A Study on The Factors That Influence the Acceptance of LMS's In Higher Educational Institution's

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Abstract- This study is designed to investigate the acceptance of Learning Management Systems (Moodle) in Higher Educational Institutions (HEI's) of Oman. Due to the technological developments the importance of using learning Management system in Higher Educational Institutes (HEI's) are increasing day by day. This study is to investigate the acceptance of Learning Management Systems in different HEI's of Sultanate of Oman. To investigate the factors that influence the use of LMS's in HEI's the 5-point likert questionnaire has been made and distributed electronically through e-mail and Social media applications. The questionnaire sent to the students of different HEI's of Sultanate. Data were collected from 137 respondents belongs to various HEI's in which 132 are the valid responses. The questionnaire consists of 5 demographic question and 13 survey questions. The variables used in this research are perceived playfulness, perceived usefulness, and perceived ease of use, attitude, and intention to use. The research is based on the Technology Acceptance Model (TAM). The Structural equation modelling (SEM) technique is used to evaluate the causal model and to extreme the validity of model. This research paper tested the 7 hypotheses.

Keywords— Moodle (Modular Object Oriented Dynamic Learning Environment), Higher Educational Institutions, learning Management system, E-mail, Technology acceptance model, Structural equation modelling

I. INTRODUCTION

In today's society, students spend much of their spare time playing multimedia, interactive and social online games and entertainment technology in general. In fact, today's students are mostly from the Net Generation, and they arrive at university having been consumers of technology in ways that previous generations barely understand (Junco & Mastrodicasa, 2007).

E-Learning is the use of Information and Communication Technology (ICT) to deliver information for education where instructors and learners are separated by distance, time, or both in order to enhance the learner's learning experience and performance ((Keller, 2008);(Tarhini, Teo, & Tarhini, 2016). (Horton, 2011) defines e-learning as a set of instructions delivered via all electronic media such as the internet, intranets, and extranets. Thus, by eliminating the barriers of time and distance, individuals can now take charge of their own lifelong learning (Almajali et al., 2016). E-learning environments reduce the cost of provision and therefore increase revenues for academic institutions (Masa'deh, Obeidat, & Tarhini, 2016) ; Ho and Dzeng, 2010).

Moodle is a software package for producing Internet-based courses and web sites. Moodle is a Course Management System (CMS), also known as a Learning Management System (LMS) or a Virtual Learning Environment (VLE). Moodle is aimed to offer educators, administrators and learners with a single strong, protected and integrated system to create personalised learning platform environments. It is built by the Moodle project which is organized and ran by Moodle HQ, an Australian company of 30 developers which is financially supported by a network of over 60 Moodle Partner service companies worldwide. (About Moodle, n.d)

Most colleges and universities nowadays are using electronic learning materials such as Moodle and blended learning etc. because technology is evolving and education techniques are developing upon it. Based on (Moodle Statistics, n.d) the number of registered sites are 75,943 and 231 countries are registered which shows the impact of E-learning. We are going to use different methods to do our research paper to see the result of our findings and look through our limitations .as well we are trying to assume the future of Moodle and who will it be used.

Moodle is the best to open platform that lets you build the excellent education solving the problem for you needs. We have grown Moodle since 2001 as an open source platform and manage courses online. Also, modular system based on plugins, most of them are like Lego blocks that is mixed together to make whatever you need and want. There are many kinds of content and plugins for all kinds of collaborative exercises and activities. (Moodle Overview, n.d)

According to (Moodle Partners, n.d) Moodle rooms is an excellent open learning platform offered by the blackboard, which is the biggest Moodle partner globally. It offers administrations to bolster Moodle by giving set up and arrangement, preparing, content improvement, and vital thought authority to guarantee the most ideal learning stage. Using a modern and intuitive interface, Moodle rooms extends the power of Moodle so that institutions, schools, companies, and governments around the world can provide a better Moodle experience to their teachers, learners, administrators, and managers. Moodle rooms also offers a variety of powerful, seamless integrations, such as Blackboard Collaborate for virtual classrooms, Office 365, and many more for an engaging, customized online learning experience.

