International Journal of Conceptions on Management and Social Sciences
Vol. 3, Issue. 4, October' 2015; ISSN: 2357 - 2787

Perceived Usefulness, Perceived Ease of Use and Behavioural Intention to Use a Learning Management System among Students in a Malaysian University

Siew Pei Hwa, Ooi Sze Hwei and Wee Kim Peck
Universiti Tunku Abdul Rahman
Sungai Long, Selangor, Malaysia

Abstract— **The success of a Learning Management System (LMS) in any educational institutions starts by students' acceptance, which in turns initiates and promotes students' utilisation of LMS in their study. Thus, it is necessary to assess the key barriers to the adoption of an LMS among students as it is a critical issue for improving e-learning usage and effects which in turn determine the success of the system. This research aims to frame a technology acceptance model to investigate the user acceptance of an LMS among university students through an empirical study. The model of LMS acceptance will have the power to demonstrate acceptance and usage behaviour of the LMS at a Malaysian university. In this research, the LMS is referred to a web-based e-learning system called WBLE (Web-Based Learning Environment) used in Universiti Tunku Abdul Rahman (UTAR). This paper highlights one of the research objectives which aims to examine the relationship between: 1) users' perceived ease of use (PEOU) and perceived usefulness (PU), 2) Users' PEOU and their behavioural intention to use (BITU) WBLE, and 3) users' PU and their behavioural intention to use WBLE. A sample of 445 UTAR students from selected faculties and Centre for Foundation Studies had participated in the research. This research employs a self-administered questionnaire approach. The research findings show that that was a significant relationship between PEOU and PU, PEOU and BITU, and PU and BITU.**

Keywords- technology acceptance model; learning management system; perceived ease of use; perceived usefulness

I. INTRODUCTION

Malaysia takes full advantage of information and communication technology (ICT) in supporting all levels of education and human resource development, and e-learning is considered one of the important alternatives for current knowledge-based society. E-learning has gradually becomes an important facilitator in teaching and learning processes. It is obvious that the number of e-learning opportunities provided by higher educational institutes continues to grow in Malaysia. According to Global Industry Analysts, the value of the global e-learning sector is estimated to hit $107 billion by the year of 2015 [1]. Malaysia has the second highest growth rates for e-learning products in the world, at the record of 39.4%, which is more than four times the worldwide aggregate growth rate [2].

The advancement of digital technologies have revolutionised the notion of teaching and learning. Learning should not be limited to traditional face-to-face (F2F) instruction; the traditional F2F instruction mode leaves little room for personalisation, customisation, and pace adjustment. In the meantime of delivering knowledge and information of a subject through traditional F2F classes such as lectures and tutorials, the teaching and learning of a subject is supplemented with online learning materials. In this regard, a Learning Management System (LMS) is an online platform used to centralise learning materials by lecturers within an institution. It is now common to find the LMS in use in all the public and private universities.

The benefits of e-learning would not be maximized if learners are not willing to adopt the system [3]. Students' acceptance is essential for the deployment of LMS. The success of LMS in any institution starts by students' acceptance, which in turns initiates and promotes learners' utilisation of LMS. Thus, it is necessary to assess the key barriers to the adoption of an e-learning system such as LMS among students because the user acceptance is often the pivotal factor determining the success or failure of an information system project [4]. Understanding students' perception towards an e-learning system is a critical issue for improving e-learning usage and effects. Therefore, this research aims to frame a technology acceptance model (TAM) to investigate the ease-of-use and usefulness of an LMS from the perspective of university students.

II. E-LEARNING AND LEARNING MANAGEMENT SYSTEM

A. E-learning

Clark and Mayer [5] defined e-learning as the use of computer to deliver instruction by way of CD-ROM, internet or intranet. The technological foundation of e-learning is the Internet and associated communication technologies [6]. E-learning assists organisations build job-transferable knowledge and skills for performance improvement or to

assist individual to achieve educational goals. Clark and Mayer further noted that, e-learning involves the use instructional methods (such as examples and practice) and multimedia elements (such as pictures and videos) to assist learning by delivering content which is pertinent to the learning objective [5]. With e-learning, students and lecturers are able to interact with each other using IT tools and applications [7].

