Antecedences of Continued Blended Learning Adoption Intentions:

A Framework for Acceptance of Blended Distance Learning

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ABSTRACT

Some organizations face significant shifts in their teaching settings and emerging teaching developments, and new technology-driven practices. Today's students are raised in a technologically advanced environment, unlike their predecessors. Higher education institutions must find innovative ways to serve diverse instructional requirements, learning stages, methodologies, and preferences. Many students and educators were exposed to online education during the Covid-19 pandemic and started to adapt to new behavior for the new-normal blended learning. The authors suggest a model for assessing the effectiveness of blended learning programs in higher education institutions in this paper. The model was implemented and tested on Kuwait University students.

Keywords: TAM model, Delone and McLean model, Benefit of use, Blended Learning.

INTRODUCTION

A blended learning curriculum is gaining popularity among educators, especially after returning to face-to-face education after extended online learning due to the COVID-19 pandemic. Blended learning is a pedagogically advantageous hybrid approach that blends traditional face-to-face

teaching with distance or online learning. According to some surveys, students' academic experiences have increased as they use blended learning (Mutawa, A. M. & Alshemary, A. 2011; Dwiyogo, W. D., & Radjah, C. L. 2020). It's also worth mentioning that blended learning improves student performance by enabling them to become more involved in the learning process as a whole. (Al Awamleh, A. 2020). Technology, on the other side, causes problems for both students and organizations. According to other scholars, such course design assistance is an obstacle to achieving learning goals owing to a shortage of pedagogical issues. For higher education entities introducing blended curriculum, acquiring emerging technology learning capabilities is often a difficulty. Numerous academic studies have shown that online components favor learning outcomes (Aswardi, A., & Nellitawati, N. 2020; Mutawa, 2020; Mutawa, 2021).

LITERATURE REVIEW

When conventional face-to-face instruction is combined with distance or online learning, the result is blended learning, which has pedagogical advantages over traditional face-to-face instruction. Their effectiveness can be assessed using models identical to those used to determine the success of information systems. The DeLone and McLean model (1992) is a well-known example. System quality, information efficiency, device utilization, user satisfaction, human effect, and organizational impact are the six constructs in the initial model. In 2003, DeLone and McLean expanded their concept (Delone & McLean 2003). A new construct, service quality, was applied to quantify service quality. Two constructs, human effect and corporate impact, were combined into net benefits.

It's worth noting that DeLone and McLean contend that their model isn't a universal model for assessing information system (IS) performance. Researchers can adjust the number of constructs according to the scale of their analysis. Several researchers have used the DeLone and McLean model and updated it (Afify, W. Ebrahim, et al., 2021; Dalle, J. Hastuti, et al., 2020; Holsapple & Lee-Post,

2006; Ozkan & Koseler, 2009). Holsapple and Lee-Post (2006) suggested a three-step approach: service quality, device quality, and knowledge quality in the design stage; system usage and customer feedback in the execution period; and the net benefits construct in the outcome stage. Previous research using DeLone and McLean's model has argued that e-Learning modeling needs a systemic methodology. Ozkan and Koseler (2009) divided technological and social considerations into two groups. The model incorporates two DeLone and McLean constructs: framework and service quality, as well as four new constructs: material quality, learner experience, teacher behaviors, and support concerns.

The Technology Acceptance Model (TAM) is another model for assessing consumer acceptance generally recognized by researchers and reactionaries. TAM has been commonly used as the foundation for several research experiments examining consumers' acceptance of knowledge systems (Vanduhe, V. Z. et al., 2020; Venkatesh & Davis, 2000). The adoption of e-learning systems by higher education institutions and the forecasting of end users' acceptance of e-learning systems in businesses have also been investigated. (Al-Maroof et al., 2021; Nadlifatin, R. et al., 2020). Combining these two theories could result in a good model. Previous experiments combining the two theories yield some valid findings.

