

ATTITUDE TOWARDS THE USE OF LEARNING MANAGEMENT SYSTEM AMONG UNIVERSITY STUDENTS: A Case Study

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ABSTRACT

Learning management system (LMS) is a learning platform for both full time and distant learning students at the International Islamic University in Malaysia (IIUM). LMS becomes a tool for IIUM to disseminate information and learning resources to the students. The objectives of this study were to

- investigate students' attitudes toward the use of LMS,
- to verify the impact of perceived usefulness and perceived ease of use on attitude towards use of learning management system,
- to examine the differences in attitudes toward the use of LMS between distance learning and full time students.

There were 120 (70 full time and 50 distance learning) students at the Institute of Education responded for the study. The collected data was analysed using descriptive statistics, t-test and Multiple Regression Analysis (MRA). The results of the study showed that perceived ease of use and perceived usefulness determine students' attitudes toward the use of LMS. However, this study did not find any significant differences between distance learning and full time students. According to the findings the study recommended that the University should continue using LMS because it is useful for both distance learning and full time students. Further suggestions are made to customize and upgrade the LMS suitable for innovative teaching and learning.

Keywords: LMS Acceptance, TAM Model, e-learning.

INTRODUCTION

The rapid innovation in mobile and computer technology has triggered the vast development in Internet applications. The Internet has been used from different perspectives and usage to accommodate the needs of the social community. In Higher Institutions, the Web 2.0 Internet technology has been utilised to provide resources, information and interactivities.

According to Bransford (1999), there are many benefits gained from the integration of ICT in education, such as active learning, collaborative learning, creative learning, integrative learning and evaluative learning.

Active learning is referred to any instructional method that engages students to involve in the learning process. In active learning, the students have to take the responsibility for learning besides the teacher (Bonwell & Eison, 1991). Collaborative learning has been championed by the constructivist theorist such as Vygotsky (1998). In collaboration work, the emphasis is given on interaction (Vygotsky, 1998) and knowledge sharing and discovery (Smith & MacGregor, 1992) in order to fulfill a task. Thus, students work with in a group for the same task at the same time to search for meaning, understanding and solutions of problems defined.

Collaboration is here seen as the act of shared creation and/or discovery). In creative learning, students are able to connect previous knowledge from unmeaningful to ways that are new and meaningful to the individual concerned. Thus, students are able to equip themselves with the knowledge and skills they need to succeed in their lives. Tim (1010) refers creative learning to the nurturing ways of thinking and working that support imagination which materialise the ideas and imagination to a real thing.

The recent technology development has led to the existence of participation and communication methods in traditional university classrooms to change. Realizing the pedagogical benefits from the Internet technology, the use of electronic learning (e-learning) management system continues to increase in Malaysian universities. International Islamic University in Malaysia (IIUM) is responding to all the benefits resulting from the use of e-learning management system in education and it is taking initiative to upgrade information technology infrastructure and improve the system in order to accommodate the needs of students and lecturers to achieve the vision of the University to fulfill the Islamization of knowledge. Many studies have been conducted on Learning Management System Acceptance, including the factors that influence technology acceptance model among lectures and students (Coates, James & Baldwin 2005; Landry, Griffeth & Hartman 2006; Ma & Liu 2004; Yuen & Ma 2008; Yunus 2007). Despite Ustati and Syed Hassan (2013) 's study on the student satisfaction of distance education program in IIUM, there is still lack of studies to provide information on students acceptance of learning management system. In this present study, the researcher examined IIUM students' attitudes towards the use of learning management system, and investigate the impact of perceived usefulness and perceived ease of use on attitude towards use of learning management system in IIUM. Furhter, it will reveal the differences between distance learning and full time students in terms of attitude towards LMS.

THE RESEARCH TESTED THE FOLLOWING RESEARCH QUESTIONS

- To what extent do students accept LMS in their learning?
- Do perceived usefulness and perceived ease of use affect students' attitude toward use of LMS?
- Is there any statistically significant difference between distance learning and full time students' acceptance of LMS?

Learning Management System (LMS)

A learning management system (LMS) is a software application enable users or learning manager to disseminate information from systematic planning by adopting appropriate pedagogical approach. It allows users to share information and collaborate online.

