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FACTORS IN THE ACCEPTANCE OF AN LMS IN JORDANIAN UNIVERSITIES

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Abstract

Learning management system (LMS) is an important tool and well suited as a learning tools and activity in universities high education. However, each institute has a different LMS tool that allows to users (Management, Instructors and Students) to use it for daily activity. This paper discusses the main factors influencing the acceptance of using LMS at Jordanian universities in order to improve and highlight the factors in high education in Jordanian Universities.

In academic institutions this paper aims to study the Jordanian Learning Management System JLMS model in order to help the managements to select the best LMS tool for their institute. The researcher presents the main hypotheses effecting JLMS model and highlights the benefits and weakness area for each one of them. Additionally, this paper grants LMS in Jordan context as a new model (JLMS). It also discusses the main factors influencing the acceptance of using LMS at Jordanian universities, which are: IT infrastructure and culture, and the hypotheses between both main factors with perceived usefulness and perceived ease of use to generalise this model in higher educational sectors in Jordanian universities.

Keywords: Jordanian Learning Management System - JLMS, Jordan University, University of Jordan, IT Infrastructure, Culture.

1. Introduction

Learning Management System (LMS) is a software that is used in administration, reporting and other training exercises (Al-Dmour, 2014). A good and effective LMS leverages new ways for learning in higher education learning and professional degrees. Everything is now organised electronically and stored digitally. Innovating technology has created new flexible and collaborative platforms that enhance learning. Moodle is an example of one LMS that is spreading around the world(Ahmad, Chinade, Gambaki, Ibrahim, & Ala, 2012).

Despite selected Jordanian faculty members having successfully adopted and established an LMS in their teaching, others continue to struggle integrating basic LMS technology and tools designed to support the new learning approach (Cuban & Cuban, 2009; Morgan, 2003; Walsh, 1993). According to Cho and Berge (2002), the most influential factors with regard to the adoption and deployment of LMS are the culture and norms of those working in higher education faculties.

The literature emphasises that the level of encouragement provided by faculty and institutional support personnel is the most significant factor influencing the successful application of instructional technology in the context of learning in higher education (M. A. Al-Shboul & Alsmadi, 2010; Butler & Sellbom, 2002; Morgan, 2003; Ndahi, 1999).

Many faculty members choose to use an LMS for two main reasons. Firstly, some academic staff understand and value the way the LMS facilitates and simplifies communication between students. The motivator for the second group is more obligatory in that they are expected and are under internal pressure to integrate the LMS (M. Al-Shboul, 2007; Dealtry, Macpherson, Homan, & Wilkinson, 2005; Reilly, Vandenhouten, Gallagher-Lepak, & Ralston-Berg, 2012). This indicates that the motivation for the acceptance of the LMS by some faculty members is purely because it is mandated, and they are therefore forced to incorporate it without really appreciating the benefits. Current teaching practice advocates using an LMS as part of the curriculum (Nelson, 2003). Nelson's literature review concludes the main rationale and purpose of LMS applications is to provide a simple communication platform for students that is conducive to communication and collaboration (Coogan, 2009; Dietz-Uhler & Bishop-Clark, 2001; Grandgenett & Grandgenett, 2001; Nelson, 2003; Selim, 2007; Strudler & Wetzel, 1999).
A study conducted by Gautreau (2011), demonstrates that 100% of faculty members surveyed use LMS applications daily; however, only 33% use the same software. Nelson (2003) reveals that faculty members frequently do not have the skills to integrate the necessary LMS technology to support their teaching processes. Babić (2012) highlights the need to investigate why only a proportion of the faculty members adopt and benefit from an LMS.

M. Al-Shboul (2011) presents a number of reasons why a traditional teaching approach continues to be used in higher education: faculty members' resistance to change, lack of technology skills and knowledge, insufficient IT support and personnel, and inadequate training and assistance with technology. Also, a study undertaken by M. Al-Shboul (2013) at the University of Jordan (UJ) involving 1314 faculty members found that the most common difficulties relating to the implementation of e-learning applications are not enough time dedicated to learning new tools (workload), a scarcity of technology training and provision, and unsatisfactory institutional encouragement, support and incentives.

