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Article:	An Investigation of Utilization and Acceptance of LMS among Students of Teacher Education at AIOU Islamabad during COVID-19 Pandemic
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Abstract

Learning Management Systems (LMS) is emerging internet technology that facilitating the instructions in blended, distance and face to face learning. The primary purpose of this paper was to explore the contribution of ease to use and usefulness of LMS in enhancing attitude towards use of LMS in teacher education at Allama Iqbal Open University (AIOU) Islamabad. The present study was a quantitative research and cross sectional survey design was used. The data were collected using adapted questionnaire of Trayek and Hassan (2013), which covered three variables ease of use, usefulness and attitude toward use of LMS. The respondents of this study were 310 Bachelor of Education (BEd) students of AIOU Islamabad and cluster random sampling technique was used for sampling. The data was collected through online Google survey form. Finally, the data was analyzed using SPSS and different statistics techniques were applied to meet the study objectives. The results indicated that perceived usefulness and ease of use of LMS had positive and significant contribution in nurturing attitude toward use of LMS among students of teacher education at AIOU Islamabad. Further, it was recommended that the management of AIOU Islamabad enhance the purposefulness, effectiveness and easy usability of LMS among students of teacher education.

Keywords: LMS, Usefulness, Ease of use, Attitude towards use

Introduction

In these days the Information and Communication Technology (ICT) has been utilized by many educational institutions for instruction. The use of ICT in instructional process has many advantages and benefits for education system. The use ICT in education enhance the quality of instruction, increase the performance of students and teachers, increase level of motivation among teachers and students, and reduce the limitations of space and time in teaching and learning process (Al-Zaidiyeen, Mei, & Fook, 2008; Chang, 2008).

The emergence and wide utilization of ICT in education and training introduced new terms in instruction likewise virtual classroom, digital material, e-learning, learning management system and web based leaning. This emergence of ICT in education and training in twenty first century has change the role of teacher and trainer. Early the role of traditional teacher was only verbal transmitter of information and now through ICT it has changed as mentors and facilitators (Al-Khalifa, 2010).

Learning Management Systems (LMS) is emerging internet technology that facilitating the instructions in blended, distance and face to face learning processes. This emerging internet technology LMS is providing variety of instructional techniques. Further, LMS offer virtual way of teaching and learning which enhanced faster interaction and communication among teachers and students for effective learning. Furthermore, LMS provide different features and facilities for effective teaching and learning process. Therefore, universities make huge investment on LMS and used by their faculty members according to their maximum professional competencies to provide education and training (Dahlstrom, Brooks, & Bichsel, 2014; Jaschik & Lederman, 2014).

Instructional activities of teacher education programs were conducted face to face at AIOU Islamabad before COVID-19 pandemic. Now after COVID-19 pandemic the instructional activities were transfer toward LMS based instruction. This study would help to increase the awareness about the perceived usefulness and ease of use of LMS among students of teacher education at AIOU Islamabad and role of usefulness and ease of use of LMS in nurturing attitude toward use of LMS. Furthermore, it would enhance the purposefulness, effectiveness and easy usability of LMS among students of teacher education.

Literature Review

In general LMS offers an instructor, resource person and moderator to organize and deliver instructional material, supervise learners' participation in online class and evaluate students' online academic achievement and performance. Further, LMS is offering interactive and variety of features for the participants. Which included discussions, questioning, effective and speedy feedback, video and audio conferencing and forums for sharing variety of instructional material for learners.

In the current e-learning technology platforms, Learning Management Systems (LMSs) are most prominent and are being used most commonly because of their usefulness and easiness in sharing course contents and in organizing the massive amount of information related to online courses (Abdelraheem, 2012). LMS platforms provide useful tools and utilities like management of courses, online messaging, group discussions and chats, uploading & downloading documents and files (e.g. assignments, quizzes, lecture materials, books, power point slides, video/sound clips etc), grading assignments & quizzes online and evaluation of the courses while maintaining interactive learning and teaching. Meanwhile, Freire, Arezes and Campos (2012) pointed that LMS has emerged in a composite manner in terms of interaction possibilities, technological assets and educational contents, so there is a marginal degree of apprehension regarding the quality of its interface and the methods in which the functions in this system are being completed.

Shroff, Deneen and Eugenia (2011) found that perceived ease of use had positive and significant influence on perceived usefulness and attitudes towards use which lead to contribute on the acceptance educational technologies for education and training. Educational technologies with high level of ease of use are contributed towards nurturing positive attitudes towards acceptance of educational technologies for education (Davis, 1989).

