Learners' Acceptance of Learning Management Systems: Developing a theoretical framework

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ABSTRACT

The use of information communication technology to build human resources is a vital prerequisite for the development of knowledge-based economy. Learning Management Systems (LMS) do not only provide academic institutions with effective and efficient means to build human resources but also enable them to efficiently and effectively codify and share their academic knowledge. The success of learning management systems in academic institution may be initiated by instructors' acceptance; however, it survives in the long run by learners' continuous acceptance and utilization. Consequently, the objective of this paper is to provide a comprehensive look at the critical factors that influence learners' acceptance of LMS and consequently their actual use. These critical factors are related to the major entities of LMS: the learner, the instructor, the course, the classmates, the organization, and the technology.

Keywords: e-learning, Learning Management Systems, Learners' Acceptance, Theoretical Framework

1. INTRODUCTION

The use of information communication technology (ICT), to build human resources is a vital prerequisite for the development of knowledge-based economy especially for developing country. Learning Management Systems do not only provide academic institutions with effective and efficient means to build human resources but also enable them to efficiently and effectively codify and share their academic knowledge. Recently, the adoption of e-learning systems has been increasing in the academic world. In 2004, the e-learning market was worth more than US $18 billion worldwide [33]. Current reports presented that more than 90% of all participating universities and colleges in USA [15] and about 95% of participating institutions in UK have adopted LMS for students and instructors use [6]. In the Middle East, e-learning projects are expected to exceed a compound average growth rate of 32% by 2008, based on the Madar research group [33].

Examining the acceptance of learning management systems (LMS) is essential to succeed in their deployment. In the e-learning context, the examination of end users acceptance may be carried out from the instructors' perspective or learners' perspective. This study aims to frame a comprehensive model to evaluate the learning management systems from the learners' perspective. The success of learning management systems in academic institution may be initiated by instructors' acceptance; however, it survives in the long run by learners' continuous acceptance and utilization. Measuring users' acceptance and satisfaction is a “basic marketing element” to manage e-learning initiative [18]. Consequently, the objective of this paper is to provide a comprehensive look at the critical factors that influence the learners' acceptance of LMS and consequently their actual use. These critical factors are related to the major entities of LMS context: the learner, the instructor, the course, the classmates, the organization, and the technology.

2. LEARNING MANAGEMENT SYSTEMS

LMS Definition & Tools

E-learning is defined as “instruction delivered through purely digital technology using the Internet or private networks” [20]. It is the use of a web-based communication, collaboration, learning, knowledge transfer and training to add values to the learners and the businesses [18]. Learning management systems are used by some academic and technical training institutions to support distance learning, while used by others to supplement their traditional way of teaching. For distance learning, E-learning can be used to build a virtual classroom where all coursework is done purely online [31].

There are several learning management systems in the market such of these systems are WebCT, Blackboard, and Moodle. These systems include several tools that can be utilized to support distance learning or to supplement the traditional teaching. For example, Moodle system offers several tools that enable the development of course activities such as assignments, surveys, choices, discussion forums chats, resources (files, websites), quizzes, survey, journals, glossaries, workshops.

LMS Benefits

There are several individual and organizational benefits resulted from the deployment of online learning management system. Students can access course materials online at any time. LMS also give students some flexibility in terms of place, time and own pace [31]. Other benefits are cost-effectiveness, consistency, timely content, flexible accessibility and customer value [7, 18]. In addition, LMS allow students to interact with others, control their own learning, develop deep thinking skills, and develop a sense of community with other learners. However, the deployment of LMS may cost a lot, require new skills on content producers and require more responsibility and self-discipline from the learners [7]; thus students might be intimidated to use LMS.
3. LEARNERS’ ACCEPTANCE OF LMS

User Acceptance of LMS

User acceptance of a technology is a multidimensional attitude; it may be affected by various technical and non-technical factors. Technology acceptance has been assessed in the literature based on perceived usefulness, user’s satisfaction, intention to use, and actual usage of the technology. Various frameworks, such as those of [2, 10, 11, 13, 40], have assessed the determinants of individuals’ acceptance. Davis’s Technology acceptance model (TAM) is a widely used model in the IS literature [10]. TAM indicates that two factors determine the attitude, intention and the actual use of an information system; these factors are perceived usefulness (PU) and perceived ease of use (PEOU). TAM suggests that PU and PEOU are determined by external variables relative to the use of that specific information system. TAM2 model by Venkatesh and Davis suggested that these external variables might be related to subjective norm, image, job relevance, output quality and result demonstrability [40].

TAM2 provides common critical factors that might affect the PU and PEOU and consequently the actual use of an information system; however, these factors may not be the best fit for all systems including learning management systems. The evaluation of technology-mediated learning might be influenced by several issues related to the technology, instructors, courses and learners. Issues related to the organization might also have some influence on the individuals' acceptance of learning management systems; Organizations factors such as training, incentives, strategic alignment and technical support might affect the adoption of technology in teaching [37].