2. Factors in the Acceptance of LMS in Jordanian Universities

The Technology Acceptance Model (TAM) (Davis, 1989; Venkatesh, 1999) has usually been used to examine the acceptance of a new technology. In this paper, a research model is based on the TAM to investigate the acceptance of using LMSs at Jordanian universities. The component of technical support will be incorporated through the TAM model, and serves as an extension to TAM. This is conducted in order to measure the acceptance of using LMSs at Jordanian universities. The research model will explain the system usage of applying LMSs at Jordanian universities. It consists of concepts that will be refined in relation to the Jordanian Learning Management System (JLMS) model and include technical support, perceived usefulness (PU) and perceived ease of use (PEOU) (Venkatesh & Davis, 2000).

Information technology infrastructure (IT infrastructure) and the Jordanian culture, which are the main elements that directly affect the acceptance of LMS in Jordan universities, followed by perceived usefulness and perceived ease of use of the LMS. After that will be tested and discussed the acceptance of using LMS and make sure it will continue use of LMS in Jordanian universities.

2.1 Information Technology (IT) Infrastructure for LMSs in Jordanian Universities

IT infrastructure for LMSs in Jordan refers to the availability of technology in the country in general, and in universities in particular, such Internet connections, computers and LMS tools (AlQudah, 2014). Many developing countries are still struggling with lack of IT infrastructure, and this research will highlight this factor as being one of the main factors influencing the acceptance of the LMS in Jordan universities. According to Samak and Tawfik (2017), the Jordanian Ministry of Education made a five-year plan to establish IT infrastructure for public

schools. This plan will be useful to identify the amount, methods and types of infrastructure used in the schools.

According to Khwaldeh, Al-Hadid, and Masa'deh (2017), the infrastructure for LMS in Jordanian universities needs to improve and suit the demands of users (students, instructors and administration users). The study highlighted some users' infrastructure needs, such as deaf and the blind users, which means there is a gap in the IT infrastructure that needs to be identified and improved to be usable for all users (students and stuff).

Donation from developed countries and organisations are being used to help upgrade the IT infrastructure for LMSs in Jordanian universities from the old infrastructure to a new platform infrastructure; however, because of other obstacles like refugees from the border country and Jordan's lack of financial resources, the improvement is slow, which means that there is a lack of infrastructure, especially in the education sectors.

IT infrastructure for LMSs in Jordanian universities positively affects the acceptance of LMS through perceived use and perceived ease of use. Two hypotheses (H) were formulated regarding IT infrastructure for LMSs as follows:

H1: IT infrastructure for LMSs has a positive effect on perceived usefulness of the LMS; and

H3: IT infrastructure for LMSs has a positive effect on perceived ease of use the LMS.

2 Culture in Jordan

Cultural factors affect the use of LMS tools in Jordanian universities. The unique culture in Jordan is a very important factor that influences the use of LMSs in different ways, and this research focuses on this factor through perceived use and perceived ease of use. According to Cho and Berge (2002), the most influential factors regarding the adoption and deployment of an LMS are the culture and norms of those working in higher education faculties. Therefore, pedagogical issues and the lack of technology professional training are affecting the acceptance of an LMS.

Many researchers highlight culture as one of the most significant factors affecting the acceptance of using LMSs in Jordanian universities. A limitation in the studies done in Jordan universities is that they do not reflect the real number of users, and to be accurate, the sample size should represent all types of users (Abdullateef, Elias, Mohamed, Zaidan, & Zaidan, 2016; M. Al-Shboul, 2013; Al Musawi, Ambusaidi, Al-Balushi, & Al-Balushi, 2015; Atoum, Otoom, & Ali, 2017; Khwaldeh et al., 2017).

