the mean score for the third grade students group ($X=9.94$, $SD=3.85$) was not significantly different from the first grade students group ($X=8.89$, $SD=5.84$). Moreover, the mean score for the fourth grade students group ($X=9.56$, $SD=4.52$) was not significantly different from the first grade students group ($X=8.89$, $SD=5.84$). In addition, there was not a considerable difference between the master and PhD group ($X=8.46$, $SD=4.77$) and the first grade students group ($X=8.89$, $SD=5.84$). These results show that the grade has no significant effect on the students 'behavioral intention to use technology. In addition, these results are in line with the other research results (Park, 2009) and further support the other investigators' findings in the literature (McCombs, 2011). As already mentioned, this is because, most learners regardless their entry background such as age, level of education and awareness of the LMS, have tendency to use technology of LMS. However, it needs more surveys to reinforce this claim.

4.1.5.12 Relationship between Students' Behavioral Intention to Use Technology and the Department They Study In

A one-way ANOVA test was applied to check if the students' study department has any significant effect on their behavioral intention to use the LMS. Table 31 reports on the results:

Table 31. Descriptive statistics of Students' behavioral intention to use technology level based on department

Department	**N**	**X**	**Std. Deviation**
Science	76	9.2237	4.30069
Engineering	123	8.9268	4.27185
Total	200	9.0400	4.26372

The students' behavioral intention to use technology level based on department is shown in Table 32:

Table 32. Students' behavioral intention to use technology level based on department

Variance Source	Sum of Squares	Sd	Mean Square	F	p
Between Groups	4.141	2	2.071		
Within Groups	3613.539	197	18.343	0.113	0.893
Total	3617.680	199			

As indicated in Tables 31 and 32, a one-way ANOVA has been used to examine the impact of the department students study in on students' behavioral intention to use technology. According to the results, the department type has no substantial impact on the students' behavioral intention to use the LMS [F (2.197) = 0.113, p=0.89>0.05]. These findings are reinforced by the other research results (Alharbi & Drew, 2014; Dahlstorm, Brooks & Bichsel, 2014). There are many reasons for a lack of statistical significance between department and students' students' behavioral intention to use technology such as the questionnaire instrument or the number of participants. Further studies will need to be conducted to better understand the cause.

4.1.5.13 Relationship between Students' Attitude Toward Using Technology and Gender

T-test results, reported in Table 33, showed an insignificant influence of gender on the students' attitude toward using the LMS.

Table 33. Students' attitude toward using technology level based on gender

Gender	N	X	SS	Sd	T	P
Female	59	16.42	7.75	198	1.37	0.173
Male	141	18.13	8.19			

As can be seen from Table 33, there was an insignificant difference between male and female student's attitude toward using technology, t (198=1.37, p=0.173>0.05). This result shows that there was not any considerable relationship between gender and the students' attitude toward using the LMS. This result is supported by the previous related research (Chua & Montalbo, 2014; Marmon, Vanscoder & Gordesky, 2014).

4.1.5.14 Relationship between Students' Attitude Toward Using Technology and Age

A one-way ANOVA test was applied to provide statistical information regarding the effect of the students' age on their attitude toward using the LMS, as shown in Table 34 below:

Table 34. Descriptive Statistics of Students' attitude toward using technology level based on age

Age	**N**	**X**	**Std. Deviation**
20-30	182	17.4505	8.24790
31-40	7	16.0000	8.48528
41 +	11	21.6364	2.24823
Total	200	17.6300	8.08144

A one-way ANOVA test has focused on examining the statistical relationship between the different age groups of students and their attitude toward using the LMS. As it can be seen in Table 34, descriptive statistics of the students' attitude toward using technology of the LMS based on age is given. Students' attitude toward using technology level based on age is shown in Table 35:

Table 35. Students' attitude toward using technology level based on age

Variance Source	Sum of Squares	Sd	Mean Square	F	p.
Between Groups	201.020	2	100.510		
Within Groups	12795.600	197	64.952	1.547	0.215
Total	12996.620	199			

As Tables 34 and 35 report, a one-way ANOVA has been used to examine the impact of age on students' attitude toward using the LMS. According to the results, age has no noteworthy impact on the students' attitude toward using the LMS [F (2.197) = 1.55, p=0.215>0.05]. The findings revealed that there was not any significant relationship between age and students' attitude toward using technology; the point which is reinforced by the other research results in the literature (Alharbi & Drew, 2014; Tajuddin, Baharudin & Hoon, 2013; Cakir, 2014). It is because of the attraction of technology for users. The result show that most users, regardless their age, weather young or old, have positive attitude toward using the LMS.

