Journal of Management Matters

Journal of Management Matters
10(2) (2023) 19-35
@Faculty of Management Studies
Rajarata University of Sri Lanka
http://www.rjt.ac.lk/mgt/pages/journal.php
DOI: https://doi.org/10.4038/jmm.v10i2.53

Research Paper

Embracing Mobile Learning: Exploring the Acceptance Among Undergraduates in Sri Lankan Universities

K.T.A.R. Samarasinghe[1] and D.M.C. Dassanayake[2,*]

[1]Faculty of Management Studies, Rajarata University of Sri Lanka, Mihintale, Sri Lanka
[2]Department of Tourism & Hospitality Management, Faculty of Management Studies, Rajarata University of Sri Lanka, Mihintale, Sri Lanka
*Correspondence: chamindad@mgt.rjt.ac.lk

Article History
Received Date: 30.10.2023
Revised Date: 30. 12.2023
Published date: 06.02.2024

Abstract

This research explores the emerging trend of mobile learning in the higher education sector, with a focus on identifying key factors influencing its adoption in Sri Lanka. In this study, a quantitative approach was employed, encompassing a participant pool of 323 undergraduates drawn from Sri Lankan national universities. The study scrutinizes the factors that influence the acceptance of mobile learning by investigating performance expectancy, effort expectancy, social influence, facilitating conditions, perceived playfulness, and self-management of learning employing mainly correlation and multiple regression data analysis techniques. A notable revelation emerges as the research highlights "self-management of learning" as the most influential factor, surpassing the conventional assumption regarding the significance of "performance expectancy," which surprisingly exhibits no direct impact on mobile learning acceptance. The model effectively explains an impressive almost sixty-eight percent of the variance in undergraduates' acceptance of mobile learning. Beyond the academic context, the insights that emerged from this study hold the potential to revolutionize educational practices in Sri Lanka, offering valuable guidance to educators, policymakers, and educational technology developers striving to seamlessly integrate mobile learning into the higher education landscape while contributing to the broader discourse on innovative pedagogical strategies.

Keywords: Mobile learning, Higher education, Technology acceptance, Undergraduates

1. Introduction

Mobile technology has significantly transformed many fields of education. This shift has broken the time and location constraints included in traditional learning. Liu et al. (2010) stated that the smooth incorporation of mobile technology into daily life can facilitate many aspects of the day-to-day lifestyle. Notably, mobile technologies have influenced many aspects of education, including classrooms, offices, and many more settings, to support learners within and outside official educational systems. The modernization in mobile technology has liberated traditional learning from the confines of time and place. It ushered in a new era of transformation in education. The emphasis has shifted from a teacher-centered approach to a learner-centered one, where education revolves around actively engaging students both in and outside the classroom (Taylor et al., 2006). In higher education learning, the enormous potential of mobile devices to improve the educational process has been particularly highlighted. This transition highlights the growing significance of mobile platforms in the education system, and these changing dynamics highlight the increasing role of mobile media in influencing the educational landscape. Mobile technology has become a cornerstone for transforming education from a constrained classroom experience to a holistic, life-enriching process that encourages students to explore, create, and engage with knowledge daily. Nawaz and Mohamed (2020) asserted that despite these advancements in the use of mobile technologies in higher education, traditional pedagogical methods persist within the higher education system in Sri Lanka, and they still rely on conventional teaching methods. However, through smart phones, laptops, and tablets, students in Sri Lankan higher education systems now enjoy enhanced access to educational materials.

Modern technology has profoundly impacted our daily lives and routines. Smart phones, in particular, have become indispensable worldwide. As of 2023, Statista reports that there are an estimated 4.78 billion smart phone users globally. In Sri Lanka, 14.77 million individuals access the internet, while 30.76 million possess mobile phones, according to www.worlddata. Such technological advancements have influenced the teaching and learning processes in Sri Lanka, as highlighted by Samsudeen and Mohamed (2019).

The popularity of handheld devices such as tabs, palm pilots, MP3 players, iPods, and smart phones has been in greater demand globally because of their aspiration for computer capability (Nawaz & Mohamed, 2020; Ambarwati et al., 2020). Yearly, the government of Sri Lanka allocates billions of dollars for the improvement of the national educational system (Alawattegam, 2020). However, the context of higher education in Sri Lanka presents unique challenges and complexities when embracing mobile learning. To successfully implement mobile learning in Sri Lanka's higher education system, it is crucial to address costs, infrastructure, digital literacy, social and ethical issues, performance barriers, user-friendliness, and support from the government, academic community, and private sector.

The adoption of mobile learning in higher education remains a primary research topic across various institutions and universities (Khan et al., 2020; Samsudeen & Mohamed, 2019). However, many Sri Lankan educational institutions rely on traditional teaching methods. Information Technology (IT) permeates multiple facets of modern life, presenting benefits, opportunities, and challenges for public and private sector decision-makers, as observed by Nawaz and Thelijjagoda (2015). Technological advancements have significantly shifted human behaviour, minimizing geographical and time constraints. Smart phones have become an essential component of daily life globally.

The deliberate choice of mobile learning, which aims to broaden access to education, has played a crucial role in shaping the nation's educational landscape. Previous research explored the factors influencing the intention to use mobile learning and the actual behaviour of mobile

learning use in Sri Lanka (Senaratne & Samarasinghe, 2019). Their research brought to the fore a significant aspect of the educational environment. This research is essential to investigate the embrace of mobile learning within the specific realm of higher education in Sri Lanka, either corroborating or deviating from global research findings. A compelling rationale exists for integrating mobile learning into higher education. This study is anticipated to provide a comprehensive perspective on identifying the underlying factors that govern the context-specific acceptance of mobile devices. By doing so, this research is poised to offer valuable insights to Sri Lankan universities, enabling them to tailor their integration of mobile learning environments to suit their unique needs and circumstances.