Likewise, Liu, Liao, and Pratt (2009) and Teo (2009) investigated that perceived ease of use had significantly effect on attitude towards use that have lead to increase the acceptance of internet technology for instruction. Hence, easy use of technology was factor that had indirectly impact on attitude towards use of internet technology in instructional process. Although, in some situation when participant seeming instructional technology as very easy to use, unless they have necessary skills and knowledge for effective and purposeful use of that technology.

Furthermore, Kiraz and Ozdemir (2006) indicated that only perceived ease of use cannot determine the use of instructional technology in education and training. Perceived usefulness of technology explained as believes of learners regarding benefits and effectiveness of instructional technology in their academic achievement and performance. Therefore, the perceived usefulness had directly impact on attitude regarding use of technology in education process. Moreover, Teo and Schalk (2009) also investigated that perceived ease of use and usefulness of LMS had positive and significant effect on nurturing attitude toward use of LMS among students of pre-service teacher education.

The attitude toward use of online instructional technology defined as the positive or negative perceptions and feelings of individuals in performing and utilization of such technologies. Further, how these perceptions and feelings contribute in nurturing particular behavior towards use of online instructional technology. The attitude toward use of LMS is the factor that can effect on the behavioural intention and further it is directly effect on the frequency of use of LMS for education process (Teo, 2009; Kiraz & Ozdemir, 2006).

Pituch and Lee (2006) examined that PU and PEU found to be good determining factors towards student's adoption of e-learning technologies. Lee, Cheung, and Chen (2005) pointed

out that both PU and PEU had a significant impact on student's intentions and attitude towards the use of online learning technologies.

Technology acceptance theories have been frequently used in various studies to examine the factors influencing the adoption of e-learning technologies. Numerous theories have been established to explain the user's attitudes and intention to adopt a technology. One of the famous models associated to acceptance of technology and its use is the Technology Acceptance Model (TAM), which was presented by Davis in 1989. Current study primarily uses TAM's concept to explain the LMS acceptance and its usage along with some other factors. TAM has been proved to be an effective theoretical model in assisting to examine and forecast the user's attitude and behavior towards the latent technologies (Legris, Ingham, & Collette, 2003). Davis (1989) individually then Davis, Bagozzi, and Warshaw (1989) collectively suggested TAM to clarify why anyone adopts or rejects some technology. Moreover, the TAM encompasses 40 to 50 percent explanation power, hence declaring it prominent amongst other competitive technology acceptance models like the Motivational Model (MM) and the Theory of Reasoned Action (TRA) (Venkatesh & Davis, 2000). TAM facilitates a foundation with which anyone can find that how external variables effect the intentions and attitudes to use a technology. Two perceptive factors theorized by TAM are "perceived usefulness (PU)" and "perceived ease of use (PEU)". TAM has theorized that user's attitudes, behavioral intentions, PU and PEU of the system either directly or indirectly affect the user's actual use of that technology. TAM also suggests that these two factors (i.e. PU and PEU) influence attitudes and actual use of a technology system. These variables were investigated in current research because these variables are very necessary in acceptance of LMS for teacher education.

The purpose of this study was to explore the contribution of ease to use and usefulness of LMS in enhancing attitude towards use of LMS in teacher education at AIOU Islamabad. This study would help to increase the awareness about the perceived usefulness and ease of use of LMS among students of teacher education at AIOU Islamabad and role of usefulness and ease of use of LMS in nurturing attitude toward use of LMS. Furthermore, it would enhance the purposefulness, effectiveness and easy usability of LMS among students of teacher education.

This study was based on following objectives to:

1. Investigate the perceptions of AIOU Islamabad BEd students regarding ease of use of LMS for teacher education.
2. Investigate the perceptions of AIOU Islamabad BEd students regarding usefulness of LMS for teacher education.
3. Investigate the attitude of AIOU Islamabad BEd students towards use of LMS for teacher education.
4. Investigate the contribution of ease of use and usefulness of LMS in enhancing attitude towards use of LMS in teacher education at AIOU Islamabad.

Research Methodology

Research Design and Participants

The primary purpose of this paper was to investigate the contribution of ease to use and usefulness of LMS in enhancing attitude towards use of LMS in teacher education at AIOU Islamabad. This study was a quantitative research and cross sectional survey design was used. The respondents of this study were 310 BEd students of AIOU Islamabad. These students were participated in LMS online teacher education program. The data was collected through online Google survey form from five random selected groups (clusters) out of sixty groups (clusters).