The critical factors that affect the PU and PEOU may vary depending on the user type, instructor or learner. The objective of this paper is to extend TAM by proposing relevant critical factors that influence the learners' acceptance of LMS. From the learners' perspective, the critical factors of their acceptance should be related to the major entities of LMS context: the learner, the instructor, the course, the classmates, the organization, and the technology.

A number of studies investigated the learners' acceptance of the use of technology in learning such as [14, 32, 36, 38, 41, 42]. None of these studies, however, provided a comprehensive examination of all the major issues related to the learners' acceptance: the learner's characteristics, the instructor's characteristics, the course's characteristics, the classmates' characteristics, the organization's characteristics and the technology's characteristics. This paper aims to provide in depth examination on these critical issues that might influence the learners' acceptance based on these areas (see Figure 1).

Learner Characteristics

Several learners' characteristics influence learners' acceptance of LMS. This paper examines learners' characteristics in terms of self efficacy, attitude toward e-learning, e-learning experience, computer anxiety and personal innovativeness.

Learner Self Efficacy: User self efficacy is highly highlighted as an important issue in the acceptance of any information system including learning management systems. Self-efficacy is defined as "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances." [4]. Thus, computer self-efficacy means individuals self-assessment of their ability to apply computer skills to accomplish their tasks [9]. Several empirical studies found significant effects of the computer self efficacy on the perceived usefulness of an information systems [8, 40] and LMS [32, 38]. Self efficacy was significant on perceived ease of use but not perceived usefulness [29].

Learner Attitude Toward e-learning: Attitude toward e-learning is another issue related to the acceptance of LMS. Learners are the major operators of LMS. Individuals' attitude should be considered in the investigation of LMS acceptance [12]. Besides, instructors attitude toward e-learning positively affect the outcomes of e-learning [28, 42].

Learner Experience with the Use of Technology (EUT): EUT also plays a major role with the acceptance of technology. Individual’s EUT is the individual's exposure to the technology as well as the skills and abilities that s/he gains through using a technology [39]. Learners' technology experience has a major impact on the learning processes and consequently learning outcomes [41].

Learner Computer Anxiety: Computer anxiety is also a critical factor for the learner's acceptance of LMS. Computer anxiety is the fear felt by individuals when they use computers, or when they considered the possibility of computer utilization [3]. Computer anxiety is playing a major role on the acceptance of the technology [3, 28, 30, 38]. Fear of computer will negatively impact the e-learning environment and consequently the user's perceived satisfaction [28]. Sun et al. found that computer anxiety significantly impacts the learners' perceived satisfaction of e-learning [38]; whereas Raaij and Schepers found the computer anxiety impacts the learner's perceived ease of use of e-learning [30].

Personal Innovativeness: Personal innovativeness is another issue that may be critical factor on the learners' acceptance of LMS. Personal innovativeness in information technology context means person's attitude reflecting his tendency to experiment with new systems and processes. Schepers and Raaij found that innovation was positively related to the acceptance of e-learning [41]. Thus, personal innovativeness was found significant on the system acceptance [30].

Instructor Characteristics

Learner involvement in e-learning environment is initiated by instructors' adoption of LMS in their classes. Thus, instructors’ characteristics are critical factors on the learners' acceptance of LMS. This paper looks at the instructor characteristics in terms of instructor's teaching
style, attitude toward e-learning, control over the technology, online responsiveness and online availability.

**Instructor Teaching Style:** The Instructor's teaching style is a critical factor that affects learners' acceptance of LMS. Instructors with interactive teaching style are critical to the learning outcomes [41, 42]. Webster and Hackley found significance effect of instructors teaching style on the learning outcomes from the learners' perspective [42].

**Instructor Attitude toward e-learning:** The instructor's attitude toward e-learning is essential on the learners' acceptance of LMS. Instructors are the major drivers of LMS. Individuals' attitude should be considered in the investigation of LMS acceptance [12]. Instructors' attitude toward e-learning positively affects the learners' outcomes of e-learning [28, 42].

**Instructor Control over the Technology:** Instructor's control over e-learning is another critical factor on learners' acceptance of LMS. LMS also should be linked to the learning outcomes [12, 23]. Students become impatient when instructors face technical problems [23]. Thus, students may view instructors as not qualified when they have little control over the communication technology. Webster and Hackley found it significant on the learning outcomes in the context of video technology mediated distance learning [42].

**Instructor Responsiveness:** Instructors' online responsiveness is critical on the learners' acceptance of LMS. Instructor's responsiveness refers to the learners' perception of the instructor prompt response to their online problems and requests [38]. Instructors' prompt response encourages learners to continue adopt LMS and accept their online learning.

**Instructor Availability:** Instructors' online availability and support to online learning improves learners' interactions with the online community and the learning [5]; the instructor's availability is very important for learners and consequently enhances learners' involvement in electronic activities [25]. Instructor's availability is important issue on the e-learning outcomes [41].