Despite the global rise of mobile learning technology, Sri Lanka's higher education still largely depends on traditional teaching methods, even with widespread access to mobile devices like smart phones and tablets. Existing research has identified factors influencing mobile learning adoption in Sri Lanka, but there's a lack of understanding of how these factors specifically affect higher education. This issue is crucial because mobile learning has the potential to transform education from traditional, fixed settings to more flexible, accessible, and student-focused approaches. However, challenges related to cost, infrastructure, digital literacy, and social and ethical concerns must be overcome to successfully integrate mobile learning in Sri Lankan higher education.

In line with the above research problem, this research posits its broader objective as "to investigate and understand the factors influencing the adoption and integration of mobile learning technologies in Sri Lanka's higher education system, considering the challenges and potential strategies to effectively transition from traditional teaching methods to more dynamic and accessible forms of learning". To achieve this broader research objective, a series of hypotheses have been formulated based on a conceptual framework, which itself is derived from an extensive review of relevant literature.

2. Literature Review

2.1. An Overview and the Benefits of Mobile Learning

Mobile learning generally enhances learners' performance by making learning more accessible (Yi et al., 2009). Mobile learning empowers students to retrieve educational resources through mobile technologies and internet connectivity, granting them the flexibility to do so from anywhere and anytime. Low and O'Connell (2006) state that mobile learning increases flexibility and gives students freedom. Mobile learning is an effective way of increasing access, diversifying and improving instruction, enhancing learning and improving educational outcomes (Criollo-C et al.,2021). Mobile learning has been shown to exhibit many advantages over the traditional approaches of instruction, as it is less costly, provides increased accessibility from anywhere and anytime, promotes self-efficacy and self-regulation in learning (Onah et al., 2021).

Mobile learning technologies eliminate geographic barriers and provide a collaborative learning environment between different groups. It can occur in remote locations and proposes various settings where the teacher can operate (Laurillard & Pachler, 2007). According to Yi et al. (2009), mobile learning encompasses diverse methods that enable individuals to engage in learning activities and maintain connections with their educational surroundings, containing peers, educators, and educational materials while remaining mobile and on the move. This dynamic approach to learning encourages interaction and collaboration among students, educators, and resources, fostering a vibrant and accessible learning ecosystem adaptable to students' varying needs and schedules.

Moreover, personal devices like smart phones, iPods, tablets, and gaming systems are increasingly used to access educational materials within and beyond the traditional classroom setting, and this trend is gaining popularity globally, as Norris et al. (2003). A considerable portion of today's student population falls under the category of 'digital natives'. This term characterizes individuals born between 1995 and 2005, marked by the 'digital revolution'. Consequently, these students are well-acquainted with using advanced, web-based technologies within their educational institutions. However, the current state of affairs reveals a significant disparity. A substantial portion of the available hardware is in suboptimal condition, and many educators lack proficiency in using computers and technological devices, as Jung (2018) noted. Hence, there is an urgent demand for a shift in institutional culture that can adequately equip both the existing and incoming generations of students to confront the challenges of the 21st century. The use of mobile platforms in higher education is an increasingly explored topic in academic literature. However, most of the studies have focused on the technological characteristics of mobile learning or the motivational factors that affect educators' use of this technology.

Only a few studies have examined learners' acceptance factors. Both educators and learners are crucial in adopting mobile learning, but little is known about what kinds of online learning activities students prefer. Not much is known about students' preference for online learning activities (Bonnici et al., 2014). It's critical to comprehend students' viewpoints on using mobile devices for education. Mobile education offers distinct advantages. According to Seppala and Alamäki (2003), the fundamental feature of mobile learning is that it allows students to be where they're able to experience the absolute delight of learning that is, at the appropriate place at the right time, which can be called "context-aware". According to Cavus and Ibrahim (2009), mobile devices like laptops, palmtop computers, and mobile phones have ushered in a new era of education, reshaping conventional classroom-based instruction into a flexible and location-independent learning experience. These portable educational tools are compact and easily transportable, allowing students to integrate them seamlessly into their learning routines. With their mobile devices, students can tackle assignments, engage in projects, and participate in various learning tasks anytime and anywhere. Uzunboylu et al. (2009) noted that mobile devices are compact and easily transportable to integrate learning endeavors from virtually any location, and students can engage in various educational tasks.

The advantages of blended learning can be enhanced through mobile learning (Bonk & Graham, 2006; Ocak, 2010). Blended learning means incorporating face-to-face teaching with online methods. It blends classroom instruction with mobile learning and reshapes traditional education through online forms. Zhang (2003), Virvou and Alepis (2005) emphasize that mobile learning offers the distinct advantage of privacy, enabling learners to access educational content without external disturbances. However, Laurillard (2007) pointed out that it's worth noting that previous research has often failed to distinguish between learners' motivations for using mobile technology for learning, whether in formal or informal educational settings. Consequently, this study examines the factors influencing mobile learning acceptance in Sri Lanka's higher education.

Sulaiman and Dashti (2018) noted that mobile learning has much to offer in creating and fostering communicative, cooperative, and creative learning environments. The advantages of mobile learning are evident, and several academics have understood its benefits. Young people's literacy, numeracy, and involvement in school can all be enhanced through mobile technology. According to Mehdipour and Zerehkafi (2013), it employs mobile phone communication features as part of a broader learning activity, delivers multimedia content and creativity,

and lowers training expenses. According to Diaz et al. (2015), flexibility is the most crucial mobile learning component. Even when not in the classroom, students can learn whenever and wherever they choose and stay in contact with their teachers and fellow students (Alkhalifah, 2018). Students can extend the reach of their learning environment beyond the confines of the lecture hall and classroom by utilizing the flexible, portable, and freely accessible learning materials that mobile devices offer (Jan et al., 2016).