The arrangement of the research papers is as follows Literature Review, Research Methodology, Research Model & Hypothesis, Demographic Data, Descriptive Statistics, Reliability and Validity of Instrument, Model Testing, Conclusion & References.

II.   LITERATURE REVIEW

The TAM model is widely known   (Ma & Liu, 2004; (Venkatesh, 2000); Venkatesh & Davis, 2000; (Venkatesh, Morris, Davis, & Davis, 2003)Venkatesh, Speier, & Morris, 2002) and it has received strong theoretical and empirical support in the literature, being cited more than 18466 as on April 2017. The TAM model was initially developed by (Davis, 1989), based on the theoretical grounding of the Theory of Reasoned Action (Ajzen & Fishbein, 1975). TAM describes the issue of how users accept and use a specific technology, as a function of the causal relationships between systems design features, perceived usefulness, perceived ease of use, attitude toward using, and use. The TAM assumes that user adoption and effective use are determined by the intention to use a system, which is in turn affected by perceived usefulness, ease of use and attitudes toward using the system. Consequently, perceived usefulness and perceived ease of use are the two primary predictors of effective acceptance and use. The initial model was subsequently improved, by adding other relevant variables. Accordingly, TAM2 incorporates additional theoretical constructs, including social influence processes and cognitive instrumental processes (Venkatesh & Davis,

2000). Subsequently, TAM3 posits new theoretical relationships such as the moderating effects of experience on key relationships, suggesting that experience will moderate the relationships between perceived ease of use and perceived usefulness, computer anxiety and perceived ease of use and perceived ease of use and behavioral intention (Venkatesh & Bala, 2008). According to (Gupta & Goyal, 2011) mobile devices provides a new medium of learning and is available 24x7.The E-learning or M-learning it's not about courses but it supports a broad definition of learning, innovation, collection, research, design etc. The students who are using Moodle LMS are more skilful then the students who are not using Moodle LMS. They also found that students are very enthusiastic to use Moodle's because it is very convenient of save time but on the other side some students are misusing the LMS. They proposed that the educators should develop the technology which is truly learner-cantered learning. According to (Susana et al, 2015), Moodle cannot replace the teaching-learning process but it can assist in teaching-learning process the results of (Susana et al, 2015) is matched with (Alier et al., 2010) in which they stated that combining Moodle with m-learning favours collaboration online assessment and knowledge dissemination, which in turn, enable ubiquitous learning. The Mobile-Moodle's is very useful and great benefit for teaching and learning process even though it has some challenges and problems (Adeyemo, Adedoja, & Adelore, 2013). The aim of doing research in TAM (Technology acceptance model) is to take TAM as a base and to look for a new suitable external factor in forecasting students' insights about the use of Moodle and the acceptance (Hsu & Chang, 2013). The model approves that it's suitable and it has a direct effect on meaning that the more comfortable the learner feels the Moodle system is, and the more useful one perceives it to be. (Chung & Ackerman, 2015) Self efficacy theory and the Technology Acceptance Model were assigned to recognize student feedbacks to lecturer implementation of classroom management software Moodle. They also looked at how the studying styles of students affected their feedbacks to Moodle. Moodle helps to ease the communication between student and lecturer as well as between students themselves. Further, (Hsu, 2013) discovers students acceptance and using of Moodle employing the model of Unified Theory of Acceptance and Use of Technology (UTAUT) and understand more about the four concepts of the model. The study worked with the UTAUT model to assess students' acceptance and the usage of Moodle will be more clarified the relationship between the variables of the model. The main contribution of this study is to provide evidence that there exist gender differences in the effect of playfulness in the student attitude toward a technology and the intention to use it. In females, playfulness has a direct influence on attitude toward using the system. In males, this influence is mediated by perceived usefulness (Padilla, Rosa & Garrido,2012).The students' acceptance mobile learning becomes the best choice for

Chinese's universities where information could be gathered in very fast way (Qiyao Zhu , Wentao Guo , Yan Hu,2012).