According to Ismail [8], there are a few types of e-learning systems, including Learning Management System (LMS), Learning Content Management System (LCMS) and Learning Design System (LDS). LMS focuses on delivering learning content, tracking learners' progress and assessing learners' performance [9]. LCMS focuses on the development, management and publishing of online content that will be delivered via LMS [10]. An LDS enables content developers to analyse and design the complete structure of the instructionally sound learning programmes [8]. This research focuses on LMS.

B. Learning Management System

According to Lonn and Teasley [11], Learning Management System (LMS) is defined as an online system that allows users to share information and collaborate online. Other terms used for this system are Course Management Systems (CMS) and Virtual Learning Environment (VLE) [12]. Kats [13] noted that LMS is a platform that supports multiple facets of an educational process, from administrative functions to course delivery and assessment. LMS manages and monitors the entire learning process, including centralising learning resources and keeping track the learning progress and performance of students [14]-[15]. It is now common to find LMS within Higher Education Institutions (HEIs) to supplement traditional classroom teaching [12], [16]. Among the key factors that popularize the usage of LMS are cost effective and basic skills required to use it [12]. Popular providers of LMS available in the market, include Moodle, Blackboard and WebCT [17].

Different tools such as discussion forums, file sharing, management of assignments, lesson plans, syllabus, chat, and so forth are integrated into a single LMS (i.e. Blackboard, Moodle or WebCT), which is used to manage and organise all learning activities and materials in a course [18]. LMS provides academic and training institutions efficient and effective means to support distance education and supplement their traditional way of teaching [11]. Through LMS, instructors are able to create and manage educational courses quicker and easier, exchange information with students over the network, engage students in online discussion via forum and also assess student performance [19]-[20].

In this research, the LMS is referred to a web-based e-learning system called WBLE (Web-Based Learning Environment), which is available at http://wble.utar.edu.my. WBLE is an asynchronous e-learning platform which is developed to supplement the F2F instruction and achieve better learning outcomes. WBLE also serves as a communication tool between lecturers and students across two campuses located at Kampar, Perak and Sungai Long, Selangor since 2005. Lecturers and students are able to access this e-learning website at their convenience. WBLE, provides the students with ability to access lecture notes, and use communication as well as interactive features in their learning activities.

III. User Acceptance of System Use

Dillon and Morris [21: 4] defined user acceptance as "the demonstrable willingness within a user group to employ IT for the tasks it is designed to support". Citing Hu et al., Edwards [22] noted that user acceptance of system use is generally conceptualized as an individual's perspective on his/ her voluntary on the intended use of a system.

Existing literature on software design acknowledges the importance of the user and emphasizes the importance of considering user reactions, typically in the context of predicting system acceptance and usage [23]. Peterson and Peterson [24] claimed that user acceptance is an issue which will impact on the success of the information system. Fay [25] indicated that an important concern in end-user mind is not whether the system is function properly, but whether the system is addressing their needs, supporting their objectives and operate in the way they are expecting. System that does not cater the needs of user leads to low acceptance. According to Kripanont [26], the technology (or systems) that are available in organisations cannot fully demonstrate their value until they are used. Fisher and Howell [23] also asserted that if the users feel that the system is easy to use and will help them to get their job done, they are more likely to accept and use it, which is an essential condition for the success of a system.

Citing Maurer, Islam et al. [27] emphasized that e-learning can be effective in improving students' learning performance, but its effectiveness depends upon if the platform is used properly and correctly by the students. Thus, it is vital to assess the barrier to the acceptance of an e-learning system as the success of the system depends largely on students' acceptance and usage of the system.