2.2. Theoretical Background

The theoretical foundation of this study is based on technology acceptance models. It augments the current literature by thoroughly reviewing these models' concepts, applications, and evolution. Various models have been developed for examining users' acceptance and intention to adopt a new technology. For instance, the technology acceptance model (TAM), introduced by Davis (1989), has been used to explore mobile learning acceptance (Ju et al., 2007; Liu, Li, and Carlsson 2010; Tan et al. 2014). The Unified Theory of Acceptance and Use of Technology (UTAUT), introduced by Venkatesh et al. (2003), has been widely applied in technology acceptance research. The UTAUT model is an amalgamation of eight leading models related to technology and human behavior. These include the Theory of Reasoned Action (TRA) by Fishbein and Ajzen (1975), the Technology Acceptance Model (TAM) by Davis (1989), the Theory of Planned Behavior (TPB) by Ajzen (1991), the Combined TAM and TPB (C-TAM-TPB) by Taylor and Todd (1995a), the Motivational Model (MM) by Davis, Bagozzi, and Warshaw (1992), the Model of PC Utilization (MPCU) by Thompson, Higgins, and Howell (1991), the Innovation Diffusion Theory (IDT) by Rogers (2003) and Moore and Benbasat (1991), and the Social Cognitive Theory (SCT) by Bandura (1986). Amongst the number of variables described in these models, this research has selected performance expectancy, effort expectancy, social influence, facilitating condition, perceived playfulness, self-management of learning, and mobile learning acceptance. The following sections describe the main concepts/variables associated with the study.

Performance Expectancy

Performance expectancy (PE) refers to the extent to which users perceive benefits from using technology during other activities (Venkatesh et al. 2012). Arain et al. (2019) found that PE is a significant factor in mobile learning acceptance in the research of factors influencing the acceptance of mobile learning by higher education students in Pakistan. According to Suki and Suki (2011), performance expectancy has a significant and positive relationship with user behaviour and behavioural intention to use mobile learning. Alharbi et al. (2017) found that performance expectancy significantly affects instructor acceptance of Mobile learning in Saudi Arabia. Chao (2019) conducted a study where a model was developed, empirically tested, and used to predict the factors influencing students' behavioural intentions towards using mobile learning. The study includes the behavioural intention to use mobile learning from a consumer's perspective by applying the extended Unified Theory of Acceptance and Use of Technology (UTAUT). Study findings showed a positive relationship between performance expectancy and behavioural intention.

Effort Expectancy

Effort expectancy describes how simple it is to use mobile learning technology (Venkatesh et al. 2003). Alharbi et al. (2017) found that effort expectancy significantly affects instructor acceptance of mobile learning in Saudi Arabia and has a significant impact on influencing smartphone use for mobile learning by postgraduate students of the University of Ibadan, Nigeria (Onaolapo and Oyewole, 2018). Effort expectancy is the belief that using a particular

technology will be easy and effortless (Venkatesh et al., 2003). Therefore, the effort expectancy is a crucial determinant of mobile learning adoption. Wang et al. (2014) proved that effort expectancy among females has a higher significance in influencing mobile-Learning adoption (Venkatesh et al., 2003).

Social Influence

Social influence pertains to an individual's understanding of the importance that significant people in their life place on the use of mobile learning technology (Venkatesh et al., 2003). Social influence plays a crucial role in determining the behavioural intention to use mobile learning, as highlighted in a study conducted by Al-Adwan et al. (2018) on the readiness of students to adopt mobile learning in higher education in Jordan. Social influence refers to modifying an individual's attitudes, beliefs, or behaviour due to the presence or actions of others. Sharma et al. (2016) state that peer influence can affect mobile device usage. In the context of higher education, social impact is reflected by the ethical culture and social norms that drive the adoption of new technologies. Specifically, this concept is defined as the extent to which individuals perceive that the beliefs of others are essential in their use of mobile learning. In this case, "others" refers to the student's peers.

Facilitating Conditions

Facilitating conditions refer to the extent to which an individual believes that the infrastructure in their organization supports their use of mobile learning technology. (Venkatesh et al., 2003). Facilitating conditions are crucial in determining the behavioural intention to use mobile learning technology. Al-Adwan et al. (2018) conducted an empirical study in Jordan and concluded that facilitating conditions is essential in modelling students' readiness to adopt mobile learning in higher education. Similarly, Arain et al. (2019) found that facilitating conditions are the most significant factor influencing the acceptance of mobile learning among higher education students in Pakistan. Facilitating conditions refer to the perceived enablers or barriers in the environment that affect a person's perception of the ease or difficulty of performing a task. These conditions play a crucial role in motivating students to continue their studies. For instance, a reliable Internet connection is a key facilitating condition for effective e-learning. It is formally defined as the extent to which a student believes that an institution's laboratory and local area network connections exist to support the use of the mobile learning system (Ambarwati et al., 2020).

Perceived Playfulness

Perceived playfulness, defined by Balkaya and Akkucuk (2021), is a composite of various factors. It encompasses the user's concentration level, inquisitiveness while interacting with a system, and the emotions of pleasure and enjoyment they experience. Previous research indicates that perceived playfulness positively impacts users' willingness to embrace augmented reality technology in their computer interactions. Studies have explored the use of augmented reality in scenarios such as shopping for shoes and experiencing digital museum exhibits, both of which use augmented reality technology (Jiang et al., 2022a,b). In the realm of interactive education, perceived playfulness also holds significant importance. It is a crucial determinant of how users engage with mobile technology when learning (Nikolopoulou, 2018). However, it's vital to remember that overly captivating content can potentially dilute the seriousness of classroom instruction. Consequently, designers should strive for a balanced blend of engaging elements when crafting digital education systems. It's worth noting that solid and dependable emotional support in familial relationships contributes to the playfulness of interactions (Zhang et al., 2019).