III. RESEARCH METHODOLOGY

In order to answer research questions, qualitative and quantitative methods were used. In this research, both of these research methodologies are used and implemented throughout the study known as mixed approach. The method adopted under the mixed methodology approach is survey.

Survey research is most commonly used in non-experimental design and is considered most appropriate for theory testing. A survey research could support the external validity of the study results from managerial perspectives (He, Lu, & Zhou, 2008).

There are many types of surveys such as oral survey, written survey, online survey and example survey. This study focuses online survey. According to (Fowler Jr, 2013), a written survey can be grouped as administered questionnaires, mail survey or drop-off survey. A mail survey was used in this study.

- ▪ Primary Data
   The primary data was collected with a help of survey questionnaires.

- ▪ Secondary Data
   Collected from different online sites , newspaper and magazines.

IV. RESEARCH MODEL & HYPOTHESIS

Many researches use TAM as a framework to predict and explain a variety of human behaviours in the IT adoption context (Ajzen & Fishbein, 1980);(Gupta & Jana, 2003); Hu et al., 1999). (Gefen, Karahanna, & Straub, 2003)TAM theorizes that causal linkages flow in a sequence of beliefs, attitudes, intentions, and behaviours. To examine an individual's actual system use, most studies focus on factors affecting the individual's intentions of system acceptance (Gefen et al., 2003).

A general model of TAM is shown in Fig. 1. Prior research suggests that perceived usefulness (PU) and perceived ease of use (PEOU) are two major influential emotional beliefs that determine a user's IT acceptance. Davis (1989, p. 320) defined perceived usefulness as "the degree to which a person believes that using a particular system would enhance his or her job performance" and perceived ease of use as "the degree to which a person believes that using a particular system would be free of effort" (Davis is also cited in Venkatesh, 2000; Marin (Marin, Garcia, Torres, Vázquez, & Moreno, 2005)
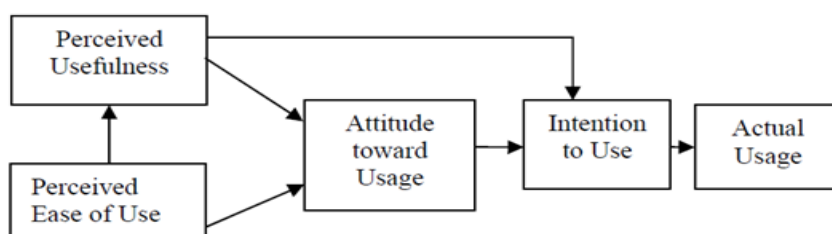

Figure. 1 Technology Acceptance Model (Davis, 1989)

According to (Ajzen and Fishbein, 1975), attitude and the subjective norms are important factors on the behavioural intention formation, a proposition that is supported by TAM. Users with a more positive attitude toward IT are likely to be more satisfied with system and view it as more useful (Ajzen & Fishbein, 1980; Heeks, 2006; Kim, Kim, & Shin, 2009)). Therefore, user attitude is hypothesized to positively affect perceived usefulness and behavioural intention.

- Perceived usefulness. This is "the degree to which a person believes that using a particular system would enhance his or her job performance"
- Perceived ease-of-use, which is "the degree to which a person believes that using a particular system would be free from effort"
- Attitude (ATT) is a dimension of the TPB and is defined as the degree to which an individual favourably

or unfavourably evaluates a situation (Fishbein & Ajzen, 1975).