According to M. Al-Shboul (2013, p. 67), "We need to spread the culture of using e-Learning technology to enhance the quality of learning". The university management advised that more focus on user training is needed and the university culture needs to be more open to new technology to improve the quality of teaching and learning. With reference to Abbad, Morris, and De Nahlik (2009, p. 19) "Cultures that are more focused on oral traditions may be less engaged with e-learning". Management should work more on user training so the users can accept and enjoy the new technology and look forward to new updates. According to Varis and Al-Agtash (2008, p. 74) "As a relevant factor in the dissemination of values and in the formation of society's thinking, the media are responsible for disseminating local culture and the events that occur in the world". The media today is a very important player in local social life and improving the use of any new technology. It's the key player in changing user culture and improving positively any new technology.

In this research paper, a significant relationship exists between the influence of culture and the perceived usefulness and perceived ease of use of adopting an LMS in Jordanian universities. There is a need to confirm this prediction with respect to the location (Jordanian universities) through this research. The relationship between cultural influence and the use of an LMS is hypothesised in this research as follows:

H2: Culture has a positive effect on perceived ease of use of an LMS; and

H4: Culture has a positive effect on perceived usefulness of an LMS.

3. Perceived Usefulness of an LMS

The perceived usefulness of an LMS is defined as the degree to which the user believes that using the LMS would improve their learning performance (Davis, 1989). It is "the degree to which a person believes that using a particular system could enhance their job performance" and "it is the extent to which an individual believes that using the system enhances his/her performance" (Saadé & Bahli, 2005, pp. 217-240). According to Davis (1989, p. 320) "People tend to use or not use an application to the extent they believe it will help them perform their job better. We refer to this first variable as perceived usefulness".

In the TAM, Davis (1989) suggests two determinants of computer usage: PU (perceived usefulness) and PEOU (perceived ease of use). Later, other investigators and researchers extended the TAM model to combine additional variables that could account for extra variance in computer usage technology (Gefen & Straub, 1997; Venkatesh & Davis, 2000). The advantage paradigm from behavioural decision theory is relevant to perceived usefulness and perceived ease of use (Beach & Mitchell, 1978).

The benefits of the hypotheses of IT infrastructure and culture are to encourage users (students, instructors and management) to accept any new technology and work on it to gain all the advantages and improve the quality of learning. The IT infrastructure and culture in Jordan are very important factors affecting the acceptance of any new technology to accept, including the use of LMSs in Jordanian universities (M. Al-Shboul, 2011; M. A. Al-Shboul & Alsmadi, 2010; Alnsour, Muhsen, Dababnah, Eljinini, & Barhoum, 2011; AlQudah, 2014).

This research paper highlights the perceived usefulness on LMS tools from the IT infrastructure and the culture in Jordan context to show the attention of acceptance using LMS in Jordan universities. The relationship between perceived usefulness and the acceptance of LMS to adopt LMS is hypothesised as follows:

H5: Perceived usefulness in adopting an LMS has a positive effect on acceptance of the LMS.

4. Perceived Ease of Use of an LMS

The perceived ease of use of an LMS is defined as the degree to which the user believes that using the LMS will be free of effort (Davis, 1989). It can be described as "the degree to which a person believes that using a particular system is free of effort. Previous research has demonstrated that individuals are more likely to use a new technology if they perceive that it is easy to use" (Saadé & Bahli, 2005, pp. 101-132).

Davis (1989) shows that ease of use had a direct effect on perceived usefulness. Many studies on the TAM also provided strong experimental support for a positive relationship between perceived usefulness and perceived ease of use. The TAM shows that perceived ease of use and perceived usefulness have a direct effect on acceptance of using a new technology (Adams, Nelson, & Todd, 1992; Szajna, 1996; Venkatesh & Davis, 2000). Venkatesh (1999) discovered that "facilitating conditions and external control served as anchors that users employ to inform

perceived ease of use about information technology" as cited in (Abbad et al., 2009, p. 167). According to Williams (2002), an important factor in determining the acceptance of technology such as an LMS is the availability of "technical support".

