



## Research Article

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# Critical Success Factors for Performance Oriented M-Learning in Sri Lanka

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## Abstract

Students engaged with multi tasks commitments demand modern learning environments facilitated with virtual engagements and high-tech contact methods. Thus, they are looking for such technically equipped learning facilities avoiding physical presence where they can learn at anytime and anywhere. The mobile devices provide many facilities for education sector providing execution supports for M-learning. This has reshaped the education model of many countries and institutions. Sri Lanka is an emerging economy and one of the countries in Asia reports higher level of educational priorities. Many of public sector universities and higher educational institutions have adopted M-learning in line with the government educational policies and some international funding options. However, it has attributed with some challenges in terms of strategy, motivation and performances. Thus, critical success factors on M-learning was the main research question addressed by this paper. This paper examines the critical success factors for improving performance-oriented M-Learning concerning nine factors: Perceived Ease of Use, Personal Innovativeness, Perceived Usefulness, Performance Expectancy, Self-Management of Learning, Effort Expectancy, Social influence, Perceived Self Efficacy and Perceived Playfulness. The factors were constructed in relation to the Technology Acceptance Model, the Unified Theory of Acceptance and Use of Technology Model and several other factors from the literature. The main research strategy used was the literature review with some attention given to cases and practices based on Sri Lankan context. Paper discusses different scenarios and cases guiding future research directions. Authors conclude research avenues by highlighting future research directions for the extended studies.

**Keywords:** Critical Success Factors, M-learning, Sri Lanka, Technology Acceptance Model, Unified Theory of Acceptance & Use of Technology

## 1. Introduction

Technological advancements have been reshaping the digital age business models and service processes whereas mobile technologies play a critical role within (Ismail, 2018). Mobile devices and technologies are increasingly attached to most of peoples' day to day lives. Uden (2007), points out that more and more people are getting mobile-literate. People tend to invest in mobile devices which is considered as an important step to improve the quality of life in this dynamic society (Boja & Batagan, 2009a; Ismail, 2018). M-learning is defined as a distance learning model which can facilitate

the educational needs with the use of mobile or portable technologies/devices such as smart phones, tablets, etc., which enables anywhere anytime learning experience (Andronico et al., 2003; Biggs & Justice, 2011; Cook, Holley, & Haynes, 2006; Keegan, 2005; Korucu & Alkan, 2011a; Sharples, 2000; Traxler, 2018; Wang, Wu, & Wang, 2009). Thus, it denotes that mobile technology provides the potential for learning opportunities for geographically dispersed persons and people who find it difficult to go for traditional classroom environments because of their busy schedules, work and families. This affects the professionals who work in different fields. Mostly, professionals are most of the time on the move. They have to update their knowledge and should facilitate learning environments which provides ongoing learning, which is independent of the time and place. According to their busy schedules they search for innovative ways to help them on knowledge acquisition and work more efficiently in the competitive environment. In today's competitive environment, work related learning and constructive progressive learning with flexibility are critical to survive in the business world. M-learning offers the users to learn anywhere and anytime (Boja & Batagan, 2009a; Milošević, Živković, Manasijević, & Nikolić, 2015; Wang et al., 2009). Thus, it denotes that m-learning is the future of the long-term ongoing learning and the best solution for busy people to facilitate learning. As most of the professionals use mobile technologies for their work purposes, adopting mobile technology for learning would be definitely a stepping-stone for the success of their career.

In order to have a performance oriented mobile learning and to adopt the learner for mobile learning, there should be factors that influence the mobile learner. Thus, it is significant to identify the critical success factors which will benefit the mobile learner, mobile learning application developers and also mobile telecommunication companies. In view of the fact that mobile learning is an emerging technology to enhance knowledge, many researchers are focusing on identifying various dimensions of mobile learning (Abu-Al-Aish & Love, 2013; Ju, Sriprapaipong, & Minh, 2007; Liu, Li, & Carlsson, 2010; Mills, Bolliger, & McKim, 2018; Rosman, 2008; Thompson, Higgins, & Howell, 1991; Yang & Du, 2018; Yi, Jackson, Park, & Probst, 2006). Hence, it could be believed that there should be a positive influence on professionals to mobile learning, so that identifying critical success factors for performance oriented mobile learning are of greater value.

Mobile technology is growing rapidly in the world. With the rapid growth of mobile devices, the new era, mobile learning takes its attention. Mobile learning (M-Learning) is the future generation of learning for lifetime continuous learning. Knowledge enhancement is vital for the survival in the industries and, professionals in companies have a major impact on the growth of the companies. Mobile learning is the use of mobile and portable technologies for learning such as Personal Digital Assistants (PDA), palmtops and handheld Personal Computers (PC) to smart phones and mobile phones. These devices are friendly personal devices which is easy to use and helps all walks of life in diverse surroundings (Boja & Batagan, 2009b; Ismail, 2018; Keegan, 2005). Cook, Holley and Haynes (2006) highlighted that mobile devices are becoming more and more sophisticated and dominating so that learning partners are able to take the advantage of that. This is the latest technology that can be easily adopted to peoples' daily lifestyles. The mobile usage with high technologies is increasing incredibly and the technology facilities and accessibility becomes more augmented.