Instrumentation and Procedure

Data was collected using a questionnaire consisted demographic factors and statements measuring ease to use and usefulness of LMS and attitude towards use of LMS in teacher education. The questionnaire was adapted from Trayek and Hassan (2013) and covered three variables perceived usefulness (six statements) with .94 reliability and perceived ease to use of LMS (seven statements) with .92 reliability and attitude toward use of LMS (seven statements) with .94 reliability.

Data Analysis

The data was analyzed using SPSS 22 version and statistics techniques like mean, SD and regression analysis were applied to meet the study objectives.

Data Analysis and Results

Table 1

Mean and SD values of usefulness of LMS

Statements	Minimum	Maximum	Mean	SD
PU1	1	6	3.73	1.613
PU2	1	6	3.83	1.710
PU3	1	6	3.84	1.653
PU4	1	6	3.99	1.630
PU5	1	6	3.82	1.735
PU6	1	6	3.95	1.678
Perceived Usefulness	1	6	3.85	1.486

Note: N=310

This table represents the perceived usefulness of LMS for teacher education at AIOU Islamabad. It indicates that the value of mean ($M = 3.99$) for PU4 is recorded highest and ($M =$

3.73) for PU1 recorded lowest. The overall mean values ($M = 3.85$) was for variable perceived usefulness of LMS. It revealed that the mean value of perceived usefulness of LMS was above the scale mark *Somewhat Disagree* (3.0) and below the scale mark *Somewhat Agree* (4.0). It revealed that the majority of students were somewhat agree and slightly satisfied with the usefulness of LMS for their education through LMS.

Table 2

Mean and SD values of ease to use of LMS

Statements	Minimum	Maximum	Mean	SD
PEOU1	1	6	3.30	1.885
PEOU2	1	6	3.38	1.717
PEOU3	1	6	3.99	1.659
PEOU4	1	6	3.23	1.780
PEOU5	1	6	3.42	1.648
PEOU6	1	6	3.79	1.683
PEOU7	1	6	3.37	1.748
Perceived Ease of Use	1	6	3.50	1.429

This table represents the perceived ease of use of LMS for teacher education at AIOU Islamabad. It indicates that the value of mean ($M = 3.99$) for PEOU3 is recorded highest and ($M = 3.23$) for PEOU4 recorded lowest. The overall mean values ($M = 3.50$) was for variable perceived ease of use of LMS. It revealed that the mean value of perceived ease of use of LMS was above the scale mark *Somewhat Disagree* (3.0) and below the scale mark *Somewhat Agree* (4.0). It revealed that near to half of students were somewhat agree and slightly satisfied with the ease of use of LMS for their education through LMS.

Table 3

Mean and SD values of attitude towards use of LMS

Statements	Minimum	Maximum	Mean	SD
ATU1	1	6	3.53	1.793
ATU2	1	6	3.95	1.636
ATU3	1	6	4.20	1.591
ATU4	1	6	3.85	1.682
ATU5	1	6	3.56	1.860
ATU6	1	6	3.73	1.770
ATU7	1	6	3.78	1.650
Attitude toward use	1	6	3.80	1.495

This table represents the attitude towards use of LMS for teacher education at AIOU Islamabad. It indicates that the value of mean ($M = 4.20$) for ATU3 is recorded highest and ($M = 3.53$) for ATU1 recorded lowest. The overall mean values ($M = 3.80$) was for variable attitude towards use of LMS. It revealed that the mean value of attitude towards use of LMS was above the scale mark *Somewhat Disagree* (3.0) and below the scale mark *Somewhat Agree* (4.0). It revealed that the majority of students were somewhat agree and having slightly satisfied attitude towards use of LMS for their education through LMS.

Table 4

Model summary of regression analysis applied on ease to use, usefulness and attitude towards use of LMS

Model	R	R Square	Adjusted Square	R	Std. Error of the Estimate
1	.904(a)	.818	.817		.64026

a. Predictors: (Constant), Ease to use, Usefulness

This table represents the application of regression analysis on ease to use, usefulness and attitude towards use of LMS. The dependent variable was attitude towards use of LMS and the independent variables were ease to use and usefulness of LMS. The result showed that 81.8% variance in the dependent variable (attitude towards use of LMS) is explained by the independent variables (ease to use and usefulness of LMS).