4.1.5.15 Relationship between Students' Attitude Toward Using Technology and Their Grades

A One-way ANOVA was conducted to test how the students' grades could possibly affect their attitude toward using the LMS. The descriptive statistics of the results is presented in Table 36.

Table 36. Descriptive statistics of students' attitude toward using technology level based on grade

Grade	N	X	Std. Deviation
1	9	16.5556	10.13794
2	63	15.3016	8.28842
3	63	18.3016	7.14286
4	39	21.2051	7.31322
Master and PhD	26	16.6538	8.52264
Total	200	17.6300	8.08144

Students' attitude toward using technology level based on grade is shown in Table 37 below:

Table 37. Students' attitude toward using technology level based on grade

Variance Source	Sum of Squares	sd	Mean Square	F	P	Significant Difference
Between Groups	903.615	4	225.904	3.643	0.007	3 / 1
Within Groups	12093.005	195	62.015			4 / 1
Total	12996.620	199				Master and PhD / 1

As can be seen from Tables 36 and 37, a one-way ANOVA test was run to study the relationship between students' grades and their attitude toward using technology. The findings showed that there was a remarkable relationship between their grades and attitude toward using the LMS ($p<0.05$) [$F (4.195) = 3.643$, $p=0.007$]. Post hoc comparisons with the LSD test illustrated that the mean score for the 3rd grade students group (X=18.30, SD=7.14) was dramatically different than the 1st grade students group (X=16.56, SD=10.14). Moreover, the mean score for the 4th grade students group (X=21.21, SD=7.31) was significantly different from that of the 1st grade students group (X=16.56, SD=10.14). In addition, there was considerable difference between the master and PhD group (X=21.21, SD=7.31) and the 1st grade students group (X=16.65, SD=8.52). This result which is also supported by the other research results (Cakir, 2014; Dahlstorm, Brooks & Bichsel, 2014). This is because, the junior and senior students as well as master and PhD students are at a higher level of knowledge than freshman students. That is why, their attitude toward using technology of LMS is more positive than freshman students. On the other hand, if students have more experience, they are more satisfied with the use of LMS.

4.1.5.16 Relationship between Students' Attitude Toward Using Technology and the Department They Study In

A one-way ANOVA test, shown in Table 38, was directed to examine the probable difference in students' attitude toward using the LMS due to studying in different departments.

Table 38. Descriptive statistics of Students' attitude toward using technology level based on department

Department	N	X	Std. Deviation
Science	76	18.1842	8.14651
Engineering	123	17.2520	8.07708
Total	200	17.6300	8.08144

Table 38 reports on the descriptive statistics of students' attitude toward using technology level based on department is given. Students' attitude toward using technology level according to department is shown in Table 39 below:

Table 39. Students' attitude toward using technology level based on department

Variance Source	Sum of Squares	sd	Mean Square	F	P
Between Groups	60.012	2	30.006		
Within Groups	12936.608	197	65.668	0.457	0.634
Total	12996.620	199			

As revealed in Tables 38 and 39, a one-way ANOVA has been employed to examine the impact of the department the students study in on their attitude toward using the LMS. According to the results, department type has no considerable impact on the students' attitude toward using technology [F (2.197) = 0.457, p=0.63>0.05]; thus, there has been no relationship spotted between department type and the students' attitude toward using technology level. Additionally, these findings are reinforced by

the previous studies findings (Dahlstorm, Brooks & Bichsel, 2014; Rubin, Fernandes, Avgerinou & Moore, 2009). This is because that all departments use the same LMS. Most probably, if there was different LMS in each department, the result was different. However, this result requires further studies. It might be best to increase the number of participants and also change or correct some questions while maintaining reliability of the questionnaire.

4.1.5.17 Relationship between Students' Actual Technology Use and Gender

A T-test was conducted to examine the probable effect of the students' gender on the fifth dimension of satisfaction from the LMS, i.e. actual technology use. The results are reported in Table 40.

Table 40. Students' actual technology use level based on gender

Gender	N	X	SS	Sd	T	P
Female	59	14.46	6.41	198	0.78	0.434
Male	141	13.67	6.55			

As can be seen from Table 40, there was no substantial difference between male or female students and their actual use of the LMS, t (198) = 0.78, p=0.434>0.05. This result shows that there was no considerable relationship between gender and the students' actual technology use, the point which further supports the findings of the previous research (Chua & Montalbo, 2014; Marmon, Vanscoder & Gordesky, 2014).