Both IT infrastructure and culture are very important factors that affect ease of use of an LMS. According to M. Al-Shboul (2013) IT infrastructure and culture are key players in enhancing the quality of learning. IT infrastructure should be able to support and accept any technology and software tools without obstacles. Poor infrastructure will cost any organisation money and time in activating the new tools or new technology software.

It is hypothesised that IT infrastructure and culture affect the perceived ease of use an LMS positively and negatively. Good infrastructure makes any new software easy to apply and use. With regard to culture, knowledge of the culture where a new software will be applied will allow the new technology to be easy for the uses to use for the users to use (students, instructors and managements) (Al-Dmour, 2014; AlQudah, 2014).

Perceived ease of use of an LMS shows the intention a user has to make use of a technology under a given behaviour. It was predicted that users' behavioural intention to adopt LMS has an encouraging influence on acceptance of the LMS.

H6: Perceived Ease of Use of an LMS Has a Positive Effect on Acceptance of LMS.

5. Acceptance of an LMS

The Technology Acceptance Model (TAM) "has become well-established as a robust, powerful, and parsimonious model for predicting user acceptance" (Venkatesh & Davis, 2000, p. 19). A large number of researchers have adopted the TAM to test and examine the acceptance of new technologies like personal computers (Igbaria, Zinatelli, Cragg, & Cavaye, 1997).

Davis (1989, p. 335) indicates that: "the possibility of dysfunctional impacts generated by information technology emphasizes that user acceptance is not a universal goal and is actually undesirable in cases where systems fail to provide true performance gains. Although there has been a growing pessimism in the field about the ability to identify measures that are robustly linked to user acceptance, the view taken here is much more optimistic. User reactions to computers are complex and multifaceted. But if the field continues to systematically investigate fundamental mechanisms driving user behaviour, cultivating better and well measures and critically examining alternative theoretical models, sustainable progress is within reach".

To accept a new system, hypotheses for both perceived usefulness and perceived ease of use should be examined(Davis, 1989). The model reflects these hypotheses to measure the acceptance of new software for any organisation, especially Jordanian universities, and it will then be possible to see if it is appropriate to use this new software in these universities. The model can then be used for all universities in Jordan. The outcome will influence the continued use of LMS software in Jordanian universities in general (Almarabeh, 2014).

Acceptance of an LMS shows the perceived usefulness and perceived ease of use of an LMS under a given behaviour for continued use of LMSs in Jordanian universities.

H7: Acceptance of an LMS has a positive effect on continued use of the LMS.

Conceptual Constructs and the Research Model

The Technology Acceptance Model (TAM) is "an intention-based model developed specifically for explaining and/or predicting user acceptance of computer technology. TAM has been used as the theoretical basis for many empirical studies of user technology acceptance/adoption and has accumulated ample empirical support" (Venkatesh & Davis, 2000, p. 78). The research utilises the Technology Acceptance Model (TAM) as a framework to address all the relevant issues

around the LMS context. The following is a review and definition of this framework with critical perspectives.

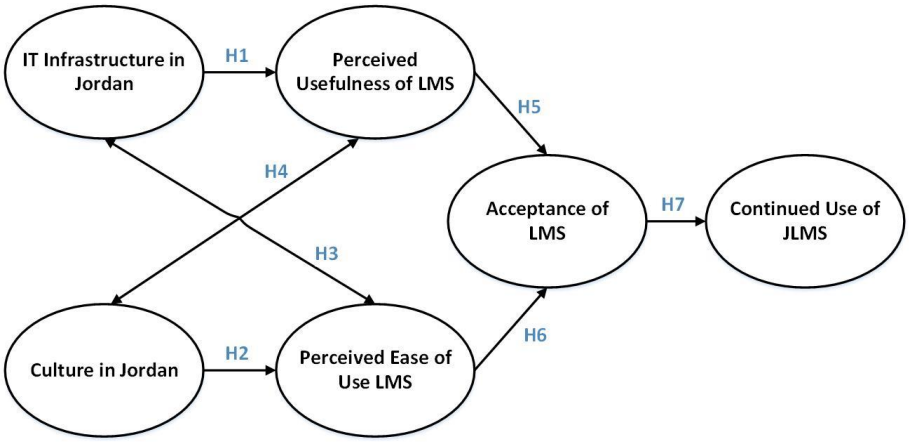

Figure 1:Conceptual framework for Jordanian Learning Management System Model (JLMS)