THE RESEARCH MODEL

The research model is summarized in Figure 1 below. Starting with TAM as a base model and reviewing some variables that may influence students' views of blended learning and technology usage (DeLone & McLean, 1992, 2003; Ozkan & Koseler, 2009), the authors suggested a blended learning acceptance model (BLAM) as illustrated in Figure 2.

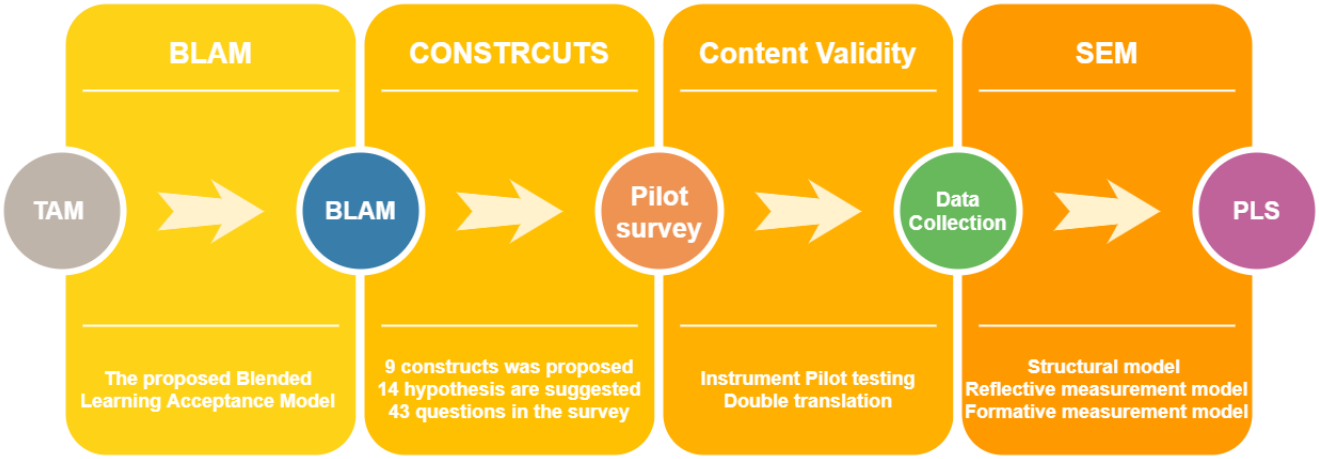

Figure 1: Research model process.

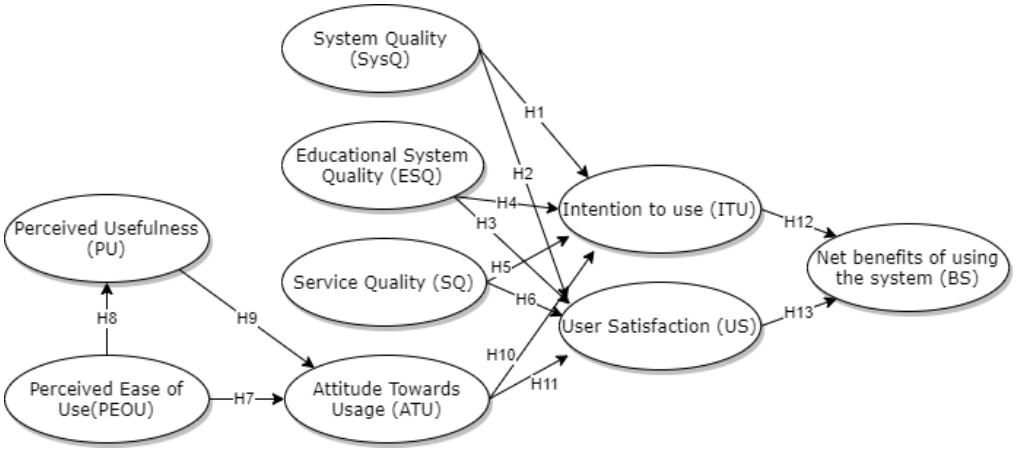

Figure 2. Our model of acceptance for blended learning

Nine constructs comprise the proposed model, as shown in Figure 2 as an oval, namely: perceived ease of use (PEOU), intention to use (ITU), service quality (SQ), net benefit (BS), perceived usefulness (PU), system quality (SysQ), attitude toward use (ATU), educational system quality (ESQ), and user satisfaction (US). Arrows connect structures in Figure 2, with each arrow denoting an implication of a hypothesis. There have been a total of 14 hypotheses suggested, and each one is discussed below.