IV. Theoretical Models

Ameen [28] noted that information system (IS) researchers used theoretical models to explain the factors involved in user acceptance of new technology. There are several theoretical models which have been widely used to understand various factors influencing the user acceptance of an information technology. These models include Theory of Reasoned Action (TRA), Theory of Planned Behaviour (TPB) and Technology Acceptance Model (TAM). These models involve the extension and decomposition from one theory (or model) to another. TRA and TPB are two

theoretical models that are extensively used to define user acceptance and satisfaction in psychological studies [28].

The technology acceptance model (TAM), which explains the user's acceptance for a new technology, was proposed by Davis in 1986. The TAM has been widely used model for predicting and explaining user acceptance and usage behaviour of information technology [29]. According to TAM, the user acceptance of technology is defined by perceived usefulness and perceived ease of use of the system [28].

Technology Acceptance Model (TAM) is an adaptation of the TRA to the field of information system which aims to accurately model how users respond to the presentation of a new technology, addressing factors such as their initial perception, level of acceptance and use of the technology. In addition, the studies such as [30]-[32] claimed that TAM is a useful theoretical model aid in understanding and predicting user's behavioural intention to use e-learning. Hence, this research is adopting the core-ideas of Davis's TAM to develop the proposed TAM for investigating the user acceptance of the WBLE, the LMS at Universiti Tunku Abdul Rahman (UTAR)

V. Research Model and Hypothesis

Based on the theoretical support from the IS literature, Davis's TAM Model has been adopted as the core of the proposed TAM for this research which can be perceived through Fig. 1 with arrows representing causal relationships. As shown in the research model, the behavioural intention to use (BITU) WBLE is a function of three concrete behavioural beliefs:

- Perceived Usefulness (PU): The degree to which a student believes using WBLE would enhance his or her learning process,
- Perceived Ease of Use (PEOU): the degree to which WBLE are regarded as easy to understand and operate, and
- Subjective Norm (SN): Student's perception of whether his/ her significance peers (i.e. lecturers and course mates) has impact on his/ her intention to use WBLE.

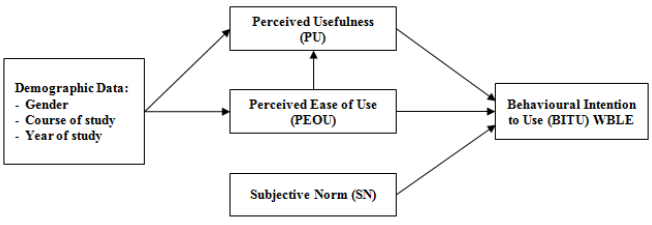

Figure 1. Research model

However, this paper highlights the investigation on the relationship between: 1) PEOU and PU, 2) PEOU and BITU, and 3) PU and BITU.

Davis [33] defined PU is the degree to which a person believes that using a particular system would enhance his or her job performance. Whereas, PEOU is referred as the degree to which a person believes that using a particular system would be free from effort. The research model highlights the importance of PU and PEOU as the critical determinants of user acceptance of WBLE, and assumes that both PU and PEOU have positive relationship with the behavioural intention to use (BITU) WBLE. Therefore, it is hypothesized that:

H1: There is a significant relationship between perceived ease of use and perceived usefulness of WBLE.

H2: There is a significant positive relationship between perceived ease of use and behavioural intention to use WBLE.

H3: There is a significant positive relationship between perceived usefulness and behavioural intention to use WBLE.

VI. Research Methodology

A. Research Samples

The population in this research consists of Foundation Studies and full time undergraduate students who have the access to the LMS at UTAR (i.e. WBLE). 445 students participated in the survey. 239 of them were males and the rest were females. There were 200 Foundation Studies students and 245 undergraduate students from different courses.