Self-Management of Learning

The term 'self-management of learning' refers to an individual's self-disciplined ability and independent learning (Smith et al., 2003). Successful learning depends on the learner's control over the learning process, including exploration, experimentation, questioning, and collaborative discussions (Sharpe, 2003). The importance of self-directed learning is a recurring theme in the literature on distance education and resource-based flexible learning, as highlighted by Evans (2000) and Smith et al. (2003). Since mobile learning is a form of e-learning conducted through mobile devices, an individual's level of self-management of learning is likely to impact their willingness to use mobile learning positively. Moreover, in mobile learning, students often have to take charge of their learning, as they may be physically separated from instructors, peers, and institutional support. This autonomy places a heightened demand on learners to develop skills in critical thinking, self-assessment of their learning needs, and the ability to locate and evaluate educational resources (Li, 2010; McFarlane et al., 2007; Wang et al., 2009).

Mobile Learning Acceptance

It is defined as a user's willingness to employ technology for the tasks designed to support (Davis, 1989); for research purposes, behavioral intention is used as mobile learning acceptance. Behavioural intention defines the degree to which persons make a thought-based conclusion about whether to carry out or not to carry out a specific behaviour (Venkatesh et al., 2003). Researchers argue that mobile learning acceptance can be determined through different factors. Mobile learning acceptance in this research mentions the person's conscious conclusion regarding using or not using mobile learning technology.

2.2. Developed conceptual framework and research hypotheses

The UTAUT theory (Venkatesh et al., 2003) suggested that performance expectancy, effort expectancy, social influence, and facilitating conditions are direct determinants of behavioural intention. Mobile learning studies have incorporated new concepts of perceived playfulness and self-management of learning into this model. While playfulness was consistently found influential, results for self-management are contradictory. A study by Wang and colleagues (2009) reported a significant effect, whereas Lowenthal (2010) didn't find a powerful influence. The primary constructs of UTAUT may not be entirely relevant to mobile earning adoption. It is, in fact, essential to test and verify this model by modifying and extending it with other determinant factors. This paper followed the above literature and introduced and empirically tested the mobile learning acceptance model for undergraduate students in Sri Lankan university contexts.

The literature review presents performance expectancy, effort expectancy, social influence, facilitating condition, perceived playfulness, and self-management of learning, identified as the predecessors of mobile learning acceptance. In this study, Figure 1 encapsulates the conceptual framework and hypotheses.

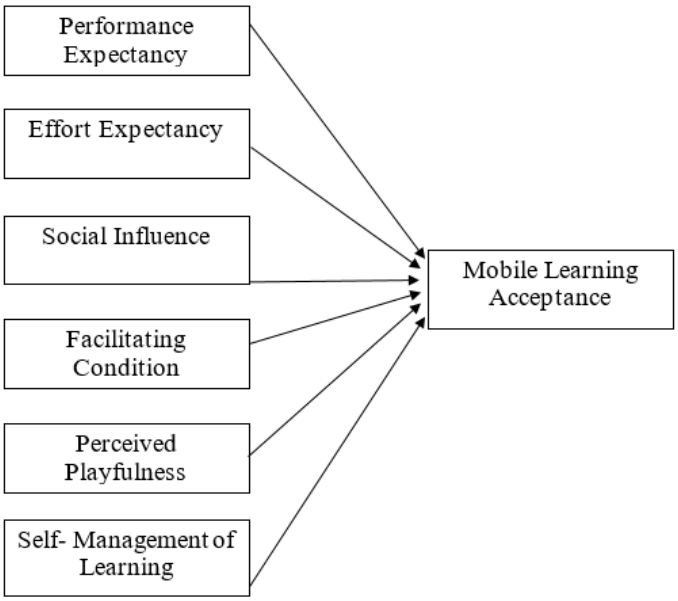

Figure 1. Conceptual Framework

The following hypotheses were developed depending on the literature review and the conceptual framework.

H_1: Performance expectancy influences the acceptance of mobile learning among university undergraduates in Sri Lanka.

H_2: Effort expectancy influences the acceptance of mobile learning among university undergraduates in Sri Lanka.

H_3: Social influence influences the acceptance of mobile learning among university undergraduates in Sri Lanka.

H_4: Facilitating condition influences the acceptance of mobile learning among university undergraduates in Sri Lanka.

H_5: Perceived Playfulness influences the acceptance of mobile learning among university undergraduates in Sri Lanka.

H_6: Self-management of learning influences the acceptance of mobile learning among university undergraduates in Sri Lanka.

3. Methodology

Grounded in a realistic ontological stance and a post-positivist epistemological philosophy, this study adopts a quantitative methodology, employing a survey strategy for data collection. The conceptual framework is constructed based on existing literature and theories pertinent to the study area, utilizing deductive reasoning with an explanatory purpose. This research is cross-sectional in its time horizon. For data analysis, the study primarily employs descriptive, correlation, and regression analyses, utilizing SPSS software for this purpose.

3.1. Survey Instrument Design

An online survey comprising various sections was designed for data collection. The first section captured the demographic profile of the respondent (gender, university, faculty, study year, level, types of mobile devices used, period of using mobile devices and duration of using mobile devices for studies). The remaining sections captured information on the seven constructs – performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating condition (FC), perceived playfulness (PP), self-management of learning (SML) and mobile learning acceptance (MLA). A 5-point Likert scale was adopted in the agree-disagree scale to collect the data.

Performance expectancy was measured using a multidimensional scale comprising seven items and represented the performances, time-consuming, outcome expectation, extrinsic motivation, relative advantage, and usefulness. Effort expectancy was measured using a multidimensional scale comprising six items representing the two easy of use and complexity dimensions. Social influence was measured by containing seven items and mainly focused on two dimensions: social image and subjective norms. The facilitating condition was measured using seven items, representing only the infrastructure dimension. The Seven items of Self-Management of Learning represented learning activity, competency, skill, and self-discipline. Finally, overall mobile learning acceptance was assessed by six items. The questionnaire was drawn from the past literature and the questionnaire items used to measure the constructs also were developed based on the past relevant studies. For respondent convenience, the survey was written in English.