Professionals with their busy schedules and frequent travels makes it difficult to classroom learning. With the enhanced technology of mobile devices, the knowledge enhancement is not restricted to classroom learning. It is imperative that professionals should be aware of the latest strategies, technologies and news around the world for a competitive advantage. Professionals should seek knowledge; thus, it is important to have a knowledge society. According to Hargreaves (2003), knowledge society is a learning society. Thus, a mobile knowledge society should be built to enhance the skills and knowledge of the professionals. Most of the professionals use mobile devices for their working purposes; thus, the use of M-learning for their knowledge acquisition will definitely benefit in gaining new knowledge acquisition required for enhancing their knowledge, thereby enhance the efficiency and productivity.

### 1.1 M-learning in Sri Lankan Context

Sri Lanka has a high mobile penetration and during 2007 it had the highest penetration in the South Asian region with subscribers of 8 million with 38.2 percent out of total population (Gunawardana & Ekanayaka, 2009). With the attention to mobility, mobile devices have been very popular among Sri Lankan people and have had a far-fetched growth during the past decades. According to Telecommunication Regulatory Commission (TRC) of Sri Lanka (2019), mobile phone users grew from 17.2 million in 2010 to 33.4 million in 2019. Thus, it implies that, with the high mobile penetration and with the support of the mobile service providers such as Mobitel, Dialog and Hutch, now mobile learning can be developed within Sri Lanka as a mode of learning. M-learning in Sri Lanka is expected to grow with the support of Ministry of Education (MOE) Sri Lanka. There has been a pilot project of Smart classroom with use of tablets in learning which was inaugurated at the Jayewardenepura Boys' School (MOE, 2020). Thus, this enlighten the promise of establishing m-learning in the school community. There is a plan to rollout this pilot project in 25 selected schools in Sri Lanka. The learning is carried out in English medium with the use of tablet PCs (MOE, 2020).

M-learning is a new learning platform in Sri Lanka. There were distance learning platforms available, but with use of mobile technologies is still in the booming stage (Gunawardana & Ekanayaka, 2009). M-learning is still new to Sri Lankan population and it is vital for the growth of educational systems and also for individuals to enhance their knowledge in this busy mobile world. M-learning was non-existent in Sri Lanka until very recently (Gunawardana & Ekanayaka, 2009). Local universities in Sri Lanka had initiated many blended learning facilities enabling more connective and exposed learning environment for students. Such innovative learning methods were adopted in Sri Lankan education sector to improve the quality and effective engagements with the learners (Liyanagunawardana, Rassool, & Williams, 2013). Thus, this enabled the professionals to pursue their education without considering the place and time. This denotes that universities can enable to access their faculties through the use of m-learning and can enable to access the environment from anytime anywhere in the world providing access to many professionals who are busy and always on the move. In addition, it also can help the special need people to participate in learning.

When m-learning is considered as a learning enabler, the barriers or the challenges for the success of m-learning should be considered, such as the trust towards the wireless network capabilities or availability, the requirement of mobile applications with better user interface designs which facilitates better user experience, the learner trust on providing their information to a mobile environment, additional learning curve require for non-techy savvy professionals, the fear of whether they will be isolated or separated (Karunaratna & Thavareesan, 2018). Thus, this implies that these barriers are needed to be addressed when implementing m-learning environments. In addition, the limitations, such as, screen size, battery lifetime, processor speed, bandwidth, storage capacity and data input capabilities also should be addressed (Iqbal & Qureshi, 2012; Karunaratna & Thavareesan, 2018; McFarlane, Roche, & Triggs, 2007).

Gunawardana and Ekanayaka (2009) conducted a study on attitude towards the intention to use m-learning with 210 medical representatives. Karunaratna and Thavareesan (2018) conducted a research to evaluate the readiness of students to use m-learning of Faculty of Science of Eastern University in Sri Lanka with 150 students in the faculty. According to that, the students were ready to use mobile phones for learning process. Fazeena, Ekanayaka and Hewagama (2016) conducted an analysis of initiation of m-learning opportunity to learning English language among School Leavers in Sri Lanka. Still the contribution of existing literature on m-learning is not sufficient. Thus, more research on different aspects must be conducted (Fazeena et al., 2016; Gunawardana & Ekanayaka, 2009; Karunaratna & Thavareesan, 2018)

