

# M-LMS Adoption Intention; Empirical Evidence from Postgraduates in Developing Context

Isuru Chandradasa (1<sup>st</sup> Author)  
Department of Human Resource Management  
Faculty of Management and Finance  
University of Ruhuna  
Matara, Sri Lanka  
isuru@mgt.ruh.ac.lk

**Abstract**-Mobile learning is a widely used teaching and learning method and a Mobile learning management system is a part of the mobile learning process. During the pandemic period, the demand for mobile learning raised rapidly and is continuing to rise. After the pandemic if academic institutions hope to continue this trend, it is important to know about students' intention to use this Mobile learning management system in the future. Without knowing this continuing this application in the future is a risk for the organization as well as a negative factor for users' satisfaction. The evidence from past literature in this regard is lacking. Therefore, the objective of this study is to examine the continued intention of Sri Lankan postgraduate's mobile learning management system use in the future. The variables that might influence their continued intention of using this Mobile learning management system are identified from previous literature and based on that conceptual framework and hypothesis of the study developed. This study used quantitative techniques and data collected from 119 postgraduate students of one of the reputed state university in Sri Lanka by employing a convenience sampling technique. The data was analyzed using SPSS 25 statistical software package. The results of the study showed that direct utilization, ease of use, mobility value, academic relevance, and university management support will have a significant impact on the post-graduates' intent on the mobile learning management system in their future academic pursuits. This study provides theoretical and practical insights for researchers and practitioners about M-LMS usage and future implications. The data included postgraduates only from one state university which is the major limitation of this study.

**Keywords** - Continuous intention of adopt M-LMS, M-LMS, Mobile learning (M-Learning)

## I. INTRODUCTION

The rapid development of technologies influences every field of business and transforms into many convenient forms that ensure higher satisfaction of its users (Han & Shin, 2016).

Mobile learning is one of the dynamically growing trends in the educational field and the expansion of these digital technologies enables continuous development (Han & Shin, 2016). In the past two years from 2020 to 2021, the world suffering from the COVID-19 virus, and alternative mechanisms to physical teaching to continue academic activities without interruption from the pandemic are used.

Developing countries are not ready to fully accept that challenge compared with developed countries that are abundant in necessary infrastructure and other necessities to face this new circumstance, (Gao, Krogstie, & Siau, 2014). In Sri due to the Covid situation all physical academic activities were temporarily stopped, and educational institutions started teaching using alternative mechanisms. Mobile learning was one of them that is popular in developing contexts. Sharma and Kitchens (2004) defined mobile learning as a new style of learning enabled by mobile devices, which include ubiquitous communication technologies and sophisticated user interfaces. With the advent of mobile learning, students may now experience a teaching atmosphere on their mobile devices (Brantes Ferreira, Zanela Klein, Freitas, & Schlemmer, 2013). Many innovative mobile services entered the university educational systems due to the pandemic situation (Qashou, 2021). Moreover, most of the past studies emphasized that using mobile learning was related to higher exam scores (Han and Shin, 2016).

In the advancement of mobile learning, numerous applications including the existing learning management system (LMS) needed to improve as compatible to bring a better user experience (Nguyen, Barton, & Nguyen, 2015). This advanced form of the learning management system which provides access via mobile devices is known as a mobile learning management system (M-LMS) (Brantes Ferreira, Zanela Klein, Freitas, & Schlemmer, 2013). M-LMS is a type of mobile learning platform that allows academics and students to access lessons on their mobile devices at any location and at any time (Nguyen et al., 2015).

Currently, educational institutions are gradually reopening for physical education but continue the use of mobile learning. Thus, this trend will continue. Most of the businesses promote work from home concept due to the advantages that are

incorporated, and, in education, it is similar. (Brantes et al., 2013). If this tendency persists in the future, it is important to be aware of the continuing intentions of the practices that use it.