In Learning management system (LMS), instructor or learning manager can monitor student involvement, and assess their ongoing performance. Thus, in any LMS whether customised or a purchased system from vendor must include interactive features for instance, video conferencing and chat or group discussion tools. Ellis (2009) relate LMS as one location for students to obtain a large number of resources online. While Brown and Johnson (2007) include LMS as a vehicle for training, evaluation, and tracking results, Al-Khalifa (2010) perceives LMS as a platform for students to complete the task quickly, uploading various types of files into its environment, enabling users to access the information at anytime and anywhere, and allowing users to communicate with other students in the course and the tutor electronically.

The use of LMS in education will save the time for both lecturers and students as well as making the learning content easier to be accessed, presented which enhance self regulated learning (Gudanescu, 2012).

Theoretically, the LMS provides students with the ability to use interactive features such as; threaded discussions and discussion forums, getting comments from their lecture, submit their assignments, getting extra resources for lectures, make the connection with their lecture easily as well as help them to organize their lecture materials. However in practice, many LMS platforms have a lot of setbacks. These included lack of financial budget, compatibility of software and hardware, technical stuffs and etc.

Previous Research Related To the Integration of Internet Technology In Education

Many of recent studies by Chen and Huang, (2010), Chuttur, (2009), Liu, Liao and Pratt (2009), Teo (2009) and Schaik and Teo (2009), van Raaij and Schepers (2008) and Venkatesh and Bala (2008) strengthen the findings related to positive effect of information and communication technologies on students' outcome. These include terms of their academic performance and activities, increasing the number of students that excel in science, improve student's understanding of subjects, effectively reinforce active learning process for student and enhance higher-order thinking and problem solving skill development. The study environment may take advantage of information and communication technologies which are being recognized by many previous studies. In actual fact, there is a need to accelerate the implementation of information and communication technologies to improve student performance. In order to do this, it is important to measure the key factors driving the growth of information and communication technologies and providing appropriate recommendation on this study.

Iwasaki, Tanaka and Kubota (2003) investigated on the use of LMS to teacher epistemology and course characteristics. The suggestion made was to ensure the development of learning model to suit the courses and instrutors in order to facilitate the utilisation of LMS. They also include suggestions of case study is needed to foster collaboarative learning.

In a study related to Moodle as open source learning communities, Dougiamas and Taylor (2003) also utilised case study as a component of research methodology in revealing the effectiveness of Moodle as a course management system platform for reflective inquiry learning. In underpinning the present study, the researcher further highlights the theoretical framework as a model for the utilization of LMS in the learning process.

Theoretical Framework

Electronic-learning (e-learning) has contributed to the benefits for students, teachers and education if they accepted it and use it in their academic life. Therefore, the acceptance of LMS among learning communities provides the success of both distance and regular learners. Regarding this issue, as e-learning system part of communication technology, it is important to define the term "technology acceptance" to determine the factors that affect the actual use of educational technology in university environment. There are several existing models that have been used to investigate acceptance of technology. This study is focusing on Technology Acceptance Model (TAM) originally proposed by Davies in 1989 (see Figure 1.0). Davis (1989) defined significant factors affecting technology acceptance in their Technology Acceptance Model (TAM) that lead to the actual usage of an information system such as the perceived ease of use of technology (PEOU), the perceived usefulness of technology (PU) and the attitudes toward the use of technology (ATU). In this study, perceived ease of use is defined as the degree a person believes that using LMS requires less effort to learn on how to use the system. Perceived usefulness is defined as the degree to which a person believes that using LMS would enhance his or her learning performance, and attitude toward using is defined as the degree to which individual associates and evaluates the target system with her or his job, whether her or his reaction is positive or negative.

Perceived usefulness and perceived ease of use are considered distinct factors influencing the user’s attitude towards using the technology, which ultimately determine the accept system use. The model examines the factors which could possibly affect the LMS acceptance. The Technology Acceptance Model (TAM) is shown in Figure 1.0.

The schematic diagram of the theoretical framework is shown in Figure 1.0 reveals the relationships between the dependent and independent variables. Essentially, it is the foundation on which the entire research is based upon.