Table 5

ANOVA summary table of regression analysis

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	565.181	2	282.590	689.366	.000(a)
	Residual	125.848	307	.410		
	Total	691.029	309			

a. Predictors: (Constant), Ease to use, Usefulness

b. Dependent Variable: Attitude towards use of LMS

The ANOVA table showed that there existed a significant difference in independent variables (ease to use and usefulness of LMS) and dependent variable (attitude towards use of LMS). It can be concluded that both independent variables (ease to use and usefulness of LMS) contribute significantly and differently in nurturing attitude towards use of LMS among students of teacher education at AIOU Islamabad.

Table 6

Standardized and unstandardized coefficients obtained from regression analysis

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	.235	.104		2.269	.024
	Usefulness	.379	.041	.377	9.279	.000
	Ease to use	.601	.042	.574	14.150	.000

a. Dependent Variable: Attitude towards use of LMS

This table presents the unstandardized and standardized coefficients obtained through regression analysis. The results indicated that both independent variables (ease to use and usefulness of LMS) contribute significantly in nurturing attitude towards use of LMS among students of teacher education. The result showed that 37.7% variance in the dependent variable attitude towards use of LMS is explained by the independent variable usefulness of LMS and 57.4% variance in the dependent variable attitude towards use of LMS is explained by the independent variable ease to use of LMS. It can be concluded that maximum variance in the dependent variable attitude towards use of LMS is explained by ease to use and considerable less variance in the dependent variable attitude towards use of LMS is explained by usefulness of LMS. Although, both factors ease to use and usefulness of LMS had positive and significant effect and contribution in enhancing attitude towards use of LMS among students of teacher education at AIOU Islamabad.

Discussion

This study was conducted to investigate the contribution of ease to use and usefulness of LMS in enhancing attitude towards use of LMS among students of teacher education at AIOU Islamabad. The results of this study indicated that perceived usefulness and ease of use of LMS were important variables in nurturing attitude toward use of LMS in teacher education. The results of current study demonstrated that the students of teacher education had low level of perceived usefulness, perceived ease of use and attitude towards use of LMS as all variables had means bellow 4.00 “somewhat agree”. These results were supported Trayek and Hassan (2013) who found low level of perceived usefulness, perceived ease of use and attitude towards use of LMS among students. Contrary to this, Liu, Liao and Pratt (2009) found that students were perceived the use and acceptance of e-learning technology LMS with high level. Furthermore, Shroff, Deneen and Eugenia (2011) also found that students perceived the use and acceptance of e-learning technology LMS with high level.

Moreover, this research discovered that perceived usefulness and perceived ease of use of LMS had positive and significant contribution in nurturing attitude toward use of LMS. These results were supported by differnt studies such as Trayek and Hassan (2013); Teo (2009); Kiraz and Ozdemir (2006) who indicated that perceived usefulness and perceived ease of use of LMS had positive and significant influence on attitude toward use of LMS. Furthermore, Chen and Huang (2010) and Liu et al, (2009) also supported the findings of this study as they found that perceived usefulness and perceived ease of use of LMS had positive and significant effect on attitude toward use of LMS among students. Likewise, Teo and Schalk (2009) and Teo (2009) also supported the findings of this study as they found that perceived usefulness and ease of use of LMS had positive and significant effect on enhancing attitude toward use of LMS among students of pre-service teacher education.

As the results of current study demonstrated that the students of teacher education had low level of perceived usefulness, perceived ease of use and attitude towards use of LMS at AIOU Islamabad. May be these low level perceptions regrinding study variables because of the AIOU Islamabad introduced LMS first time at large scale for all their students of teacher education. Further, mostly students may not be the perfect and proper user of LMS for their

study and may be they have faced some networking issues as well. Moreover, the LMS related AIOU Islamabad team may not aware about the some field, systematic, technical and geographical issues.

Conclusion and Recommendations

It was concluded that the students of teacher education at AIOU Islamabad had low level of perceived usefulness, ease of use and attitude towards use of LMS. Further, it was concluded on the basis of findings of this study that perceived usefulness and perceived ease of use of LMS had positive and significant contribution in nurturing attitude toward use of LMS among students of teacher education at AIOU Islamabad.

Therefore, it has been recommended that the management of AIOU Islamabad enhance the purposefulness, effectiveness and easy usability of LMS among students of teacher education. Because, these factors had strong and positive effect on attitude towards use and acceptance of LMS among students of teacher education. Further, the students of teacher education also enhance their skills by own self for easy usability and purposeful use of LMS for readiness and effective learning.

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