B. Research Instrument

This research used a structured self-administered questionnaire to collect data. The questionnaire contained four sections as follows:

- Section A: Perceived Ease of Use and Perceived Usefulness toward WBLE
- Section B: Social Influence and Behavioural Intention to Use the WBLE
- Section C: Actual Usage of WBLE
- Section D: Personal Details

Sections A and B of the questionnaire measured the research constructs such as perceived usefulness, perceived ease of use, subject norm and behavioural intention to use WBLE using a 5-point Likert-type scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Each participant was required to complete the questionnaire indicating his/her agreement or disagreement with each statement that built into those constructs. The statements in the questionnaire were adapted from relevant scales in the past studies. In Section C, participants were asked to assess their actual usage of WBLE.

The last section in the questionnaire contains items that solicited demographic data of the students.

Prior to the empirical study, a preliminary study was carried out among 30 undergraduate students to pilot-test the survey questionnaire for its reliability. These respondents were excluded from the empirical study to avoid contamination [34]. A reliability test was carried out using Cronbach's alpha, which measures the internal consistency of the survey questionnaire. The questionnaire has demonstrated a high level of internal consistency and reliability among items in which the Cronbach's alpha coefficient of the four dimensions ranging from 0.812 to 0.929 as shown in Table I.

TABLE I. CRONBACH'S ALPHA COEFFICIENT FOR RESEARCH CONSTRUCTS IN THE SURVEY QUESTIONNAIRE

Research Construct	Items	Cronbach's Alpha (α)
Perceived Usefulness of WBLE	8	0.849
Perceived Ease of Use of WBLE	6	0.929
Subjective Norm (social influence of using WBLE)	4	0.812
Behavioural Intention to use WBLE in the future	5	0.854
TOTAL	**23**	**0.922**

According to Curtis and Drennan [35], the Cronbach's alpha values greater than 0.70 are considered acceptable, while values greater than 0.80 indicating good internal consistency. Since the Cronbach's alpha values for all the four constructs exceeded the minimum acceptance level of 0.70 as recommended by Curtis and Drennan, thus, the results of Cronbach's analysis show that the questionnaire is well constructed and reliable.

C. Research Procedure

The survey instrument was administered to students from different courses with the assistance of several lecturers during the regular class time on either 14th week of the May 2014 trimester (for undergraduate students) or the first week of the October 2014 trimester (for Foundation Studies students). The survey was completed in approximately 15-minute for each student.

D. Data Analysis

Data analysis involved the coding of data and interpreting the results using SPSS (Statistical Package for Social Science). Both descriptive and inferential analysis techniques were used to analyze the data collected from questionnaire, to empirically test the formulated hypotheses. Pearson's Correlation Coefficient (r) was used to test the null hypotheses 1, 2 and 3.

VII. RESEARCH FINDINGS AND DISCUSSION

A. Testing of Hypothesis 1

The following null hypothesis was tested:

$H_0$1: There is no significant relationship between perceived ease of use and perceived usefulness of WBLE.

The results are shown in Tables II and III.

TABLE II. DESCRIPTIVE STATISTICS FOR PERCEIVED EASE OF USE AND PERCEIVED USEFULNESS

	N	M	SD
PEOU	445	3.76	0.75
PU	445	3.45	0.73

TABLE III. CORRELATION RESULTS BETWEEN PERCEIVED EASE OF USE AND PERCEIVED USEFULNESS

		PU	PEOU
PU	Pearson Correlation	1.00	0.598**
	Sig. (2-tailed)		0.000
	N	445	445
PEOU	Pearson Correlation	0.598**	1.00
	Sig. (2-tailed)	0.000	
	N	445	445

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

The p-value was found to be highly significant ($r = 0.598$, $p < 0.01$) (see Tables II and III). Therefore there was strong evidence to reject the null hypothesis 1 ($H_0$1). Perceived ease of use (PEOU) was positively correlated with perceived usefulness (PU) ($r = 0.598$). The findings indicate that UTAR students who perceived the WBLE as easy to use also perceived it as useful. The findings are in line with past studies such as Alatawi et al., [36], Almarashdeh et al., [37]-[38], Chang and Tung [20], Grandon et al. [39], Landry et al. [40], and Theng et al. [41].