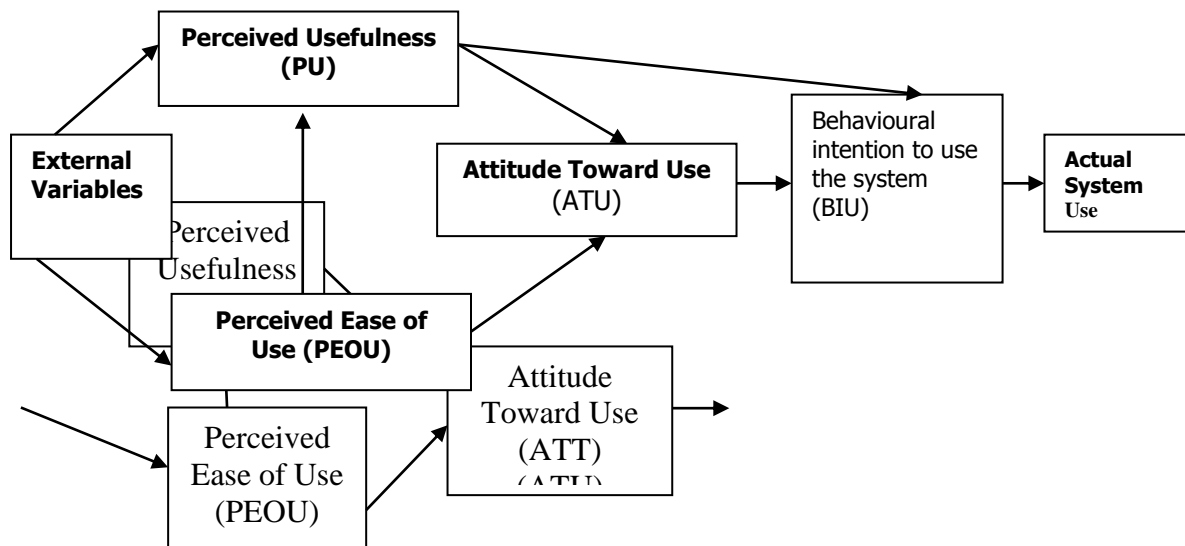


Figure: 1
Technology Acceptance Model TAM, (Davis, 1989)

Figure: 2 shows the conceptual model used in this study. It is a modified TAM model, excluding actual system use, external variables constructs and Behavioural Intention to use. The main variables in this study are Perceived Usefulness (PU), Perceived Ease of Use (PEOU) and Attitude Toward Use (ATU). This model has been simplified according to the analysis procedure (MRA) selected for the research.

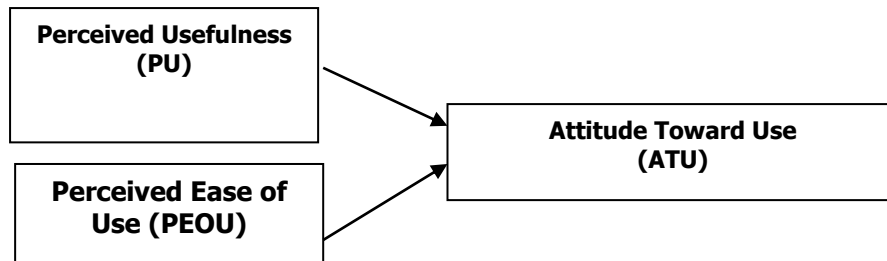


Figure: 2
The research model (Conceptual framework).

The dependent variable analysed in this study was to find out the level of LMS acceptance among students. Two independent variables; perceived ease of use (PEOU) and perceived usefulness (PU) were believed to have some influences towards the dependent variable (attitude towards the use of LMS). These three variables explain the level of acceptance in using LMS.

Perceived ease of use denotes to how easier the user will perceive the using of technology. Based on many previous researches, the perceived ease of use can be the determining factor to influence the use of technology. According to Shroff, Deneen and Eugenia (2011), perceived ease of use had a significant influence on both attitudes towards usage and perceived usefulness which will lead to the effect on the acceptance.

Educational technology with a high level of ease of use is more likely to induce positive attitudes towards acceptance (Davis, 1989). On the other hand, Liu et al (2009) found in their study that perceived ease of use was significant predictors of attitude towards use that will lead affect the acceptance.

Thus, perceived ease of use was an indirect factor on the use of technology. In other words; even when the user perceived technology as very easy and no need any effort to use it, he or she does not use it unless there is enough knowledge and competence to direct positive attitudes towards computer (Teo, 2009). In addition, Kiraz and Ozdemir (2006) believe that the perceived ease of use alone cannot determine the use of technology in education. Perceived usefulness refers as to how much the user believes that he or she can get help and benefits his or her performance from the use of technology. Related to many previous studies, the perceived usefulness is a direct determinant of technology use.

Klopping and McKinney (2004) found in their study that the perceived usefulness will influence directly the intention and actual of use of technology. Moreover, perceived usefulness can influence students' intention to use technology strongly, also it is a major determinant of students' intention to use technology (Davis; Bagozzi & Warshaw, 1989).