Literature regarding the use M-LMS in the education sector in the past is limited. The availability of an M-LMS does not guarantee that students will utilize it in their daily academic activities continuously. Students' impressions of the system may be varying by different factors (Brantes et al., 2013). Some students were unaware of the system's potential utility (Nguyen, Barton, & Nguyen, 2015).

Further, due to the lack of evidence on university students continued use of M-LMS this study tries to fill this empirical knowledge gap.

The relevance of this m-LMS is especially important for online university students who are relatively old, part-time, and off-campus students (Qashou, 2021). According to Dahlstrom and Bichsel's (2014) research, older students are more likely to indicate that they learned best when a course was online, but younger students were more likely to report that they learned best when a course was completely online. The object of this study is to examine the factors that influence postgraduate students for continued use of M-LMS.

## II. LITERATURE REVIEW

### A. M-LMS

Users can access learning materials via mobile learning management systems on portable wireless devices such as smartphones and tablets (Qashou, 2021).

### B. The continuous intention of using M-LMS

Technology usage refers to either the amount of effort exerted in interacting with a particular technological system (Fitzgerald, 1993). From this perspective, continuous use of technology refers to a person's future desire, expectation, or goal to employ presently in use technology or system (Brantes et al., 2013). M-LMS is a technology-enabled system, and the current study focuses on the continuous intention of use- M-LMS for their future learning activities. According to Ajzen and Fishbein, 1980 continuous intention is a measure of a person's propensity to keep on using technology or system. Several theoretical models have emphasized the significance of behavioral intention as the most important predictor of human behavior in the continuous use of technology (Lee & Rao, 2009). In the context of the present study, the intention was to assess if the postgraduates, who are using M-LMS for their academic activities, would be willing to continue in the future.

### C. Theories of study variables

Many prior studies used or expanded the Technology acceptance model (TAM) to investigate the adoption intention

of mobile learning. Akman & Turhan (2017) used an extended TAM to investigate students' acceptance of online learning systems in higher education. Recent studies discovered that perceived usefulness and perceived ease of use were significant determinants of users' attitudes towards the use of online educational systems (Mehta, Morris, Swinnerton, & Homer, 2019). We construct an expanded TAM model to examine the adoption of M-LMS based on the facts supporting the TAM and its success in integrating other variables to better understand aspects linked to continuous intention to use M-LMS. In addition to TAM's core constructs, three major predictors, Perceived Mobility Value (Huang, 2007), Academic Relevance (Venkatesh & Davis, 2000), and University Management Support (McGill, Klobas & Renzi, 2014) are extracted from prior studies to explore students' continuous intention to use M-LMS within a university education setting. Based on that figure 1 conceptual framework was developed.

### D. Conceptualization

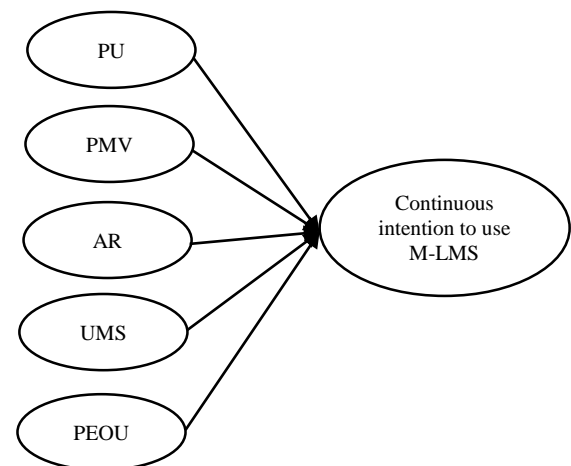


Fig. 1. Conceptual framework Source: Author constructed, 2021

### E. Hypothesis development

TAM is a user acceptance model that focuses on a system's perceived usefulness and perceived ease of use. The degree to which a person feels that using a given system will improve his or her job performance is referred to as perceived usefulness (Davis, 1989) and perceived ease of use refers to the degree to which a person feels that utilizing a certain system would be devoid of effort (Davis, 1989). These two variables had been tested in several empirical studies and found a positive association between these two variables with technology adoption intention (Salloum, Alhamad, Al-Emran, Monem & Shaalan, 2019). Further, it has proven as largely reliable in predicting user acceptance of new information technologies Pavlou, (2003); Gefen, (2003). Based on those following hypotheses were derived.