**Course Characteristics**
Course characteristics are critical on the learners' acceptance of e-learning and LMS. Few studies, such as [38, 42], investigated the impact of course characteristics on the learners' acceptance of learning technology: Webster and Hackly [42], however, focused on videoconferencing mediated distance learning. This study integrates the course characteristics in terms of course flexibility and course quality as proposed by Sun et al. [38].

**Course Flexibility:** Course flexibility refers to the learners' perception of the effects and the efficiency of adopting e-learning [38]. Flexibility in time, location and learning is a major factor on the learners' acceptance of LMS [1]. One of the main promises of e-learning is that it enables learners to acquire education and learn with no restriction on time and place.

**Course Quality:** The quality of LMS-mediated course is a critical determinant of the learners' acceptance of LMS. LMS offers several rich tools that enable the development of well-designed course. The well-designed online course should provide learners online interactive discussions, multimedia presentation of course materials and the online management of learning processes [28, 38]. It should provide a rich environment for online communication, collaboration and sharing of course materials.

![Fig 1. Learners Acceptance of LMS Framework](image)

**Classmates Characteristics**
The effect of classmates' characteristics on the learners' acceptance of LMS is essential but rarely assessed. This study considers the role of classmates' characteristics (in terms of their attitude toward the e-learning and their interactions) on learners' acceptance of LMS.

**Classmates Attitude Toward e-learning:** The classmates' attitudes affect learning outcomes [42]. A
significant affect of classmates' attitudes on learning outcomes was confirmed from the learners' perspective [42].

Classmates Interactions: classmates' interaction in e-learning environment is a very important factor on the learners' acceptance. Interactions in e-learning environment do not only involve learners with instructor's interaction but also learners with learners' interaction [26]. The frequency, quality and promptness of interaction in e-learning environment could affect the learners' satisfaction [38]. Group members' interaction has a significant impact on learner's satisfaction [1, 22].

Organization Characteristics
Very limited theoretical and empirical studies investigated the influence of organization factors on the acceptance of LMS. This study proposes that management support and training are important organization factors for learners' acceptance of LMS.

Management Support: Senior managers' support is also important for learners to accept and adopt learning management. Senior managers should support technology deployment, clearly identify the goal of the technology and its importance for the organization's success. Management support of end-users significantly improves computer usage [16]. In the e-learning context, organization's support has a significant impact on learner's satisfaction [22].

Training: Training is considered important for end users; training is a process of gaining technology skills necessary to accomplish a task, and critical to the acceptance of the technology because it enhances end users understanding and attitudes toward the technology [17]. Training can be in form of workshops, online tutorials, courses, and seminar. Training was found significant on the acceptance of the technology [17]. Training was found significant on the learners' perceived usefulness of online learning environment [21].

Technology Characteristics
Technology or Information systems factors can be related to the system quality, information quality and service support quality [11]. LMS quality is critical on the learners' acceptance of LMS.

Systems Quality: System quality is related to the characteristics of a system. Researchers, such as [2, 11, 35] have introduced several ways to measure system quality. The common measure of system quality are response time, reliability, flexibility, accessibility and ease of use. In the context of e-learning, these system characteristics found significant on e-learning acceptance and use: reliability [41, 42]; accessibility [41] and system's functionality, interactivity, and response [29].

Information Quality: Information quality refers to the perceived output produced by the system. The common characteristics of information quality include accuracy, relevance, timeliness, sufficiency, completeness, understandability, format and accessibility [2, 11, 35]. Roca et al. measured information quality by indicators related to relevance, timeliness, sufficiency, accuracy, clarity and format, and proved information quality significance directly on satisfaction and indirectly on perceived usefulness [32].

Service Quality: Service quality refers to the quality of the system's support services provided to the system's end users. Common measurements of service quality are tangibles, reliability, responsiveness, assurance and empathy [19, 27]. In the e-learning context, Roca et al. measured service quality by measurement related to responsiveness, reliability and empathy, and confirmed it's significant directly on satisfaction and indirectly on perceived usefulness [32].

4. CONCLUSION

Learning management systems (LMS) provide efficient and effective means to build human resources. LMS also provide academic insinuations means to store, manage, and share its academic resources and knowledge. The success of LMS in academic institution may be initiated by instructors' acceptance; however, it survives in the long run by learners' continuous acceptance and utilization.

The objective of this paper was to provide a comprehensive examination of the critical factors that influence learners' acceptance of LMS and consequently their actual use. These critical factors are related to the major entities of LMS context: the learner, the instructor, the course, classmates, organization, and technology. Figure 1 summarizes these proposed factors. This study provides useful implications and insights for researchers and practitioners on the acceptance of LMS.

However, an empirical investigation is required to validate the impacts of these critical factors on the learners' acceptance of LMS. Thus, future empirical research should develop or adopt reliable and valid measurements for researchers and practitioners to evaluate the impact of these factors on the learners' acceptance of learning management systems. Empirical investigations are also needed to verify the effects of these factors. Future studies may also look at the determinants of the instructors and organizations acceptance of LMS. Furthermore, future empirical research may provide detailed investigation of the net benefits of LMS for learners, instructors and organizations.

5. REFERENCES