The attitude toward use defined as the positive or negative feeling of individuals in performing and how this feeling can affect the particular behaviour of use. The attitude toward use is one of the main factors that can effect on the behavioural intention; it is directly influence the frequency of use of technology (Teo, 2009; Kiraz & Ozdemir, 2006).

RESEARCH METHOD AND DESIGN

This research design has been designed with a focus to answer the research questions raised from this study. This study has utilized the quantitative research, specifically a cross sectional survey as the method of data collection. It was designed to identify the level of acceptance of learning management system among IIUM students in Malaysia through measuring the attitude towards using LMS.

Research Participants

The participants in this study were 120 students from IIUM in Malaysia (70 full time and 50 distance learning students). They were recruited from two different study programmes: Distance learning students and Full time students; both were undergraduate students from Institute of education. The participants were selected according to the availability of their presence in classroom. A total population of 800 distance learning students and 2000 full time students were registered. Thus a small percentage of full time students (3.5%) and 12.5% distance learning students were drawn from real population.

Measures

A survey instrument was developed based on previous research to measure the three factors in the research model. Comprising two sections, the first required participants to provide their demographic information and the second contained 20 statements on the three factors in this study.

- Demographic information, including gender, age, programme of study and computer experience.
- Perceived usefulness (PU),
- Perceived ease of use (PEU) and
- Attitude toward use (ATU) were measured using 6 items for each construct.

The items were adapted based on the literature reviews. All the items were ranked according to 5 likert scale from strongly agree (5) to strongly disagree (1). Undecided was used as the middle point (3).

ANALYSIS PROCEDURES

After the data was collected, the researcher assigned numbers to all the questionnaires when entering the data. The questionnaires data were analysed using the SPSS (Statistical Package for Social Science) 16.0 software package.

The procedure of analysing the data obtained in this study was made in three different techniques, namely; the descriptive statistics percentage, Multiple Regression Analysis (MRA) and independent sample t-test.

The first technique, is the descriptive statistics involving percentage and frequency counts were presented.

It was used to analyse the demographic data of the respondents in order to determine missing values and to ascertain the percentages of the level of students' acceptance of LMS system.

The second technique, which was the Multiple Regression Analysis (MRA), which was used to determine the effectiveness of Independent Variables on Dependant Variable.

The last technique, which was the independent sample t-test, which was used to confirm whether there is a statistical significant difference among distance and full time students in the level of acceptance of LMS system.

RESULTS

Sample Characteristics

The respondents of the study were 120 undergraduate university students, where more than half of them were full time students (70 students, 58.3%), and just 50 students were distance learning (41.7%).

In this study, there were 79 female students divided into 2 groups; 49 full time students (62.0%), and 30 distance learning students (38.0%). However, the number of male full time and distance learning students was almost the same (21 students, 51.2%) and 20 students 48.8% respectively. The respondents' characteristics are shown in Table 1.

Table: 1
Sex of the Respondents and Programme of study.

Sex of the Respondents	Male	Count	Programme of study		Total
			Distance Learning	Full time	
			20	21	41
		% within Sex of the Respondents	48.8%	51.2%	100.0%
	Female	Count	30	49	79
		% within Sex of the Respondents	38.0%	62.0%	100.0%
Total		Count	50	70	120
		% within Sex of the Respondents	41.7%	58.3%	100.0%

Item Analysis

Table 2 presents the mean and standard deviation for the variables that define Perceived usefulness, Perceived ease of use and Attitude toward use.

**Table: 2
Descriptive Statistics**

	Mean	Std. Deviation
Using LMS would enhance my effectiveness in learning	3.67	.832
Using LMS would improve my course performance	3.72	.812
Using LMS would increase my productivity in my coursework	3.79	.819
Using LMS enables me to have more accurate information	3.70	.875
Using LMS makes it easier to do my tasks	3.73	.877
Using LMS useful in my study	3.74	.855
LMS is easy to use	3.73	.952
It is easy to get LMS to do what I want it to do	3.50	.907
My objective for using LMS is clear and understandable	3.69	.838
Interacting with LMS does not require a lot of mental effort	3.73	.896
LMS is convenient to use	3.68	1.053
It is easy to find information on LMS	3.60	.982
LMS allows easy return to previous display pages	3.48	1.021
I like using LMS	3.56	.968
I use LMS to get more information about my subjects	3.77	.912
I know about e-learning, and i believe it is useful	3.78	.963
LMS provides an attractive working environment	3.63	.917
Using LMS has been a pleasant experience	3.63	.899
I believe it is would be a good idea to use this LMS for my course work	3.64	.887
I have a generally favorable attitude toward using LMS	3.55	.897

Note: number of participants were 120.