Almarashdeh et al. [37]-[38] showed that PEOU has significant impact on PU of LMS. The studies of Chang and Tung [20] and Grandon et al. [39] reported that PEOU has a positive direct effect on PU of e-learning. Alatawi et al. [36] indicated that the strong and significant relationship between PEOU and PU indicates how important it is for the system to be perceived as user-friendly and easy to use in order to be perceived useful by its users. Landry et al. [40] and Theng et al. [41] concluded that if students find e-learning system easy to use, they might consider it as a useful learning tool.

B. Testing of Hypothesis 2

The following null hypothesis was tested:

$H_0$2: There is no significant relationship between perceived ease of use and behavioural intention to use WBLE.

The results are shown in Tables VI and VII.

TABLE IV. DESCRIPTIVE STATISTICS FOR PERCEIVED EASE OF USE AND BEHAVIOURAL INTENTION TO USE WBLE

	N	M	SD
PEOU	445	3.76	0.75
BITU	445	3.49	0.70

TABLE V. CORRELATION RESULTS BETWEEN PERCEIVED EASE OF USE AND BEHAVIOURAL INTENTION TO USE WBLE

		PU	BITU
PEOU	Pearson Correlation	1.00	0.597**
	Sig. (2-tailed)		0.000
	N	445	445
BITU	Pearson Correlation	0.597**	1.00
	Sig. (2-tailed)	0.000	
	N	445	445

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

The p-value was found to be highly significant (r = 0.597, $p < 0.01$) (see Tables IV and V). Therefore there was a strong evidence to reject null hypothesis 2 ($H_0$2). Perceived ease of use (PEOU) was positively correlated with behavioural intention to use (BITU) WBLE. The findings imply that UTAR students who perceived the WBLE as easy to use will increase their behavioural intention to use WBLE in studies.

The findings concur with several studies including Alatawi et al. [36], Almarashdeh et al. [37]-[38], Baleghi-Zadeh et al. [42], Chang and Tung [20], Premchaiswadi and Porouhan [43], Sharma and Chandel [44], and Theng et al. [41]. .

Chang and Tung (2008), and Premchaiswadi and Porouhan [43] concluded that perceived ease of use is a significant determinant of intention to use an e-learning system. In particular Almarashdeh et al. [37]-[38], Alatawi et al. [36], and Baleghi-Zadeh et al. [42] stated that PEOU has a significant impact on the intention to use LMS. Alatawi et al. [36] further explained that easier system is more likely to be adopted by the users than the complex and cumbersome systems. Alatawi et al. further stated that a system need to be user friendly and its exploration has to be effortless; otherwise users of such system would not adopt or use it even though it is useful as this is a human nature to use easier system.

C. Testing of Hypothesis 3

The following null hypothesis was tested:

$H_0$2: There is no significant relationship between perceived usefulness and behavioural intention to use WBLE.

Pearson's Correlation Coefficient (r) was also used to test the null hypothesis 3 ($H_0$3) to find out the relationship between perceived usefulness (PU) and behavioural intention to use (BITU) WBLE. The results are shown in Tables VI and VII.

TABLE VI. DESCRIPTIVE STATISTICS FOR PERCEIVED USEFULNESS AND BEHAVIOURAL INTENTION TO USE WBLE

	N	M	SD
PU	445	3.45	0.73
BITU	445	3.49	0.70

TABLE VII. CORRELATION RESULTS BETWEEN PERCEIVED USEFULNESS AND BEHAVIOURAL INTENTION TO USE WBLE

		PU	BITU
PU	Pearson Correlation	1.00	0.626**
	Sig. (2-tailed)		0.000
	N	445	445
BITU	Pearson Correlation	0.626**	1.00
	Sig. (2-tailed)	0.000	
	N	445	445

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

The p-value was found to be highly significant (r = 0.626, $p < 0.01$) (see Tables IV and V). Therefore there was strong evidence to reject the null hypothesis 3 ($H_0$3). Perceived usefulness (PU) was positively correlated with behavioural intention to use (BITU) WBLE (r = 0.626). UTAR students who perceived the WBLE as being useful will increase their behavioural intention to use WBLE in studies.