3.2 Population, Sample, Data Collection, and the Unit of Analysis

This research focused on undergraduate students from national universities across Sri Lanka. According to the University Grants Commission (2021), the undergraduate student population in national universities in Sri Lanka is 121,000. A non-probability convenience sampling approach, along with purposive criteria, was employed to select the suitable respondent. Respondents were screened based on two key questions: whether they were currently enrolled as undergraduate students in a Sri Lankan national university and if they owned mobile devices such as tablets, smart phones, or laptops. Data was collected using an online questionnaire hosted on Google Forms and disseminated via social media and email lists obtained from student councils of the respective universities. Of the responses, 323 were deemed usable and comprised the final sample size. As the study aimed to understand individual students' predispositions towards mobile learning, the unit of analysis was centered on individual undergraduate students from the selected universities.

3.3 Data Analysis

The analysis was conducted using the SPSS software. There are three objectives in data analysis getting a feel for data, testing the goodness of the data, and testing the hypothesis developed for the research. The feel for the data will give preliminary ideas of how good the scales are and how well the coding and entering of data have been done.

The next objective is testing the goodness of the data can be accomplished by submitting the data, obtaining Cronbach's alpha so on. Cronbach’s alpha was used to measure the internal consistency reliability of the instrument. Table 1 presents Cronbach's alpha values for the respective variables, along with the number of items used to measure each construct. All the measures are found to have proven internal consistency reliability, as Cronbach's alpha values are greater than 0.7 Field (2009).

Table 1. Testing of Internal Consistency Reliability of Variables

Construct	Number of items	Cornbrash's Alfa coefficient	Assessment
Performance Expectancy	7	0.948	Accepted
Effort Expectancy	6	0.961	Accepted
Social Influence	7	0.897	Accepted
Facilitating Condition	7	0.877	Accepted
Perceived Playfulness	7	0.863	Accepted
Self-Management of Learning	6	0.925	Accepted
Mobile Learning Acceptance	7	0.947	Accepted

To test normality, the skewness and kurtosis scores were examined and all the scores were found to be between +3 and -3 highlighting the data are approximately normally distributed. (Mardia, 1970).

4. Findings

4.1 Sample Profile

The sample comprised 323 respondents, with their demographic distribution detailed in Table 2. Concerning gender, the sample included 216 female respondents (66.9%) and 107 male respondents (33.1%). In terms of technology ownership, a significant portion of the sample, 164 respondents (50.8%), reported using both laptops and smart phones as essential tools for their studies. Additionally, 101 students (31.3%) exclusively relied on smartphones, while a smaller group of 16 students (5%) used only laptops for their academic needs.

Table 2. Sample Profile and Demographic Distribution

Questions	Percentage
Gender	
Male	33.1 (107)
Female	66.9 (216)
The ownership of mobile device(s)	
Laptop	5 (16)
Smartphone	31.3 (101)
Laptop, Smartphone	50.8 (164)
Laptop, Tablet	0.3 (1)
Smartphone, Tablet	1.5 (5)
Tablet, Laptop, Smartphone	11.1 (36)
Frequency of using a mobile device for studies(s)	
Very rarely	1.2 (4)
Occasionally	12.4 (40)
Often	26.3 (85)
Frequently	60.1 (194)

Moreover, 36 students (11.1%) used at least three mobile devices, including tablets, laptops, and smart phones. A majority of the students, constituting 60.1% (194) of the sample,

reported frequent use of mobile devices for educational purposes. Additionally, 26.3% (85) of the respondents stated that they often use mobile devices specifically for their academic purposes.

Correlation Analysis

Correlation analysis was conducted to determine the nature and degree of relationship between independent and dependent variables. The independent variables are; performance expectancy, Effort Expectancy, Social Influence, Facilitating Condition, Perceived Playfulness, and Self- Management of learning (Table 3).

Table 3. Correlation Statistics

		Performance Expectancy	Effort Expectancy	Social Influence	Facilitation Condition	Perceived Playfulness	Self Management of Learning
Mobile Learning Acceptance	Pearson Correlation	.517**	.649**	.647**	.559**	.602**	.760**
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000
	N	323	323	323	323	323	323
**. Correlation is significant at the 0.01 level (2-tailed).							

Mobile Learning Acceptance is the dependent variable of the research. The presented correlation analysis output illustrates the relationships between Mobile Learning Acceptance and various factors. All factors displayed significant positive correlations at the 0.01 level (2-tailed). Specifically, Performance Expectancy correlated .517, suggesting a moderate association. Effort Expectancy (.649), Social Influence (.647), and Facilitating Condition (.559) indicate stronger relationships with Mobile Learning Acceptance, with Effort Expectancy being the strongest among them. Perceived playfulness, too, exhibited a strong correlation (.602). Self-management of learning showcased the strongest association with a correlation of .760, underscoring its paramount importance in mobile learning acceptance among students.

4.2. Multiple Regression Analysis

A multiple regression analysis was carried out to determine the impact of each independent variable on the dependent variable. Before examining the independent variables' individual beta scores, the model fit indices were evaluated. The ANOVA output was significant, affirming that the independent variables collectively predict the dependent variable with a commendable accuracy. Variables explained approximately 67% of the variance in Mobile Learning Acceptance, as inferred from the R^2 value.

Table 4. Multiple Regression Coefficients

Coefficients					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.177	.158		1.120	.264
Performance Expectancy	.053	.040	.064	1.336	.183
Effort Expectancy	.125	.050	.141	2.504	.013
Social Influence	.127	.050	.122	2.570	.011
Facilitating Condition	.116	.041	.116	2.808	.005
Perceived Playfulness	.107	.049	.096	2.191	.029
Self-Management of Learning	.464	.045	.463	10.319	.000
Dependent Variable: Mobile Learning Acceptance					

The regression output table (Table 4) provides insights into the factors influencing Mobile Learning Acceptance. Notably, "Self-Management of Learning" is the most potent predictor with a standardized coefficient (Beta) of 0.463 and a highly significant p-value, affirming its paramount influence. Other variables, such as "Effort Expectancy," "Social Influence," "Facilitating Condition," and "Perceived Playfulness," also have a significant impact, as indicated by their respective p-values below 0.05. In contrast, "Performance Expectancy" seems to have a weaker, non-significant influence on the acceptance of mobile learning, given its p-value of 0.183.