4.1.5.18 Relationship between Students' Actual Technology Use and Age

A one-way ANOVA test was utilized with the purpose of examining the statistical relationship between the different age groups of students and their actual technology use. Table 41 reports the statistical information regarding this relationship.

Table 41. Descriptive statistics of students' actual technology use level by age

Age	**N**	**X**	**Std. Deviation**
20-30	182	13.6593	6.49814
31-40	7	16.7143	8.63548
41 +	11	16.0909	4.63583
Total	200	13.9000	6.50628

Table 41 reports on the descriptive statistics of students' actual technology use level based on aget is given The students' actual technology use level according to age is shown in Table 42:

Table 42. Students' actual technology use level by age

Variance Source	**Sum of Squares**	**sd**	**Mean Square**	**F**	**p.**
Between Groups	118.783	2	59.392		
Within Groups	8305.217	197	42.158	1.409	0.247
Total	8424.000	199			

As indicated in Tables 41 and 42, age has no significant impact on the students' actual use of the LMS [F (2.197) = 1.41, p=0.247>0.05]. The findings revealed that there was not any relation between age and the students' actual technology use. These findings are consistent with other research results in the literature (Marmon, Vanscoder & Gordesky, 2014; Tajuddin, Baharudin & Hoon, 2013; Cakir, 2014). This is because, the students' actual technology use depends on the system performance. This means that if LMS can meet the users' requirements, undoubtedly, it can attract many users of different age groups.

4.1.5.19 Relationship between Students' Actual Technology Use and Their Grades

A One-way ANOVA was conducted to test any possible variation in the students' actual use of the LMS due to difference in their grades. The results are shown in Table 43.

Table 43. Descriptive statistics of students' actual technology use level based on grade

Grade	N	X	Std. Deviation
1	9	7.3333	7.12390
2	63	12.8889	6.06979
3	63	14.5397	6.13773
4	39	16.2308	5.95802
Master and PhD	26	13.5769	7.36572
Total	200	13.9000	6.50628

The students' actual technology use level based on their grades is shown in Table 44 below:

Table 44. Students' actual technology use level based on grade

Variance Source	Sum of Squares	Sd	Mean Square	F	P	Significant Difference
Between Groups	692.858	4	173.214	4.369	0.002	3 / 1
Within Groups	7731.142	195	39.647			4 / 1
Total	8424.000	199				Master and PhD / 1

As Tables 43 and 44 report, a one-way ANOVA test approach was employed to study the relationship between the students' actual technology use level and their grades. The findings show that there was a noteworthy effect of students' grades on students' actual use of the LMS level ($p<0.05$) [$F(4.195) = 4.37$, $p=0.002$]. Post hoc comparisons with the LSD test specified that the mean score for the third grade

students group (X=14.54, SD=6.14) was dramatically different than the first grade students group (X=7.33, SD=7.12). Moreover, the mean score for the fourth grade students group (X=16.23, SD=5.96) was significantly different than the first grade students group (X=7.33, SD=7.12). In addition, there was a considerable difference between the master and PhD group (X=13.58, SD=7.37) and the first grade students group (X=7.33, SD=7.12). These results are supported by the other research results (Cakir, 2014; Lim, Zha, Tondeur, Chai & Tsai, 2013). As mentioned for the same results, it is because of the students' awareness of an LMS. Since master and PhD students as well as the junior and senior students are more familiar with the features and functionality of an LMS than freshman students, they can utilize the LMS better. On the other hand, when the students have more years of experience, they feel more satisfied with the LMS.

4.1.5.20 Relationship between Students' Actual Technology Use and the Department They Study In

A one-way ANOVA test, reported in Table 45, was directed to study the probable relationship between the students' actual use of the LMS and the department they study in.