The findings are consistent with the empirical studies of Almarashdeh et al. [37]-[38], Alatawi et al. [36], Baleghi-Zadeh et al. [42], Chang and Tung [20], Farahat [45], Premchaiswadi and Porouhan [43], Sharma and Chandel [43], and Theng et al. [41]. Farahat [45] and Premchaiswadi Porouhan [43] consistently discovered that intention to use an online learning system to learn is positively affected by "Perceived Usefulness". Almarashdeh et al. [37]-[38] and Baleghi-Zadeh et al. [42] indicated that PU has a significant impact on behavioural inention to use LMS. Chang and Tung [20], and Sharma and Chandel [44] indicated that a perception among students using websites for learning that higher perceived usefulness results in more behavioural intention to use online learning course websites. This can be explained by Alatawi et al. [36], where users are more likely to use the systems if they believe that such systems are more beneficial and useful in their day-to-day workings and if their performance is going to enhance due to the use of such systems.

VIII. CONCLUSION

Davis [4: 475] claimed that "Lack of user acceptance has long been an impediment to the success of new information systems". While LMS is adopted to facilitate learning, user acceptance must be considered during the development in order to enhance its successful adoption. Benefits of LMS will not be maximized if user did not use the system. The research examines the applicability of TAM to explain students' acceptance of LMS within the academic setting. Knowing the outcomes of the WBLE utilization is particularly important to evaluate the success of such system, and plan for its future enhancement.

REFERENCES

[1] Virtual College. (2012, February 22). GIA: E-learning Market will be Worth $107bn by 2015 [Online]. Available: http://www.virtual-college.co.uk/news/GIA-Elearning-market-will-be-worth-107bn-by-2015-newsitems-801299148.aspx

[2] W. Sawahel. (2013, January 25). "Africa is most dynamic e-learning market on the planet," University World News [Online]. Available: http://www.universityworldnews.com/article.php?%20story=20130125105755921

[3] K. A. Pituch and Y. K. Lee, Y.K., "The influence of system characteristics on e-learning use," Computer and Education, vol. 47, no. 2, pp. 222-244, 2006.

[4] F. D. Davis, "User acceptance of information technology: System characteristics, user perceptions and behavioral impacts," Internation Journal of Man-Machine Studies, vol. 38 no. 3, pp. 475-87, 1993.

[5] R. C. Clark and R. E. Mayer R.E., E-Learning and the Science of Instruction: Proven Guidelines for Consumers and Designers of Multimedia Learning. 2nd ed. Hoboken: John Wiley & Sons. 2011.

[6] D. R. Garrison, E-Learning in the 21st Century: A Framework for Research and Practice. 2nd ed. New York: Taylor & Francis, 2011.

[7] N. M. Nordin, M. A. Embi and Z. A. Wahab, "Integration of e-learning in teaching and learning in Malaysian higher education institutions," in E-learning in Malaysian Higher Education Institutions: Status, Trends, & Challenges, M. A. Embi, ed., Putrajaya: Kementerian Pengajian Tinggi Malaysia, pp. 81-98, 2011.

[8] J. Ismail, "The design of an e-learning system beyond the hype," Internet and Higher Education, vol. 4, pp. 329-336, 2002.

[9] K. Harman and A. Koohang, Learning Objects: Standards, Metadata, Repositories, and LCMS. California: Informing Science Press, 2007.

[10] K. Prasad, Strategic human resource development: Concepts and practices. New Delhi: PHI Learning Private Limited, 2012.

