

THE RELATIONSHIP BETWEEN ACCEPTANCE AND SATISFACTION OF LEARNING MANAGEMENT SYSTEM USAGE IN A BLENDED LEARNING ENVIRONMENT

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ABSTRACT

The objective of this study is to examine if there is a relationship between students' acceptance and satisfaction of Learning Management System (LMS) usage in a blended learning environment. A quantitative research approach was used in which a total of 174 students from a public university in Yemen were surveyed using the questionnaire. Structural equation modeling (SEM) was used for data analysis. The results indicated that both students' perceived ease of use and perceived usefulness had a significant positive relationship with student satisfaction. Therefore, higher education institutions need to consider the relationships between the factors of acceptance and satisfaction in implementing a blended learning environment. Consequently, LMS system's ease of use and usefulness make it possible for students to devote their attention to learning the course materials instead of spending additional effort in learning the instrument.

Keywords: blended learning; learning management system; acceptance; satisfaction; Yemen.

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1. INTRODUCTION

In recent decades, the world has become as a small village because of the rapid development of ICT that facilitates a convergence between traditional face-to-face and technology-mediated learning environment. According to [1], as a result of the advancement in communication and network technologies, more innovative delivery and learning solution have emerged in order to provide meaningful learning experiences for students in academic settings. Technologies have a significant effect on learning and teaching when appropriate approaches are used in learning and teaching. Therefore, integrating technology into the classroom is one of the important approaches to develop better understanding of basic concepts provided for learning.

Instruction can take place in one of these three forms: traditional, blended learning, and pure e-learning. Traditional instruction is a face-to-face approach, blended learning is a combination of face-to-face with online instruction which uses electronic tools and ICT, while pure e-learning uses ICT in instruction without any face-to-face approach[2]. The blended learning has been presented as a promising alternative educational approach [3]. The blended learning environment combines multiple methods for learning events, including most often face-to-face traditional classrooms with synchronous and/or asynchronous online learning[4]. It is characterized as the best features of online learning and traditional classroom. Learning management system (LMS) is an information technology system (IT) used by educators to easily build, update and maintain online courses on websites[5].

While blended learning has a number of advantages such as access to knowledge content, instructional richness, ease of revision, social interaction, and cost effectiveness[6], insufficient learning satisfaction and acceptance is still an obstacle to its use [7]. In spite of the investments and applications of ICTs at the university, there are many indications that online courses are unsuccessful at meeting students' needs and students are dissatisfied with their online course experiences[8]. This dissatisfaction phenomenon has been at the center of an intense international debate among online educators.

The success of LMS, as for any information system, can be assessed in terms of student acceptance and satisfaction. Measuring student satisfaction and acceptance is considered as a basic marketing element to manage e-learning initiatives[9]. In addition, several studies have

investigated the acceptance and satisfaction of information technologies in education from the students' perspective such as by [9-11]. However, none of them examined the relationship between the students' satisfaction and their acceptance in LMS usage in a blended learning environment. Consequently, this study seeks to determine the relationship between undergraduate students' acceptance and satisfaction in a blended learning environment.

The rest of this study proceeds with a brief review of literature made by previous researchers, a description of the research model and hypotheses for empirical testing, a description of the research methodology, data analyses, a discussion of the results, and conclusion of the study.

2. RESEARCH MODEL

The proposed research model is based on an extension of the technology acceptance model (TAM) in which the determinants that are hypothesized to have an effect on the acceptance of LMS usage are perceived usefulness and perceived ease of use[12]. Furthermore, students' acceptance is hypothesized to have an impact on students' satisfaction. The research model is depicted in Figure 1.