The literature review highlighted many hypotheses affect that suggest the acceptance of an LMS is subject to complex relations between variables. The following hypotheses were proposed:

6. Summarizing Hypotheses;

H1: IT infrastructure characteristics positively affect perceived usefulness of an LMS
H2: Cultural characteristics positively affect perceived ease of use of an LMS
H3: IT infrastructure characteristics positively affect perceived ease of use of an LMS
H4: Cultural characteristics positively affect perceived usefulness of an LMS
H5: Perceived usefulness of LMS characteristics positively affect acceptance of an LMS
H6: Perceived ease of use of LMS characteristics positively affect acceptance of the LMS
H7: Acceptance of an LMS characteristics positively affects continued use of the JLMS

A number of issues can affect users' decision to accept LMS tools of choice, and Jordan is one of the developing countries that experience problems such as lack of network connectivity, slow system response and social cultural issues. In this research paper, the many factors that affect acceptance and rate of adoption are used to understand how they influence the diffusion rate of LMS tools as innovative instructional delivery tools. Therefore, we investigate behavioural intent to use LMS tools by employees, based on attitude, relative advantage, complexity and compatibility (Mkhize, Mtsweni, & Buthelezi, 2016).

7. Significance of the Study

The study presents information that will be useful to decision makers in Jordanian universities and highlight the issues related to using an LMS in higher education and demonstrate the degree of acceptance of LMSs in Jordanian universities. In this part of study paper, the focus will be on six different universities: University of Jordan (UJ), Princess Sumaya University of Technology (PSUT), Philadephia University (PU), Jordan University of Science and Technology (JUST), The Applied Science Private University (ASU) and Al al-Bayt University (AABU). It will highlight the current status of each of them regarding the use of LMS in higher educational teaching. The study investigates the following aspects:

a. Current use of LMSs in Jordanian universities
b. Factors influencing the acceptance of LMS applications in Jordanian universities
c. Attitudes of participants using LMS applications
d. Participants' knowledge of LMS applications.

According to Feeney (2001), LMSs are becoming important for university education. Adoption of LMS tools becomes for both intuitional aim and for a source of data upon which to estimate performance. Kim (2008) indicates that faculty workload is the main factor influencing faculty participation in an LMS (distance education). Most importantly, universities in Jordan are still struggling to deliver successful integrated LMS applications, particularly in engineering and computer science. As a result, most of these universities may not be able to achieve their specified goals in terms of applying LMS applications.

Summary

Learning Management Systems (LMS's) are the latest innovative trend facilitated by the prorogation of Information Technology (IT) allowing learning capabilities previously not thought possible. The literature review has demonstrated various e-learning strategies and their uses. Online learning is an innovative way of acquiring knowledge that is making life easier for all individuals involved in learning. This paper has summarised the viewpoints of other researchers and authors. This paper has also discussed main factors influencing the acceptance of using LMS at Jordanian universities, which are IT infrastructure and culture and the hypotheses between both main factors with perceived usefulness and perceived ease of use to generalise JLMS model in higher educational sectors in Jordanian universities. Additionally, the TAM model was explained, including the research limitations and the LMS application in higher educational sectors in Jordanian universities.

The results of the JLMS model can only be generalised to undergrad level at Jordanian universities. And can only be generalised to participants (students, instructors and administrators) at Jordanian universities. The research instruments can only be used to similar contexts.

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