- Theory of planned behavior (TPB) and Technology acceptance model (TAM) both suggest that a person's behavior is determined by his/her intention to perform the behavior and that this intention is, in turn, a function of his/her attitude toward the behavior and his/her subjective norm. The best predictor of behavior is intention. Intention is the cognitive representation of a person's readiness to perform a given behavior, and it is considered to be the immediate antecedent of behavior (Ajzen, 1991).
- Computer playfulness has been defined as "the degree of cognitive spontaneity in microcomputer interactions" (Webster & Martocchio, 1992). Playfulness is a complex variable, which includes individual's pleasure, psychological stimulation, and interests (Ghani & Deshpande, 1994).
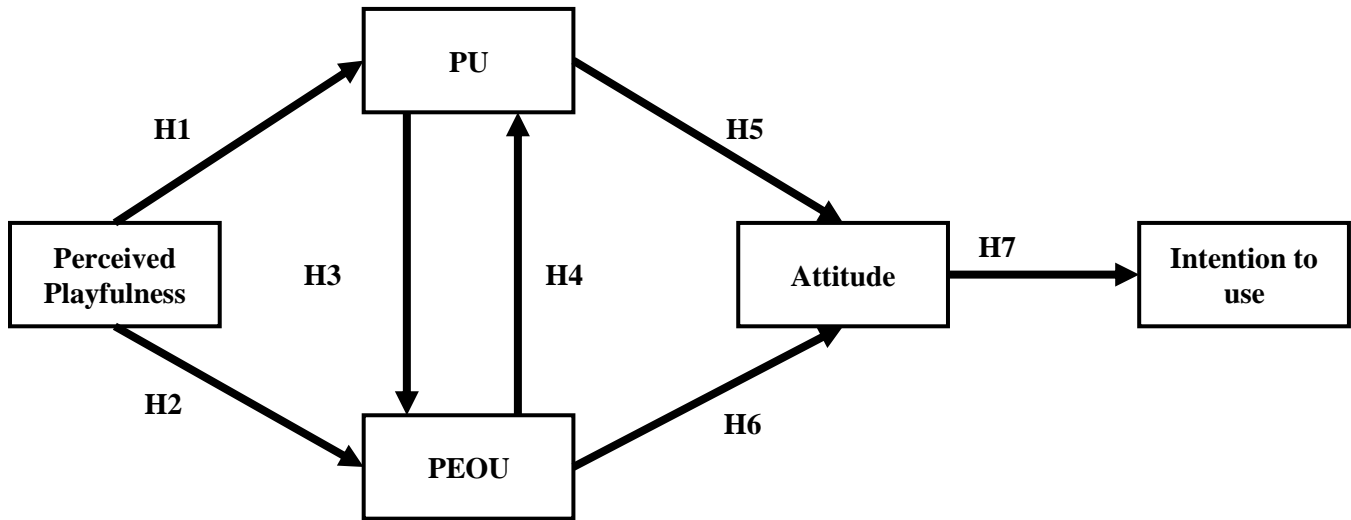
Figure 2. The Research Model

Based on the technology acceptance model (TAM) theory this study presents the following hypotheses:

H1. The perceived playfulness positively affects the perceived usefulness of using the Moodle's.

H2. The perceived playfulness positively affects the perceived ease of use of using the Moodle's.

H3. The perceived ease of use positively affects the perceived usefulness of using the Moodle's.

H4. The perceived usefulness a positively effect on user attitudes using the Moodle's.

H5. The perceived ease positively effects on user attitudes using the Moodle's.

H6. The perceived usefulness has a positive effect on user behaviour intentions using the Moodle's.

H7. User attitude positively affects behaviour intentions using the Moodle's.

V. DEMOGRAPHIC DATA, DESCRIPTIVE STATISTICS, RELIABILITY AND VALIDITY OF INSTRUMENT

The demographic characteristics of the data gathered through the survey questions is presented in the following table 1. The total number of the respondents were 137.

Table 1: Demographic Statistics of the respondents

Variable		Oman
Age	Less than 20 years	**24 (17.5%)**
	Between 20 & 30 years	**99 (72.3%)**
	More than 30 years	**14 (10.2%)**
Computer User (Week)	Less than 5 hours a week	**47 (34.3%)**
	Less than 10 hours a week	**30 (21.9%)**
	10 to 20 hours a week	**30 (21.9%)**
	More than 20 hours a week	**30 (21.9%)**
Gender	Male	**27 (19.7%)**
	Female	**110 (80.3%)**
E-Learning Experience (Using Moodle's)	Less than 1 year	**48 (35%)**
	More than 1 year	**89 (65%)**
	Bank Muscat	**67**
Respondents Department	Information technology	**32 (23.4%)**
	Engineering	**38 (27.7%)**
	Applied Sciences	**9 (6.6%)**
	Business	**37 (27%)**
	Other	**21 (15.3%)**

All the analysis of the data was done in SPSS 21.0. The descriptive analysis has been done that shows N=137 but only N=132 is valid for data analysis See Table 2.