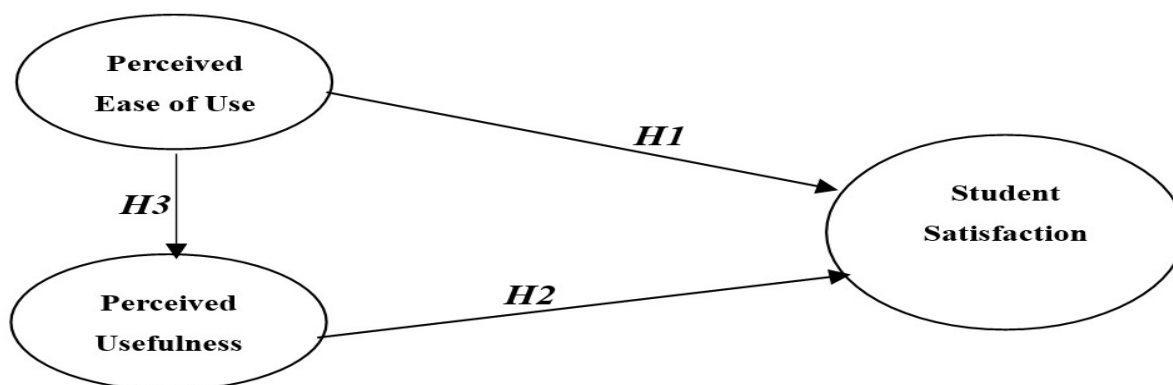


Fig.1. The research model

In general, the TAM demonstrates the antecedents of technology acceptance and traces the effect of external determinants on internal belief (perceived ease of use and perceived usefulness), in turn, the impacts of those internal beliefs on intention to use and actual usage[12]. Based on the TAM, acceptance is identified by the intention to use a certain system, which in turn is identified by perceived ease of use and usefulness of such system. In the mandatory context, where students of institution or university are asked to use information system (e.g. LMS), intention to use may not be a sufficient factor of student acceptance

[13].Based on this line of reasoning, satisfaction indicator rather than the intention to use was chosen as the important factor of IS acceptance in this study, as was the case in other studies involving the compulsory use[9]. In their studies, in [14]claimed that students' satisfaction is one of the most important indicators in the implementation e-learning initiatives. Increased satisfaction of students is positively associated with retention as well as its impact on students' acceptance [15].

Satisfaction is defined as user acceptance of information system and the comfort degree used in use. It has also been defined as the pleasure or conviction which a user feels when performs a desired or the required action and experiences the result. Student satisfaction is a measure of the success of an information system, and it is used as a key indicator of whether or not students would continue to adopt a learning system[14]. Some studies indicate that students' satisfaction of e-learning systems determine their desire to use them[16].

In the TAM, perceived usefulness and perceived ease of use are the primary cognitive beliefs that impact user acceptance of a certain IS. Perceived ease of use of technology means the degree to which the user expects the target of the system is free of effort. Meanwhile, perceived usefulness of the technology is the degree of work improvement after adoption of a system [12]. Using LMS in blended learning enables the students to realize the usefulness and easiness of the system and feel comfortable to use it. When students feel that the system is easy to use and interact with, they get a sense of efficacy and personal control to operate the system. Consequently, students' perceived ease of use of LMS in blended learning may contribute to their satisfaction to use LMS in blended learning[9]. Furthermore, in [15] found that the students' perceived usefulness of an e-learning system in supplementary learning is significantly related to their satisfaction and acceptance to use it in supplementary learning and for distance education. Students can more easily accept LMS once they believe that it will help them to achieve their academic goals. Thus, the perceived usefulness has a significant positive relationship with student satisfaction of e-learning systems[16]. In the e-learning context, empirical studies indicate that the students' perceived ease of use and perceived usefulness significantly affect student satisfaction[9, 17]. Thus, the higher the students' perceived ease of use and usefulness of LMS, the higher their satisfaction. Therefore, the following hypotheses are proposed:

Hypothesis H1: There is a significant relationship between perceived ease of use and students' satisfaction of LMs in a blended learning environment.

Hypothesis H2: There is a significant relationship between perceived usefulness and students' satisfaction of LMs in a blended learning environment.

Furthermore, in [12] found that perceived ease of use impact the perceived usefulness of technology and indirectly affects the acceptance of new technology. In addition, it can be found from TAM that perceived ease of use influenced perceived usefulness. In the e-learning context, previous studies found that if students perceive that the e-learning is easy to learn, they would regard the system as useful [15, 18-19]. That is, the easier LMS is for a student to interact with it, the more likely the student will find the system useful. Hence, this study hypothesizes.

Hypothesis H3: There is a significant relationship between perceived ease of use and perceived usefulness of LMs in a blended learning environment.

3. METHODOLOGY

A quantitative research approach was used to collect the data. This study employed a questionnaire survey method to investigate the relationship between students' acceptance and satisfaction of LMS usage in a blended learning environment. The study is conducted at the Faculty of Open Education (FOE) in one university in Yemen. The participants of this study involve the whole target population; i.e., the undergraduate students of the FOE at this university. This faculty contains about 300 students. Based on [20] and for purposes of this study, the researcher used an estimated population size ($N = 300$) and thus a sample size of $n = 169$ has been determined. In other words, the minimum number of participants needed to complete the questionnaire was 169. However, this study distributed the questionnaire to all the 300 students. The total number of responses gathered was 174 resulting in approximately 85% response rate to the survey. The participants of this study involving both male and female students.