[11] K. A. Al-Busaidi and H. Al-Shihi. (2010). Instructors' acceptance of learning management systems: A theoretical framework, Communications of the IBIMA, vol. 2010 [Online]. Available: http://www.ibimapublishing.com/journals/CIBIMA/2010/862128/862128.pdf

[12] A. Hamat, M. A. Embi and A. H. Sulaiman, "Learning management systems in Malaysian higher education institutions," in E-learning in Malaysian higher education institutions: Status, Trends, & Challenges, M. A. Embi, ed., Putrajaya: Kementerian Pengajian Tinggi Malaysia, pp. 29-50, 2011.

[13] Y. Kats, Learning Management Systems and Instructional Design: Best Practices in Online Education. Pennsylvania: Idea Group Inc (IGI), 2013.

[14] S. Rapuano and F. Zoino, "A learning management system including laboratory esperiments on measurement instrumentation," IEEE Trans. on Instrumentation and Measurement, vol. 55, no. 5, pp. 1757–1766, 2006.

[15] W. R. Watson and S. L. Watson, "An Argument for Clarity: What are Learning Management Systems, What are They Not, and What Should They Become?" Tech Trends, vol. 51, no. 2, pp. 28-34, 2007.

[16] S. S. Smith, Web-Based Instruction: A Guide for Libraries. 3rd ed. Georgia: American Library Association, 2010.

[17] M. Francis, "How to successfully take an online class," in Continuing Education for Librarians, C. Smallwood, K. Harrod. and V. Gubnitskaia, eds., Jefferson: McFarland, pp. 35-41, 2013.

[18] M. Francis, "How to successfully take an online class," in Continuing Education for Librarians, C. Smallwood, K. Harrod. and V. Gubnitskaia, eds., Jefferson: McFarland, pp. 35-41, 2013.

[19] C. Dalsgaard. (2006). Social software: E-learning beyond learning management systems. European Journal of Open, Distance and E-Learning [Online]. Available: http://www.eurodl.org/materials/contrib/2006/Christian_Dalsgaard.htm

[20] S. C. Chang and F. C. Tung, "An empirical investigation of students' behavioral intentions to use the online learning course websites," British Journal of Educational Technology, vol. 39, no. 1, pp. 71-83, 2008.

[21] A. Dillon and M. Morris, "User acceptance of new information technology: Theories and models," Annual Review of Information Science and Technology, vol. 31, pp. 3-32, 1996.

[22] P. J. Edwards, "Electronic medical records & computerized physician order entry: Examination factors and methods that foster clinician IT acceptance in pediatric hospitals," PhD Dissertation, Georgia Institute of Technology, Atlanta, Georgia, 2006.

[23] S. L. Fisher and A. W. Howell, "Beyond user acceptance: An examination of employee reactions to information technology systems," Human Resource Management, vol. 43, no. 2, pp. 245-258, 2004.

[24] C. M. Peterson and T. O. Peterson, "The darkside of office automation: How people resist the introduction of office automation technology," in Human Factors in Management Information Systems, J. M. Carey, ed., New Jersey: Ablex Publishing Corporation, pp. 183-194, 1999.

[25] J. J. Fay, Encyclopedia of Security Management, 2nd ed, Oxford: Butterworth-Heinemann, 2007.

[26] N. Kripanont, N, "Examining a technology acceptance model of Internet usage by academics within Thai business schools," PhD Dissertation, Victoria University, Melbourne, Australia, 2007.

[27] M. A. Islam, N. A. A. Rahim, C. L. Tan and H. Momtaz, "Effect of demographic factors on e-learning effectiveness in a higher learning Institution in Malaysia," International Education Studies, vol. 4, no. 1, pp. 4-7, 2011.

[28] F. Ameen, A user acceptance of web personalization systems: Model validation using S.E.M: A PLS-PM approach with moderating effects. Oak Ridge, TN: Iris Publishing, 2014.

[29] M. Wang , C. Huang and T. Yang, "Acceptance of knowledge map systems: an empirical examination of system characteristics and knowledge map systems self-efficacy," Asia Pacific Management Review, vol. 17, no. 3, pp. 263-280, 2012.