4.3. Testing of Hypotheses

Table 5. Summary Results of Correlation and Regression and Hypotheses Testing

Time	Hypotheses testing					
Hypothesis	Construct	*t* Statistics	*p* Values	*B* Value	*Confidence Interval*	Assessment
H_1	PE-> MLA	1.336	0.183	0.053	99.81%	*Partially Supported*
H_2	EE -> MLA	2.504	0.013	0.125	99.98%	*Supported*
H_3	SI -> MLA	2.570	0.011	0.127	99.98%	*Supported*
H_4	FC -> MLA	2.808	0.005	0.116	99.99%	*Supported*
H_5	PP -> MLA	2.191	0.029	0.107	99.97%	*Supported*
H_6	SML-> MLA	10.319	0.000	0.464	100%	*Supported*

Both the regression and correlation analysis results concerning the research hypotheses are summarized in Table 5. According to Table 5, hypotheses number 2,3,4,5 and 6 can be accepted whereas hypotheses 1 is partially accepted as only the correlation analysis statistics support it. To explain further, effort expectancy, social influence, facilitating condition, perceived playfulness and self-management of learning have a significant positive impact on the acceptance of mobile learning. Importantly, performance expectancy has a more vital link with mobile learning acceptance. However, according to the results of this research, it can be

concluded that the self-management of learning does have a considerable impact on mobile learning acceptance compared to other independent variables.

5. Discussions and Conclusions

Mobile learning, strengthened by telecommunications and connected device advancements, is reaping appreciation among learners. This is evident among Sri Lankan university undergraduates who have showcased a substantial awareness and understanding of the utility and benefits of this mode of learning. The correlation and regression analysis results affirm that the variables examined in the study significantly correlate with the undergraduates' acceptance of mobile learning. These findings echo the results of analogous previous studies (Ahmed, 2016), thereby validating the legitimacy of these outcomes. Interestingly, as extrapolated from UTAUT, performance expectancy emerges as a neutral influencer, paving the way for the forceful impact of other factors in the acceptance of mobile learning contrary to the arguments made by Arain et al. (2019). Notably, the study underscores the students' emphasis on learning self-management as a predominant rationale for adopting mobile learning, marking a crucial discovery about the contextual dynamics under investigation (Almaiah et al., 2019).

Theoretically, the study's fusion of TAM and UTAUT into a cohesive conceptual model (Venkatesh et al., 2003), substantiated statistically, unveils pivotal insights. It illuminates the nuances of mobile learning acceptance among undergraduates, facilitating a nuanced understanding that could be leveraged in exploring the blessing of analogous technological tools in educational realms. There is a need for the University’s official adoption and formulation of policy on mobile learning to guide implementation and unearth its full educational benefits. When such a policy is clearly articulated within the framework of the Institution, it will help in providing a firm foundation in teaching and learning with mobile devices to improve learning outcomes (Bansah & Agyei, 2022).

Managerially, the study's findings emphasize the imperative for institutional authorities to cultivate an infrastructure conducive to the seamless utilization of mobile devices and pertinent applications by students. Consequently, this paves the way for a recalibration of curricula, teaching methodologies, learning paradigms, and assessment strategies, aligning them more synergistically with the research findings and catering to a spectrum of student inclinations such as playfulness, effort expectancy, and perceived usefulness.

To conclude, this study confirms the growing acceptance of mobile learning among Sri Lankan undergraduates, underscoring the need for educational institutions to adapt their infrastructures and pedagogies. It highlights the importance of aligning teaching methods and curricula with mobile learning technologies to enhance student engagement and learning outcomes.

References

Ahmed, M.S. (2016). Technology acceptance of smartphones as mobile learning tools: A contextual comparative study of engineering and education colleges.

Ajzen, I. (1991). The Theory of Planned Behavior. Organizational Behavior and Human Decision Processes, 50, 179–211. doi: 10.1016/0749-5978(91)90020-T.

Alawattegam, K. K. (2020). Free education policy and its emerging challenges in Sri Lanka. European Journal of Educational Sciences, 7(1), 1-15.

Al-Adwan, A.S., Al-Madadha, A., & Zvirzdinaite, Z. (2018). Modeling students' readiness to adopt mobile learning in higher education: An empirical study. International Review of Research in Open and Distributed Learning, 19(1).

Alharbi, O., Alotebi, H., Masmali, A., & Alreshidi, N. (2017). Instructor acceptance of Mobile learning in Saudi Arabia: A case study of Hail University. International Journal of Business and Management, 12(5), 27.

Alkhalifah, T. (2018). An investigation of the acceptance of mobile learning by high school students in the K-12 Context in the Kingdom of Saudi Arabia (Doctoral dissertation, Flinders University, College of Science and Engineering).

Almaiah, M. A., Alamri, M. M., & Al-Rahmi, W. (2019). Applying the UTAUT model to explain the students' acceptance of mobile learning system in higher education. IEEE Access, 7, 174673-174686.

Ambarwati, R., Harja, Y. D., & Thamrin, S. (2020). The role of facilitating conditions and user habits: A case of Indonesian online learning platform. The Journal of Asian Finance, Economics,andBusiness,7(10),481–489. https://doi.org/10.13106/jafeb.2020.vol7.no10.481

Arain, A.A., Hussain, Z., Rizvi, W.H., & Vighio, M.S. (2019). Extending UTAUT2 toward acceptance of mobile learning in the context of higher education. Universal Access in the Information Society, 18(3), 659-673.