Based on the 5-likert scale, the mean of all items is above of anchor point (2.5). The highest mean (3.79) with the SD of .819 is found in item 2, Perceived usefulness (Using LMS would increase my productivity in my coursework). This result shows that the students believe using LMS in their academic life will enhance their efficiency in their coursework. Regarding to this, IIUM should use LMS to disseminate knowledge and islamic values to the students.

On the other hand, the lowest mean (3.48) with SD of 1.021 occurred in item 7 of Perceived ease of use (LMS allows easy return to previous display pages). This result shows that the students were facing problems whenever they return to previous pages through using the LMS.

Multiple Regression Analysis (MRA) was used to expose the relationship between independent Variables (Perceived usefulness and Perceived ease of use) and dependent variable (Attitude toward use). The relationships between independent variables and dependant variable are shown in Table 4. The variance explained is shown in Table 3.

**Table: 3
3 Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.873 ^a	.762	.758	.40291

a. Predictors: (Constant), MPEU, MPU

**Table: 4
Coefficients^a**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.125	.200		-.622	.535
	MPU	.524	.066	.470	7.919	.000
	MPEU	.502	.061	.492	8.290	.000

a. Dependent Variable: MATU

Table 4 shows that Perceived usefulness and Perceived ease of use significantly affect Attitude toward use at level of $p < 0.05$.

Perceived ease of use has affect on the attitude toward use with $\beta = 0.492$. Whereas, Perceived usefulness has influenced the attitude toward use with $\beta = 0.470$. This model is explained by 76.2%.

The difference of attitude to use LMS between distance learning and full time students are showed in Table 5.

**Table: 5
The differences between distance learning
and full time students.**

Group Statistics					
	Programme of study	N	Mean	Std. Deviation	Std. Error Mean
MA TU	Distance Learning	50	3.5371	.87091	.12317
	Full time	70	3.7327	.77674	.09284

The main difference has been further confirmed through the t-test analysis (see Table: 6).

**Table: 6
Independent Samples Test**

		Levene's Test for Equality of Variances		t-test for Equality of Means				
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
MATU	Equal variances assumed	.549	.460	-1.292	118	.199	-.19551	.15131
	Equal variances not assumed			-1.268	98.026	.208	-.19551	.15424

The results show there is no significant difference between distance learning and full time students; $F(118) = .549$, $t = -1.292$, $p > .05$ in their attitude toward use of LMS. Thus, it shows that the level of acceptance according to their attitude are similar across full time and distance learning students.

DISCUSSION AND CONCLUSION

This study examined student acceptance of e-learning technology using TAM to underpin the conceptual framework. Overall, TAM is an effective model to understand the behavior of people to utilise technology specifically LMS. Based on the case study, the results reveal that perceived ease of use is more important in determining attitude toward use than perceived usefulness.

The result of present study showed that the student had low level of acceptance of LMS as all items had means bellow 4 "agree". This result is not supported by other studies such as Liu, Liao and Pratt (2009); Shroff, Deneen and Eugenia (2011) who found that students favoured the use of e-learning technology with high level. In addition, the study revealed that perceived usefulness and perceived ease of use significantly affect attitude toward use of LMS. This is supported by other studies such as Teo (2009); Kiraz and Ozdemir (2006) who claimed that perceived usefulness and perceived ease of use can be the determining factors to influence attitude toward using LMS.

The main purpose of this study was to determine the students' perceive toward the use of Learning Management System in IIUM, and explore the relationship between perceived ease of use (PEOU), perceived usefulness (PU) and attitude towards use (ATU), also to study the difference between distance learning and full time students' acceptance of learning management system.

The results of this study have shown that perceived usefulness perceived ease of use have a significant effect on attitude towards use. In other words, when students perceive learning management system as one that is gain more benefits and can improve their performance through use it as well as it is easy to use and free effort, they will have positive attitude toward the system. These findings support Chen and Huang(2010); Liao et al, (2009) ; Schaik and Teo, (2009); and Teo, 2009) studies.

Moreover, this study did not find a significant relationship between programme of study (distance learners and full time) and attitude toward use (ATU). Thus, the implications of the findings indicate that a case study is needed to ensure effectiveness of each or any LMS in the learning communities. As every learning community has its own needs and different characteristics of courses and lecturers (Iwasaki,; et.al,2003). This research will be a bench mark for future studies related to LMS and computer integration.

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