[30] M. K. O. Lee, C. M. K. Cheung and Z. Chen, "Acceptance of internet-based learning medium: The role of extrinsic and intrinsic motivation," Information and Management, vol. 42, pp. 1095-1104, 2005.

[31] R. G. Saadé, F. Nebebe and W. Tan, Viability of the technology acceptance model in multimedia learning environments: Comparative study," Interdisciplinary Journal of Knowledge and Learning Objects, vol. 37, pp. 175-184, 2007.

[32] S. Y. Park, An analysis of the technology acceptance model in understanding university students' behavioral intention to use e-learning," Educational Technology and Society, vol. 12, no. 3, pp. 150-162, 2009.

[33] F. D. Davis, "Perceived usefulness, perceived ease of use, and user acceptance of information technology," MIS Quarterly, vol. 13, no. 3, pp. 319-340, 1989.

[34] E. van Teijlingen and V. Hundley, "The importance of pilot studies," Nursing Standard, vol. 16, no. 40, pp. 33-36, 2002.

[35] E. Curtis and J. Drennan, Quantitative Health Research Methods: From Theory to Practice. Berkshire: McGraw-Hill Education, 2013.

[36] F. M. H. Alatawi, Y. K. Dwivedi, M. D. Williams and N. P. Rana, "Exploring technological factors influencing knowledge management systems adoption in Saudi Arabian public sector: A validation of extended TAM model," I-Gov Workshop, 12-13 June 2013, Brunel University, London, pp. 82-97, 2014.

[37] I. A. Almarashdeh, N. Sahari, N. A. H. M. Zin and M. Alsmadi. "Distance learners acceptance of learning management system," Proceeding of 2010 6th International Conference on Advanced Information Management and Service, 30 November – 02 December 2010, Seoul, Korea. Korea: IEEE, pp. 305-309, 2010.

[38] I. A. Almarashdeh, N. Sahari, N. A. H. M. Zin and M. Alsmadi, M., "Acceptance of learning management system: A comparison between distance learners and instructors," Advanced in Information Sciences and Service Sciences, vol. 3, no. 5, pp. 1-9, 2011.

[39] E. Grandon, O. Alshare and O. Kwan, "Factors influencing student intention to adopt online classes: A cross-cultural study," Journal of Computing Sciences in Colleges, vol. 20, no. 4, pp. 46–56, 2005.

[40] B. J. L. Landry, R. Griffeth and S. Hartman, "Measuring student perceptions of blackboard using the technology acceptance model," Decision Science Journal of Innovative Education, vol. 4, no. 1, pp. 87-99, 2006.

[41] Y. L. Theng, "An empirical study of students' perceptions on e-learning systems," Proceeding of the 2nd International Convention on Rehabilitation Engineering & Assistive Technology, 13-15 May 2008, Bangkok, Thailand. Singapore: START Centre, pp. 245-249, 2008.

[42] S. Baleghi-Zadeh, A. F. Mohd Ayub, R. Mahmud and S. Mohd Daud, "Behaviour intention to use the learning management: Integrating technology acceptance model with task-technology fit. Middle-East," Journal of Scientific Research, vol. 19, pp. 76-84, 2014.

[43] W. Premchaiswadi and P. Porouhan, "An empirical study of the key success factors to adopt e-Learning in Thailand," Proceeding of the International Conference on Information Society, 25-28 June 2012, London, United Kingdom. pp. 333-338, 2012.

[44] S. K. Sharma and J. K. Chandel, "Technology acceptance model for the use of learning through websites among students in Oman," International Arab Journal of e-Technology, vol. 3, no. 1, pp. 44-49, 2013.

[45] T. Farahat, "Applying the technology acceptance model to online learning in the Egyptian Universities," Social and Behavioural Sciences, vol. 64, pp. 95-104, 2012.