Balkaya, S., & Akkucuk, U. (2021). Adoption and use of learning management systems in education: the role of playfulness and self-management. Sustainability, 13, 1127. doi: 10.3390/su13031127

Bandura, A. (1986). Social foundations of thought and action: A social cognitive theory. Prentice-Hall, Inc.

Bansah, A. K., & Agyei, D. D. (2022). Perceived convenience, usefulness, effectiveness and user acceptance of information technology: Evaluating students' experiences of a Learning Management System, Technology, Pedagogy and Education.

Bonk, C. J., & Graham, C. R. (2006). Handbook of blended learning: global perspectives, local designs. San Francisco, CA: Pfeiffer Publishing. Cavus, N., & Ibrahim, D. (2009). M-learning: an experiment in using SMS to support learning new English language words. British Journal of Educational Technology, 40(1), 78-91.

Bonnici, L. J., Maatta, S. L., Klose, M. K., Julien, H., & Bajjaly, S. (2014). Instructional style and learner-centered approach: A cross-institutional examination of modality preference for online course delivery in a graduate professional program. Studies in Higher Education, 1-19.

Cavus, N., & Ibrahim, D. (2009). M-learning: An experiment in using SMS to support learning new English language words. British Journal of Educational Technology, 40(1), 78-91.

Chao, C-M. (2019). Factors Determining the Behavioral Intention to Use Mobile Learning: An Application and Extension of the UTAUT Model. Frontiers in Psychology, 10, 1652. doi: 10.3389/fpsyg.2019.01652

Criollo-C, S., Guerrero-Arias, A., Jaramillo-Alcázar, Á., & Luján-Mora, S. (2021). Mobile learning technologies for education: Benefits and pending issues. *Applied Sciences*, 11(9), 4111.

Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, 13(3), 319. doi: 10.2307/249008.

Davis, F., Warshaw, P., & Bagozzi, R. (1992). Extrinsic and Intrinsic Motivation to Use Computers in the Workplace. *Journal of Applied Social Psychology*, 22(14), 1111–1132.

Diaz, J.C.T., Carrión, P.V.T., & Moro, A.I. (2015). Aprenentatge mòbil: perspectives. International Journal of Educational Technology in Higher Education (ETHE), 12(1), 38-49

Eteokleous, N., & Ktoridou, D. (2009). Investigating mobile devices integration in higher education in Cyprus: faculty perspectives. *International Journal of Interactive Mobile Technologies*, 3(1), 38-48.

Evans, T. (2000). Flexible delivery and flexible learning: developing flexible learners? In Garrick, J. and Jakupec, V., editors, Flexible Learning, Human Resource and Organizational Development. Routledge, London, 34.

Field, A. (2009). Discovering statistics using SPSS for future research. *Journal of Marketing*, 49, 41-50.

Fishbein, M., & Ajzen, I. (1975). Belief, attitude, intention, and behavior: An introduction to theory and research. Reading, MA: Addison-Wesley.

Jan, S.R., Ullah, F., Ali, H., & Khan, F. (2016). Enhanced and effective learning through mobile learning: An insight into students' perception of mobile learning at the University Level. International Journal of Scientific Research in Science, Engineering, and Technology (IJSRSET), Print ISSN, pp. 2395-1990.

Jiang, Q., Chen, J., Wu, Y., Gu, C., & Sun, J. (2022a). A study of factors influencing the continuance intention to the usage of augmented reality in museums. *Systems*, 10, 73. doi:10.3390/systems10030073

Jiang, Q., Gu, C., Feng, Y., Wei, W., & Tsai, W.-C. (2022b). Study on the continuance intention in using virtual shoe-try-on function in mobile online shopping. Kybernetes, Epub ahead-of-print. doi:10.1108/K-12-2021-1346

Ju, T., Sriprapaipong, W., & Minh, D. (2007). On the success factors of mobile learning. Paper presented at the 5th International Conference on ICT and Higher Education, Bangkok. Retrieved from http://www.mendeley.com/research/success-factors-mobile-learning

Jung, H. (2018). Trends and future directions of corporate e-learning contents. *The Journal of Industrial Distribution & Business*, 9(2), 65–72. https://doi.org/10.13106/ijidb.2018.vol9.no2.65

Khan, U., Zhang, Y., & Salik, M. (2020). The impact of information technology on organizational performance: The mediating effect of organizational learning. *The Journal of Asian Finance, Economics, and Business*, 7(11), 987–998. https://doi.org/10.13106/jafeb.2020.vol7.no11.987

Laurillard, D., & Pachler, N. (2007). Pedagogical forms of mobile learning: framing research questions. In N. Pachler (Ed.), Mobile learning: towards a research agenda (pp. 33-54). London: WLE Centre, IOE.

Li, W. (2010). Virtual knowledge sharing in a cross-cultural context. Virtual knowledge sharing in a cross-cultural context, 14(1), 38–50.

Liu, Y., Li, H., & Carlsson, C. (2010). Factors driving the adoption of m-learning: An empirical study. Computers & Education, 55(3), 1211–1219.

Low, L., & O'Connell, M. (2006). Learner-centric design of digital mobile learning. Online Learning and Teaching Conference – OLT Conference 2006. 26 September, Brisbane, Australia. Retrieved March 15, 2011.

Lowenthal, J. N. (2010). Using mobile learning: Determinants impacting behavioral intention. *The American Journal of Distance Education*, 24(4), 195–206.

Mardia, K. V. (1970). Measures of multivariate skewness and kurtosis with applications. Biometrika, 57(3), 519–530.

McFarlane, A., Roche, N., & Triggs, P. (2007). Mobile learning: Research findings: Report to becta. Retrieved Dec. 4th, 2012, from http://www.lopendleren.nl/documenten/achtergrondinformatie/Becta_mobile-learning-july07.pdf

Mehdipour, Y., & Zerehkafi, H. (2013). Mobile learning for education: Benefits and challenges. *International Journal of Computational Engineering Research*, 3(6), 93–101.