Table 45. Descriptive statistics of Students' actual technology use level based on department

Department	N	X	Std. Deviation
Science	76	13.9605	5.90467
Engineering	123	13.8374	6.89425
Total	200	13.9000	6.50628

The one-way ANOVA test focused on examining the statistical relationship between the different faculty groups and students' actual technology use. As it can be seen, the

descriptive statistics of students' actual technology use level based on department is given in Table 45. The students' actual technology use level based on department is shown in Table 46:

Table 46. Students' actual technology use level based on department

Variance Source	Sum of Squares	sd	Mean Square	F	P
Between Groups	10.370	2	5.185		
Within Groups	8413.630	197	42.709	0.121	0.886
Total	8424.000	199			

As shown in Tables 45 and 46, the results point out no substantial effect of the department type on the students' actual use of the LMS[F (2.197) = 0.121, p=0.89>0.05]. The findings determined that there was no relation between the department the students study in and their actual technology use. These findings are in line with the results of the previous studies (Dahlstorm, Brooks & Bichsel, 2014; Alharbi & Drew, 2014). As can be seen, most of the ANOVA results involving department were not significant. There are many reasons for a lack of statistical significance between students' department and their actual technology use. Further studies will need to be conducted to better understand the cause. It might be due to the questionnaire instrument or the number of participants and also cause of the use of the same LMS by users in all departments.

Chapter 5

CONCLUSION

This chapter introduces the major results of the study and discusses them in the light of the findings of the current research. The following sections are dedicated to the concepts and recommendations for further research.

The findings are as follows:

Considering the survey reports, Payamnoor and Farhangian LMSs usage, for the vast majority of Iranian students regardless their gender, age, and department was satisfactory. However, there were some discontent regarding the platform and systematic design of the both LMS providers. In addition, the research findings revealed that there was no considerable correlation between LMS satisfaction dimensions including PU, BIT, ATUT, ATU, and learners' gender, age and faculty. Whereas, age had substantial impact on PEU. The investigation revealed PEU is the most critical problem the younger users facing today. Since the younger users have the lower skill in the use of an LMS, they mostly prefer to use comprehensible technologies with simple interface.

Moreover, the students with the higher academic level have more years of experience in working with an LMS, learners' grade discovered as the crucial factor in their satisfaction level of using LMS. According to the survey, students' behavioral intention to use technology, known as the only factor was not affected by grade. This

means that the most Iranian students regardless their academic level and also despite the LMS issues, tend to utilize the LMS frequently.

Payamnoor and Farhangian LMSs attempt to provide a user-friendly environment for learners with the aim of evolution in e-learning. These two LMS providers have a remarkable capacity for development and innovation. For this purpose, it is crucial to have a better understanding of Iranian students' needs, requirements, and expectations to optimize the LMS.

In general, the quality and the current mechanism of Payamnoor and Farhangian LMSs is not perfect, but it can be improved gradually by continuous study and data analysis.

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APPENDIX

Appendix A: Questionnaire

Please place an "X" in the appropriate box to rate the following items.

Part A: Demographic Information

Gender: Male___ Female ___

Age (in years): 20-30 ____ 31-40 ___ 41 & above____

Grade:

1____

2____

3____

4____

Graduate Student_____ (Master/PhD)

Department: _____

Part B: TAM for Learning Management Systems (LMS)

Please place an "X" in the appropriate box to rate the following items using a scale of 1-5:

1= Strongly Disagree 2= Disagree 3= Agree 4 =Strongly Agree 5=N/A

SD D A SA N/A

		1	2	3	4	5
1	The LMS helps me to increase my learning productivity.					
2	The LMS helps me to find the course materials.					
3	The LMS helps me to submit the assignments.					
4	The LMS increase my academic performance.					
5	The LMS helps me in learning process.					
6	The LMS helps me to ask the lecturer and discuss with the lecturer for					
7	The LMS is easy to be operated.					
8	The LMS use understandable language.					
9	The LMS use the appropriate background color and letter.					
10	The LMS has systematic menu.					
11	The LMS is accessible, from the inside and outside of the universities.					
12	I have an intention to use LMS every day.					
13	I have an intention to check the latest materials.					
14	I have an intention to check my grade through the LMS.					
15	I have an intention to encourage my colleague to use the LMS.					
16	I use the LMS without any compulsion from anyone.					
17	I need the LMS.					
18	I am happy when I use the LMS.					
19	Using the LMS to submit the assignment is a creative idea.					
20	Using the LMS to download the course materials is an innovative idea.					
21	Using the LMS to discuss with the lecturer and colleague is a positive					
22	Using the LMS is good and wise decision.					
23	I am going to encourage my colleague to use the LMS.					
24	I use the LMS to support the learning activities.					
25	I always access the LMS every day.					
26	I get the course materials from the LMS.					
27	I download and upload the assignment through the LMS.					
28	I use the LMS to check my grade.					
29	I am satisfied to use the LMS.					
30	I tell my colleague about my satisfaction using the LMS.					