The questionnaire consists of 17 items which are divided into three separate parts. The first part was demographic data. The second part involved the acceptance factor. This construct consisted of two sub-constructs: Perceived Ease of Use and Perceived Usefulness which were

measured by eight items adapted and modified from [12]. The third part involved the satisfaction factor. This construct - Students Satisfaction - was measured by five items adopted from [21]. These items assessed the student satisfaction in terms of adequacy, effectiveness, interactive and usefulness. Except for the demographic information, the other items were measured using a five point Likert-type scale of: 5= SA (Strongly Agree), 4= A (Agree), 3= N (Not Sure), 2= D (Disagree) and 1= SD (Strongly Disagree). The survey was uploaded online in their social network environment, in which they are encouraged to respond.

4. RESULTS AND ANALYSIS

4.1. Structural Equation Modeling (SEM)

Structural Equation Modeling (SEM) was used to assess the relationships among multiple independent and dependent variables simultaneously. The analysis of the SEM can be carried out using one of two techniques: covariance-analysis and partial least squares (PLS). In this study, the software package SmartPLS, Version 3.0 was used to analyze the data. Two assessments are supported by PLS: (a) the measurement model assessment and (b) the structural model assessment.

4.1.1. Assessment of the Measurement Model

The measurement model was tested for convergent validity and discriminant validity

4.1.1.1. Convergent Validity

The convergent validity was tested by using three criteria suggested by [22]: (1) all indicator loadings should be significant and greater than 0.70; (2) construct reliability (CR) also should be greater than 0.70; and (3) average variance extracted (AVE) for each construct should be greater than 0.5. As shown in Table 1, all factor loadings for all items exceeded the recommended threshold of 0.70. The composite reliability (CR) values of the constructs (ranging from 0.929 to 0.941) exceeded the generally accepted threshold of 0.70. Furthermore, the AVE values (ranging from 0.762 to 0.794) exceeded the generally accepted threshold of 0.50. Hence, all three conditions for convergent validity were met.

Table 1. Results of the measurement model, reliability and validity

Dimension	Loading	CR	α	AVE	Authors
Perceived Ease of Use (PEU)		0.929	0.899	0.767	adopted from [12]
1. I find the E-learning system easy to use.	0.885				
2. I seldom make errors when I use the e-learning system.	0.841				
3. E-learning tools are clear and understandable to me.	0.910				
4. I find the e-learning system to be flexible to interact with	0.865				
Perceived Usefulness (PU)		0.939	0.912	0.794	adopted from [12]
1. Using e-learning system enables me to accomplish tasks more quickly.	0.891				
2. Using e-learning system improves my performance.	0.945				
3. Using e-learning system increases my productivity.	0.918				
4. Using e-learning system enhances my learning effectiveness.	0.802				
Student Satisfaction (SS)		0.941	0.922	0.762	adopted from [21]
1. I am satisfied with the effectiveness of e-learning system.	0.867				
2. I am pleased with my experience of using the e-learning system.	0.903				

3. My decision to use the e-learning system was a wise one.	0.906
4. I am satisfied with the quality of interaction between all involved parties.	0.835
5. I am satisfied with my participation in the class.	0.851

4.1.1.2. Discriminant Validity

Discriminant validity can be validated if the square root of the AVE for a construct is greater than the relationship between the construct and all other constructs in a measurement model [22]. The discriminant validity of this study is shown in Table 3, which displays the square root of the AVE for each construct is greater than the relationship between the construct and all other constructs in the measurement model, indicating a good discriminant validity. In summary, the measurement model demonstrated adequate and sufficient reliability, convergent validity and discriminant validity and was therefore suitable for structural modeling.

Table 3. Correlations and discriminant validity

	Perceived Ease of Use	Perceived Usefulness	Student Satisfaction
Perceived Ease of Use	0.876		
Perceived Usefulness	0.704	0.891	
Student Satisfaction	0.673	0.785	0.873

Square root of AVE reported along diagonal in bold type

4.1.2. Assessment of the Structural Model

The second step of SmartPLS is the assessment of the structural model. This assessment involved examining the significance of each hypothesized path (β) and the squared multiple correlations (R^2) in the research model. The SmartPLS 3.0 results for the path coefficients (β) and squared multiple correlations (R^2) are shown in Figure 2.