System Quality (SysQ): Via the learning management system (LMS), assesses the level of student-instructor engagement, using measures for instance, promptness, affordability, helpfulness, and responsiveness. The following hypotheses are proposed by the authors:

Hypotheses 1: SysQ possesses a favorable impact on the US.

Hypotheses 2: SysQ has a beneficial influence on ITU.

Educational System Quality (ESQ): Uses metrics including affordability, durability, adaptability, protection, safety, accessibility, duration of an answer, efficiency, and educational issues like displaying academic performance and peer participation to assess the educational system's standards Web-based learning management system. The following hypotheses are proposed by the authors:

Hypotheses 3: ESQ is positively related to the US.

Hypotheses 4: ESQ is positively related to ITU.

Service Quality (SQ): A metric of how good the service is provided to students and how well it meets their expectations. It pertains to the LMS's continuity in terms of Web-based student assistance. It has little to do with the level of communication with lecturers. It's more about the understanding of service efficiency than it is about service expectations. The following hypothesis is proposed by the authors:

Hypotheses 5: SQ is positively related to ITU.

Hypotheses 6: SQ is correlated with the favorability of the US.

Perceived Ease of Use (PEOU): This construct considers the LMS's ease of usage, the clarity of its features, the comfort with which it can be learned and work completed, and the smoothness with which transactions can be achieved. The following hypothesis is proposed by the authors:

Hypotheses 7: PEOU has a significant and immediate impact on ATU.

Hypotheses 8: PEOUhas a direct and beneficial influence on PU.

Perceived Usefulness (PU): The degree to which an individual assumes that using the learning management system would improve in efficiency. The authors suggest the following hypothesis:

Hypotheses 9: PU has a beneficial influence on ATU.

Attitude Towards Use (ATU): The learner's outlook, perceptions, and supplementary subjects are also included. The authors suggest the following hypotheses:

Hypotheses 10: ATU possesses a favorable impact on ITU.

Hypotheses 11: ATU has a favorable influence on the US.

Intention to Use (ITU): As device usage is linked to users' actions, This is the system's actual usage or its outputs that are relevant to the user's attitude. The following hypothesis is proposed by the authors:

Hypotheses 12: ITU will have an advantageous effect on BS.

User Satisfaction (US): How well the LMS's programs and content suit the needs of learners. User happiness refers to a user's overall impression of a device which is often used to gauge their mood. This segment assesses user-system experiences and is generally regarded as a key component of the success of online education. . The following hypotheses are proposed by the authors:

Hypotheses 13: US has a beneficial influence on BS.

Hypotheses 14: US has a beneficial influence on ITU.

Net Benefit of Using the System (BS): A blended learning method's impact on a person, group, or organization benefits its use. The rewards of using a device would be passed from an individual to the whole organization, implying that it would bring value to organizations in the long run.

CONSTRUCT OPERATIONALIZATION

A self-administered questionnaire was created to evaluate the hypotheses. Appendix A contains the questionnaire included in this work. Following Churchill's (1979) guidelines for scale growth, a total of 79 objects were initially identified, with items that were highly identical in nature being excluded. There were a total of 43 items left. A 5-point Likert scale was used to create the questionnaire, which was then piloted using simple sampling. Content validity was created via the instrument's pilot testing. Although English is the dominant language in today's science practices, non-native speakers can be questioned or misinterpreted specific queries. The most popular explanation for survey translation is to prevent skewed results (Van de Vijver, Fons, & Leung, 1997). After completing the translation, a pilot survey was distributed to 25 students, and changes were made.