Moore, G. C., & Benbasat, I. (1991). Development of an instrument to measure the perceptions of adopting an information technology innovation. *Information Systems Research*, 2(3), 192–222.

Nawaz, S.S., & Mohamed, R. (2020). Acceptance of mobile learning by higher educational institutions in Sri Lanka: An UTAUT2 approach. *Journal of Critical Reviews*, 7(12), 1036–1049.

Nawaz, S.S., & Thelijjagoda, S. (2015). Sri Lankan Citizens' Use Behavior towards E-Government Services. *European Journal of Business and Management*, 7(8), 219–231.

Nikolopoulou, K. (2018). Mobile learning usage and acceptance: perceptions of secondary school students. *Journal of Computer Assisted Learning*, 5, 499–519. doi: 10.1007/s40692-018-0127-8.

Norris, D. M., Mason, J., & Lefrere, P. (2003). Transforming e-knowledge: A revolution in the sharing of knowledge. Ann Arbor, MI: Society for College and University Planning.

Onah, D. F., Pang, E. L., & Sinclair, J. E. (2021). Investigating self-regulation in the context of a blended learning computing course. *The International Journal of Information and Learning Technology,* 39(1), 50–69

Onaolapo, S., & Oyewole, O. (2018). Performance Expectancy, Effort Expectancy, and Facilitating Conditions as Factors Influencing Smart Phones Use for Mobile Learning by Postgraduate Students of the University of Ibadan, Nigeria. *Interdisciplinary Journal of e-Skills and Lifelong Learning,* 14(1), 95–115.

Rogers, E. M. (2003). Elements of diffusion. Diffusion of innovations, 5, 1–38.

Samsudeen, S. N., & Mohamed, R. (2019). University students' intention to use e-learning systems. *Interactive Technology and Smart Education*, 16(3), 219–238.

Senaratne, S. I., & Samarasinghe, S. M. (2019). Factors affecting the intention to adopt m-learning. *International Business Research*, 12(3), 150-164.

Seppälä, P., & Alamäki, H. (2003). Mobile learning in teacher training. *Journal of Computer Assisted Learning*, 19, 330–335.

Sharma, S. K., Sarrab, M., & Al-Shihi, H. (2016). Development and validation of mobile learning acceptance measure. *Interactive Learning Environments*, 25(7), 847–858.

Sharpe, M. (2003). Disruptive devices: mobile technology for conversational learning. *International Journal of Continuing Engineering Education and Lifelong Learning*, 12(5/6), 504–520.

Smith, P., Murphy, K., and Mahoney, S. (2003). Towards identifying factors underlying readiness for online learning: An exploratory study. Distance Education, 24(1):57–67. 34, 78, 79

University Grant Commission. (2021). Sri Lanka University Statistics 2021. https://www.ugc.ac.lk/index.php?option=com_content&view=article&id=2404%3As

Suki, N. M., & Suki, N. M. (2011). Exploring the relationship between perceived usefulness, perceived ease of use, perceived enjoyment, attitude, and subscribers' intention towards using 3G mobile services. *Journal of Information Technology Management*, 22(1), 1-7.

Sulaiman, A., & Dashti, A. (2018). Students' satisfaction and factors in using Mobile learning among college students in Kuwait. *EURASIA Journal of Mathematics, Science, and Technology Education*, 14(7), 3181-3189.

Tan, G. W. H., Ooi, K. B., Leong, L. Y., & Lin, B. (2014). Predicting the drivers of behavioral intention to use mobile learning: A hybrid SEM-Neural Networks approach. *Computers in Human Behavior*, 36, 198-213.

Taylor, J., Sharples, M., O'Malley, C., Vavoula, G., & Waycott, J. (2006). Towards a task model for mobile learning: a dialectical approach. *International Journal of Learning Technology*, 2(2-3), 138-158.

Taylor, S., & Todd, P. (1995a). Assessing IT usage: The role of prior experience. MIS Quarterly, 561-570.

Thompson, R. L., Higgins, C. A., & Howell, J. M. (1991). Personal computing: toward a conceptual model of utilization. *MIS Quarterly*, 125-143.

Uzunboylu, H., Cavus, N., & Ercag, E. (2009). Using mobile learning to increase environmental awareness. *Computers & Education*, 52(2), 381-389.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User Acceptance of Information Technology: Toward a Unified View. *MIS Quarterly*, 27(3), 425–478. doi: 10.2307/30036540.

Venkatesh, V., Thong, J. Y. L., & Xu, X. (2012). Consumer Acceptance And Use Of Information Technology: Extending The Unified Theory Of Acceptance And Use Of Technology Viswanath. *Forthcoming in MIS Quarterly*, 36(1), 157–178. doi: 10.1016/j.rser.2016.06.093.

Virvou, M., & Alepis, E. (2005). Mobile educational features in authoring tools for personalized tutoring. *Computers & Education*, 44, 53-68.

Wang, T., Jung, C., Kang, M., & Chung, Y. (2014). Exploring determinants of adoption intentions towards enterprise 2.0 applications: An empirical study. *Behaviour & Information Technology*, 33(10), 1048–1064. https://doi.org/10.1080/0144 929X.2013.781221

Wang, Y., Wu, M., & Wang, H.-Y. (2009). Investigating the determinants and age and gender differences in the acceptance of mobile learning. British Journal of Educational Technology, 40(1), 92–118.

Yi, C. C., Liao, W. P., Huang, C. F., & Hwang, I. H. (2009). Acceptance of mobile learning: a respecification and validation of information system success. In Proceedings of World Academy of Science, *Engineering, and Technology*, 41, 2070-3740.

Zhang, C., Cubbin, C., & Ci, Q. (2019). Parenting stress and mother–child playful interaction: the role of emotional support. J. Fam. Stud. 25, 101–115. doi: 10.1080/13229400.2016.1200113

Zhang, D. (2003). Delivery of personalized and adaptive content to mobile devices: a framework and enabling technology. *Communications of the Association for Information Systems*, 12, 183-202.