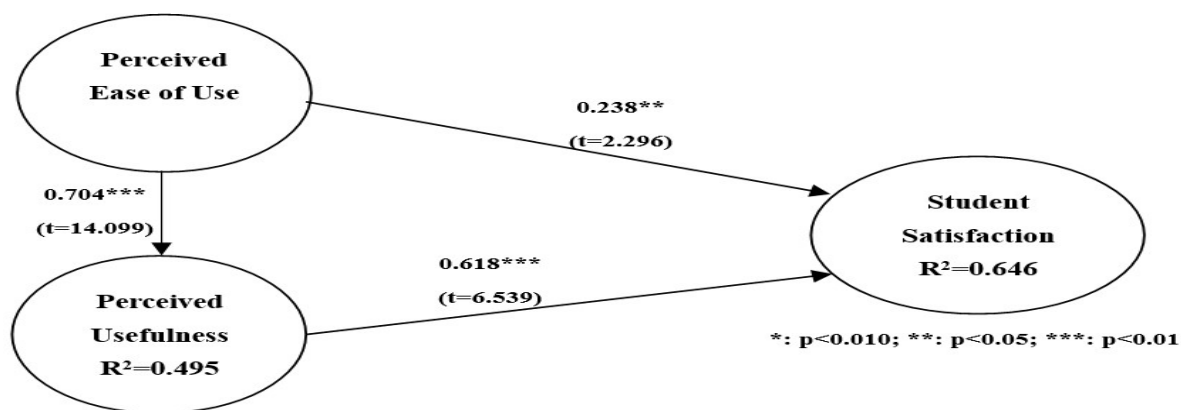


Fig.2. The results for the structural model

The results showed that students' perceived ease of use (H1: $\beta = 0.704$, $t = 14.099$, $p < 0.01$) had a positive relationship with students' perceived usefulness. In addition, perceived ease of use (H2: $\beta = 0.238$, $t = 2.296$, $p < 0.05$) and perceived usefulness (H3: $\beta = 0.618$, $t = 5.539$, $p < 0.01$) indicate positive and significant relationship with students' satisfaction of the LMS usage, supporting hypotheses 1, 2 and 3.

Figure 2 shows R^2 values of the dependent constructs: perceived usefulness and student satisfaction. The model explains 49.5% of the variance in the student's perceived usefulness of LMS in blended learning and 64.6 % of the variance in satisfaction with LMS in a blended learning environment. The R^2 values of the two dependent constructs i.e., perceived usefulness (0.495) and student satisfaction (0.646) are considered as substantial and moderate [23].

5. DISCUSSION

This study is one of the few attempts to investigate the relationship between the students' acceptance and their satisfaction of LMS usage in a blended learning environment. Lack of the student's acceptance and satisfaction could be an impediment to the successful adoption of any new technology or product, including the use of LMS in a blended learning. Fortunately, the results indicated that a high positive relationship existed between student acceptance and their satisfaction on LMS usage. The findings highlight the critical roles of students' acceptance and their satisfaction of LMS usage in a blended learning environments which is in line with [9].

In agreement with prior findings [9, 11], it was found that both perceived ease of use and

perceived usefulness were important factors in determining the acceptance of LMS usage in a blended learning environment. Specifically, it has been found that students' satisfaction of LMS has a high positive relationship with perceived usefulness and perceived ease of use [17, 24]. This means if students believe that the online learning course is useful, they will be more likely to be satisfied in that class. In similar, when the system is easy to use, students feel it is more useful; therefore, they will have stronger intentions to use it and will be more satisfied with it. This is the same as the result derived by the original TAM[12, 15]. Furthermore, indications which represent perceived benefits such as increased productivity, effectiveness, performances, and greater control over learning can thereby increase student satisfaction with LMS system[16]. It has been found that good system characteristics such as ease of use, flexibility, interactivity, user-friendly, better design functionalities, performance, participation, and understandable are important factors in enhancing acceptance and satisfaction of LMS systems[11].

In addition, the findings provide evidence for the power of the TAM in explaining the students' intention to satisfy and accept LMS in particular. Specifically, there exists a strong relationship between perceived ease of use and perceived usefulness as originally proposed by [12]. It is reasonable to conclude that if the system is relatively free of effort, it will enhance the performance and productivity and in turn positively affect the attitude towards adopting the system[19]. Therefore, designers should design the system and its interface in a way that is easy to use, which may promote the intention to accept and adopt LMS.

It can be concluded that students usually perceive that LMS are useful and they are satisfied with using a system that provides easy and user-friendly operations which is consistent with[9, 16-17, 25]. In addition, the students' notion of ease of use is an important antecedent to perceptions of satisfaction. An e-learning system's ease of use makes it possible for students devote their attention to learning the course materials instead of spending additional effort learning the instrument. Consequently, a higher learning satisfaction should exist.

6. CONCLUSION

In conclusion, this study found that there is a relationship between students' acceptance and satisfaction of LMS usage in a blended learning environment. In other words, if the students

accept the technology, then they will be satisfied. Consequently, acceptance and satisfaction are considered as important factors to initiate the use of any technology. This study provides insights for universities to strengthen LMS implementations and further improve student acceptance and satisfaction. A perception of non acceptance and unsatisfactory will hamper students' motivation to continue their blended learning education.

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