Table 2: Descriptive Statistics

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
PP1	137	1.0	5.0	3.431	.8894
PP2	137	1.0	5.0	3.416	.9521
PU1	137	1.0	5.0	3.562	1.0905
PU2	137	1.0	5.0	3.737	.8683
PU3	136	1.0	5.0	3.743	.8944
PU4	137	1.0	5.0	3.628	.9626
PEOU1	135	1.0	5.0	3.511	.8966
PEOU2	136	1.0	5.0	3.787	1.0357
PEOU3	135	1.0	5.0	3.741	.8721
PEOU4	135	1.0	5.0	3.726	.9497
ATT1	135	1.0	5.0	3.459	1.0421
ATT2	134	1.0	5.0	3.657	1.0267
IU1	135	1.0	5.0	3.637	1.0193
Valid N (list wise)	132				

The reliability and validity of survey instrument is assessed with Cronbach's alpha in SPSS 21. The result showed that Cronbach's alpha of the entire instrument was 0.947. The reliability of each variable is greater than the minimum threshold of 0.7, indicating that the scale had adequate reliability.

The result of Factor Analysis indicated that the instrument had acceptable validity. The factors were extracted using Principal Component Analysis. The factors with Eigen values greater than 1 will be retained. The two factors extracted, each had an eigenvalue that was greater than 1, the accumulative variance explained was 57.650%, and the minimum

Average Variance Extracted (AVE) of the variables was 1.622, which is larger than the threshold of 0.5 and the rotations converged in six iterations.

VI.   MODEL TESTING

After checking the validity and reliability of the instrument regression analysis will be performed to test the relationships between the variables and intention to use Moodle's in learning. The following table 5 shows the regression results on using Moodle's.

Table 3 : Model Testing (Testing of Hypothesis)

Independent Variable	Dependent Variable	R^2	Standardized Beta	Standard Error	t	P	Result
PP	PU	.453	.612	.058	10.576	0.000[*]	Supported H1
PP	PEOU	.368	.515	.058	8.841	0.000[*]	Supported H2
PU	PEOU	.719	.669	.056	11.976	0.000[*]	Supported H3
PEOU	PU	.517	.772	.064	11.976	0.000[*]	Supported H4
PU	ATT	.368	.606	0.086	8.791	0.000[*]	Supported H5
PEOU	ATT	.265	.688	.099	6.933	0.000[*]	Supported H6
ATT	ITU	.329	.617	.076	8.073	0.000[*]	Supported H7

Overall Model fit: p=0.000[*];

VII.   CONCLUSION

The paper uses the Technology Acceptance Model (Davis Jr, 1986)and TAM-based extended model including perceived playfulness as intrinsic motivator for explaining the intention of use of Moodle's based learning systems. It is found that H1 & H2 is fully supported i.e Perceived Playfulness (PP) and will positively affect Perceived Usefulness (PU) and Perceived ease of use (PEOU). Further,), Hypotheses H3 is also supports that Perceived Usefulness (PU) is significantly affect Perceived ease of use (PEOU). It is also found that Hypothesis H4 Perceived ease of use will also positively effect Perceived usefulness which is not consistent with the results (Padilla-MeléNdez, Del Aguila-Obra, & Garrido-Moreno, 2013). Since, this data is collected by the female students and most of the respondents are females (80.3%). If the number of males is enough in the data the results may vary regarding playfulness, attitude and intention to use, so researchers should take into consideration factors of gender in the development and testing of e-learning theories (Ong, Day, & Hsu, 2009; Ong & Lai, 2006). All other hypothesis (H5, H6, and H7) will be supported by the result of the analysis. Since, this data is collected from the reputed college of the Muscat but we cannot generalize our results.

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