*H1: Perceive usefulness has a positive influence on continuous intention to use M-LMS.*

*H2: Perceive ease of use has a positive influence on continuous intention to use M-LMS.*

The extent to which users are aware of the flexibility of mobile services and systems is characterized as the perceived mobility (Rahmi, Birgoren,&Aktepe, 2018). Previous studies identified the positive effect of perceived mobility value on technology adoption and use for mobile learning (Huang et al., 2007). Based on that following hypothesis was derived.

*H3: Perceived mobility value has a positive influence on continuous intention to use M-LMS.*

Academic relevance refers to the general significance of M-LMS in university education. (Venter, van Rensburg, & Davis, 2012). Venkatesh & Davis (2000) discovered that general relevance had a favorable effect on technology adoption and use. As a result, this study contends that academic relevance in general influences the intention of continuous use of M-LMS. As a result, the following hypothesis was derived.

*H4: Academic relevance has a positive influence on continuous intention to use M-LMS.*

University management support refers to the service provided by the administration and authorities of the university for the successful implementation of technology for students. Iqbal & Bhatti (2017) indicated the significance of university management support for mobile learning efforts in earlier studies (Saroia & Gao, 2019). Moreover, Venkatesh (2000) discovered that university management support had a significant impact on technology adoption and use. According to Barker, Krull, and Mallinson (2005), university support workers played a significant part in the day-to-day support and maintenance of their learning institution's mobile learning infrastructure. Based on that following hypothesis was derived.

*H5: University management support has a positive influence on continuous intention to use M-LMS.*

### III. METHODOLOGY

A descriptive research design was employed that allows assessing the associations between the variables described in the model. After reviewing the literature, five independent variables were identified and a conceptual framework for the study was developed using the five hypotheses.

This study focuses on investigating the intention to continuous use of M-LMS in the future of the Sri Lankan postgraduates. Hence, the unit of analysis was the individual. The theoretical population of this study is postgraduate students at state universities in Sri Lanka. Due to the practical limitation and complexities, postgraduate students who are reading for Master of Business Administration(MBA) in one reputed state university in Colombo district of Sri Lanka was selected as the study population. Designed questionnaires were distributed among 150 postgraduates who are reading for their MBA. By employing a convince sampling technique 119 responses were gathered. The constructs of the research model were measured using previously validated instruments. The all the constructs used a five-point Likert scale where respondents

marked their agreement scaling from strongly disagree (1) to strongly agree (5). Gathered data was analyzed by using SPSS 25 version of the software package.

### IV. DATA ANALYSIS

First, the normality was checked and the results indicated that the data set is normally distributed. Frequency analysis was used to describe sample composition. Consequently, the internal consistency of the constructs was tested using Cronbach alpha and all constructs met the threshold value of 0.6 or above. Further, correlations among variables were tested using Pearson correlation and found no multi collinearity issues among the predictors as all the correlations among independent variables were reported below 0.44. The hypothesis was tested by using regression analysis results.

#### A. Sample Composition

Table 1. Sample composition

Variable	Category	Frequency	Percentage (%)
Age group	20-25	17	14
	26-30	66	56
	31-35	32	27
	More than 36	4	3
Gender	Male	56	47
	Female	63	53
The period that uses M-LMS	1-3 months	42	35
	4 months to 6 months	18	15
	1 year	51	43
	More than 1 year	8	7

Source: Survey Data, 2021

#### B. Hypothesis testing

The Adjusted R Square value amounts to 0.721. Thus, the regression model explains 72% of the variance in the intention to continuously use M-LMS with the five independent variables specified in the research model and the ANOVA test confirmed that the regression model is statistically significant (F = 76.689, P= 0.000)