DATA COLLECTION AND SAMPLE PLAN

The study's participants were randomly selected from ten randomly chosen classes at Kuwait University subjected to blended learning. OCS is a Moodle learning management system used for blended learning for the selected samples. This survey was sent to students who had completed at least one blended-learning course, and a total of 273 responses were received. By marking all questions as mandatory, the survey was structured to only allow complete responses.

Structural Equation Modeling (SEM)

Structural equation modeling (SEM) is a method for analyzing structural connections that utilizes multivariate statistical analysis. This method combines component analysis with multiple regression

analysis and is used to investigate the structural relationships between observed variables and latent constructs (Bowen & Guo , 2011; Hoyle, 1995).

The highest probability solution and the partial least squares (PLS) approach are two different SEM methods (Gefen, Straub, & Boudreau, 2000). For hypothesis testing and development, the maximum likelihood approach is used, while the PLS approach is used for predictive applications. The research model determines if the highest probability solution or PLS can be used. The PLS approach examines variances and relationship importance, rendering it suitable for making predictions (Gefen et al., 2000). The PLS method was used in this study to assess the extent of relationships between constructs.

The estimation model and the structural model are the two methods used in PLS research. The contextual model (also known as the inner model) is a description of the relationships between exogenous and endogenous latent constructs. In contrast, the measuring model portrays the latent constructs and their objects. (Gefen et al., 2000; Haenlein & Kaplan, 2004). The authors used the structural model in this article.

Reflective Measurement Model

The authors looked at internal accuracy reliability (composite reliability greater than 0.7), indicator reliability (item loading greater than 0.7, statistically crucial at the 5% level), validity convergent (average extracted variance greater than half), and validity in discrimination are used to validate the reflective measurement model.

Formative Measurement Model

The authors looked at item weights (greater than 1/5, statistically significant at the ½ percent mark), variance inflation factors (VIFs) is 3.3, and similarities between constructs to evaluate the constructive measurement model.

DATA ANALYSIS AND RESULTS

The data processing section of this paper was done using SmartPLS. SmartPLS is an ordinary partial least squares structural equation modeling software tool (Sarstedt, M., Cheah, J. H. 2019).

Reliability analysis

Cronbach's alpha coefficient was used to calculate the questionnaire's reliability. The questionnaire has a strong level of efficacy based on the responses. Table 1 summarizes the details.

Table 1. The questionnaire's Cronbach's alpha coefficient

Construct	Cronbach's Alpha	rho_A	Composite Rel.	AVE
ESQ	0.940	0.944	0.953	0.772
ITU	0.890	0.908	0.931	0.819
SQ	0.916	0.921	0.947	0.856
BS	0.881	0.896	0.918	0.737
PEU	0.959	0.960	0.967	0.832
US	0.905	0.942	0.931	0.773
PU	0.963	0.964	0.970	0.845
ATU	0.817	0.825	0.916	0.845
SysQ	0.758	0.771	0.892	0.805

Table 2 lists the specific construct objects and the direction coefficients for indirect and overall consequences.

Table 2. The hypothesis and the path parameters.

The Hypothesis	Path coefficient	Indirect	Total	Comment
H1: SysQ → ITU	0.074	0	0.074	Weak relation
H2: SysQ → US	-0.009	0.003	-0.006	Weak relation
H3: ESQ → US	0.138	0	0.138	Weak relation
H4: ESQ → ITU	0.640	0.005	0.645	Substantial relation
H5: SQ → ITU	-0.059	0.013	-0.046	Weak relation
H6: SQ → US	0.337	0	0.337	Moderate relation
H7: PEOU → ATU	0.368	0.404	0.773	Substantial relation
H8: PEOU → PU	0.848	0	0.848	Substantial relation
H9: PU → ATU	0.477	0	0.477	Moderate relation
H10: ATU → ITU	0.232	0.013	0.245	Weak relation
H11: ATU → US	0.330	0	0.330	Moderate relation
H12: ITU → BS	0.672	0	0.672	Substantial relation
H13: US → BS	0.272	0.026	0.298	Moderate relation
H14: US → ITU	0.039	0	0.039	Weak relation

Final LMS Evaluation Model

Only H4, H6 to H9, and H11 to H13 have been confirmed by the findings, implying that system functionality has little effect on user satisfaction or willingness to use an LMS and is unrelated to user satisfaction. Additionally, we discovered that service consistency had little bearing on the probability of utilizing the LMS. The proposed model does not accept the beneficial effect of attitude toward LMS usage on the plan to use LMS. User satisfaction had little impact on the desire to use, which is a shocking finding. Figure 3 depicts the test results for the proposed model.

DISCUSSION AND CONCLUSION

By modifying and building on DeLone and McLean's framework, the study aimed to propose a paradigm for evaluating the adoption and effectiveness of LMS in higher education programs. The construct system quality was excluded when considering the model's layout. The result shows that customer loyalty is not measured by the efficiency of the IT department's framework and services. Additionally, the paths for H5, H10, and H14 were excluded because user satisfaction and mindset toward the process had no impact on the decision to use the device.

As a result, educational institutions should create methods to improve customer (student) satisfaction with their learning management systems, especially in the aftermath of the COVID-19 pandemic and the establishment of the new normal after school. Consistency in the teaching framework seems essential for students to enjoy the advantages of using the LMS. The LMS's quality of use is also a consideration. Universities may emphasize user experience improvements and the design and customization of a user-friendly architecture. Consistency in the teaching framework seems essential for students to enjoy the advantages of using the LMS. A similar study by Altameemi & Al-Slehat (2021) demonstrates the behavioral intention to adopt e-learning technology from students' viewpoint. The final proposed BLAM model is depicted in Figure 3, following the removal of unsupported paths and the framework's quality construct.

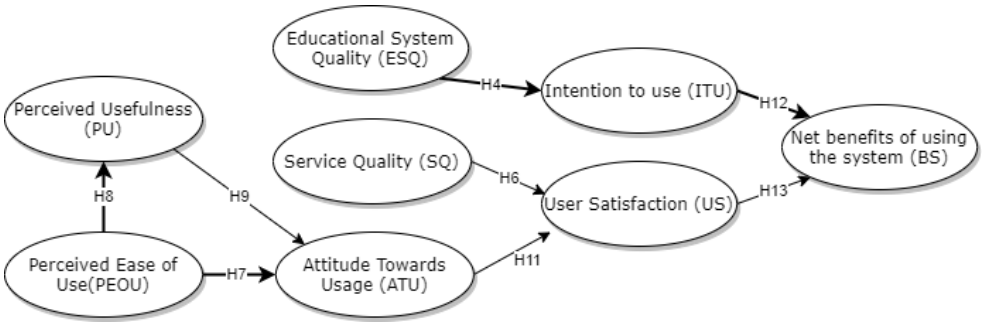

Figure 3: The proposed BLAM acceptance model

This study has some limitations since most students were from the college of petroleum and engineering of Kuwait University with higher homogeneity. The authors' arbitrary phonological factors were not examined, and there may be a typical process bias. The authors can collect statistics such as the number of log-ins or hours spent on the LMS, as well as the level of contact. Future studies will focus on identifying motivating variables and comparing them to available historical evidence on LMS use, as well as the aftereffect of COIVD-19 and the new normal of the educational system.

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APPENDIX A

Survey questions and measurement elements are available at the following link:

https://goo.gl/forms/GWD7HkBk0Kf3yQOs2

Survey data can be downloaded from the following link:

https://1drv.ms/x/s!AoVcky28ShQTi-Mi9aE_KJMBba-KWA?e=5ruKMR

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