Based on the observed results in table 2, indicated that perceived usefulness, perceived ease of use, perceived mobility value, academic relevance, and university management support have a positive influence on postgraduate students' continued intention to use M-LMS in the future. In sum, this study confirms the results of previous studies (Saroia & Gao, (2019); Ooi, Hew & Lee, (2018). Supporting H1, and H2 Perceived usefulness ( $\beta=0.444$ , sig =.001). and Perceived

ease of use ( $\beta=0.388$ ,  $\text{sig} =.002$ ) had a significant positive influence on postgraduate’s continuo intention to use M-LMS.

Table 2. Regression results

	Unstandardized Coefficients		t	Sig.
	B	Std. Error		
Perceived usefulness	.444	.091	4.926	.001
Perceived mobility value	.904	.168	5.368	.000
Academic relevance	.199	.052	3.692	.004
University Management support	.807	.168	5.368	.000
Perceived ease of use	.388	.137	3.068	.002
Adjusted R Square	.721			
ANOVA	F = 76.689, (P= 0.000)			

Source: Survey Data, 2021

Moreover, this study found empirical support for the H3, which claims that perceived mobility value ( $b =0.904$   $p = 0.000$ ) and academic relevance ( $b =0.199$   $p = 0.004$ ) are having a significant positive influence on determining postgraduates continued intention to use M-LMS. The study also found that university management support ( $\beta=0.807$ ,  $\text{sig} =.000$ ) positively influenced on postgraduate’s continuo intention to use M-LMS.

## V. RESULTS AND DISCUSSION

The observed results of the study indicate that the five variables selected has a significant positive influence on continuous intention of use M-LMS. Mainly postgraduates feel that using M-LMS use improve his or her academic performance and if they feel that utilizing M-LMS would be devoid of effort they intend to use M-LMS in the future. Moreover, when M-LMS consisted in flexibility benefit and characteristics postgraduates’ future intention will positively derive that for continued use of M-LMS in future. Further significance of using M-LMS will increase comparatively in academic activities it also becomes a reason to influence of Use M-LMS in continuously. Furthermore, study results reveal that if the administration and authorities of the university have positive support for their postgraduates regarding M-LMS it will positively influence the postgraduate’s continuous intention of using M-LMS in the future.

From a theoretical standpoint, this research is regarded as valuable for academic research since it expands and improves knowledge of mobile learning uptake. This study contributed to the existing literature on the adoption of M-LMS. This study illustrates the robustness and explanatory power of the proposed TAM framework in predicting users' intention to adopt an M-LMS in a higher education setting.

The findings enable the understanding of how university postgraduates’ students will engage with and realize the usage of an M-LMS. They provide insight into creating and deploying of mobile technologies for educational purposes. From the postgraduates’ perspective perceived ease of use, perceived usefulness, academic relevance, perceived mobility value, and university management support in M-LMS are the crucial aspects to ensuring continuous intention of use M-LMS in the future. Therefore, university administration authorities must consider these aspects because these affect the continued use of the system. Further this study provides insights to developers and service providers of mobile learning apps such as M-LMS to identify the important characteristics that would play a significant role in postgraduate users of M-LMS.

We identified the following study limitations while proposing future research objectives in this work. Due to time and budgetary restrictions, the sample was limited to one state university respondent. Bigger sample size would enhance statistical power and provide more robust results (Hair et al., 2010). Future research with a larger sample size covering postgraduates as well as undergraduates at other institutions is also recommended. This study applied a cross-sectional design, with data collected at a single moment in time. Students' continuous intention is considered a psychological concept that requires longitudinal empirical investigations to obtain a thorough understanding. Future studies using a longitudinal study methodology would substantially contribute to the literature. Compared to gathering responses to a questionnaire alternative technique, such as interviews, might allow for a more in-depth study of intention and its causes The study used only four factors based on TAM and empirical findings. Additional variables specified in other theories might have an impact on the continued intention of using M-LMS.

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