## 1.2 Purpose of the Study

Mobile learning is referred to as any kind of learning or educational provision where the sole or dominant technologies are mobile technologies and the learning opportunity is realized by learner not staying at a fixed or predetermined location (Mohammad, Mamat, & Isa, 2012). Factors driving m-learning adoption is claimed as a context which is not being properly researched or understood by the educational institutions and business communities (Liu, Li, & Carlsson, 2010). Some argued that Technology Acceptance Model and the Unified Theory of Acceptance and Use of Technology can be related to success factors of mobile learning (Jairak, Praneetpolgrang, & Mekhabunchakij, 2009; Milošević et al., 2015). Currently, the TAM model consists of two beliefs: perceived usefulness, perceived ease of use (Venkatesh, Morris, Davis, & Davis, 2003). The model does not look at how personal behaviors affect the acceptance of new technologies or how the society beliefs affect the acceptance. It only focuses on how using a particular system would enhance his or her job performance and how a particular system would be free of errors (Venkatesh et al., 2003). Some argue that personal innovativeness (Abu-Al-Aish & Love, 2013; Liu et al., 2010), Performance Expectancy, Effort Expectancy, Social influence, Self-Management of Learning (Abu-Al-Aish & Love, 2013), Perceived Self Efficacy (Gunawardana & Ekanayaka, 2009), Perceived Playfulness (Abu-Al-Aish & Love, 2013; Agarwal & Karahanna, 2000) also affects mobile learning. Meanwhile, there is no single theory or model which supports all these factors. Therefore, this paper attempts to investigate TAM and UTAUT model with new ingredients Personal Innovativeness, Performance Expectancy, Effort Expectancy, Social influence, Self-Management of Learning, Perceived Self Efficacy and Perceived Playfulness. In addition, still m-learning is in its early stages in Sri Lanka and Sri Lanka finds challenges of adopting into digitalized models in various sectors yet (Rassool & Dissanayake, 2019). Thus, this paper discusses the critical success factors for performance-oriented learning. Further, this paper as a conceptual review contributes to the existing knowledge base and provide insights on future research directions. In addition, paper presents the cases in relation to the behavioral studies while highlighting the industry usage.

## 1.3 Methodology

This paper focus on arguments and explanations that are mainly supported by empirical evidences and associated theoretical contents, thus, follows a deductive approach. Literature review was employed as the main research tool in which research papers, journals, white papers, conference papers and other industry publications were used to review the concepts and applications pertaining to critical success factors for performance oriented mobile learning. Then, evaluated the current frameworks, theories, models and the related future work. In addition, paper attempted to discuss cases found within the application of Perceived Ease of Use, Personal Innovativeness, Performance Expectancy, Social Influence, Effort Expectancy, Self-Management of Learning, Perceived Usefulness, Perceived Self Efficacy and Perceived Playfulness factors related to mobile learning. Paper highlights case and scenario evidences providing attention to Sri Lankan context. This is prepared as a concept paper whereas the arguments were empirically supported. Finally, review of the cases was made and conclude the paper by providing insights to future research avenues in relation to the discussions made.

## 2. Review of Literature

### 2.1 Theoretical Review

There are various dimensions of variables identified by previous researchers. Among them Technology Acceptance Model (TAM) which was introduced by Davis (Davis, 1985; O’Cass & Fenech, 2003) and the Theory of Reasoned Action (TRA) developed in Social Psychology (Fishbein & Ajzen,

1975; Rathirane & Semasinghe, 2012) are focused on the technology. The TRA has been used mainly to justify the attention in the field of consumer behavior to predict the intention and behaviors of consumers. Further, it is used to identify the attempts of how and where the target customers behaviors change (Sheppard, Hartwick, & Warshaw, 1988). TRA was the basis for TAM and TAM was proposed to explain why a user accepts or rejects Information technology by adapting TRA (Ajzen, 1991; Davis, 1985, 1989). Davis (1989) argued that because of explanatory power, parsimony and robustness TAM model has an outstanding reputation and on the other side TRA hypothesizes beliefs affect attitude which stimulates intention and intention carries behaviors (Ajzen & Fishbein, 1980). Davis (1989) further brings out that TAM adopts this belief-attitude-intention-behavior relationship which highly affects the acceptance of mobile learning by the mobile technology users.

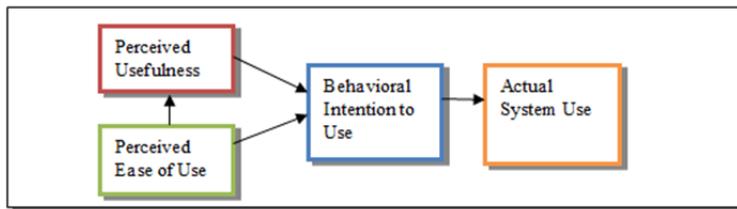


Figure 2.1: TAM Model

Source: Davis (1985), Davis (1989), Venkatesh et al. (2003)

Liu et al. (2010) has produced a model based on this Technology Acceptance Model, by conducting a survey based on the data collected from 230 participants, which resulted in the addition of two additional ingredients Perceived long-term usefulness and personal innovativeness. Moreover, he explores that personal innovativeness and perceived near-term or long-term usefulness have significant impact on intention to adopt m-learning. Also, Liu et al. (2010) points out that perceived long-term usefulness is significantly affecting the perceived near-term usefulness.

Venkatesh et al. (2003) has explored eight models which were generally used in exploring the user acceptance of technology to come up with the Unified Theory of Acceptance and Use of Technology (UTAUT) model which as a result of that has been used in the study of attitude towards m-learning. They have found performance expectancy (Abu-Al-Aish & Love, 2013; Y. Liu et al., 2010), effort expectancy and social influence (Abu-Al-Aish & Love, 2013) are facilitating conditions to be the major determinants of usage behavior.

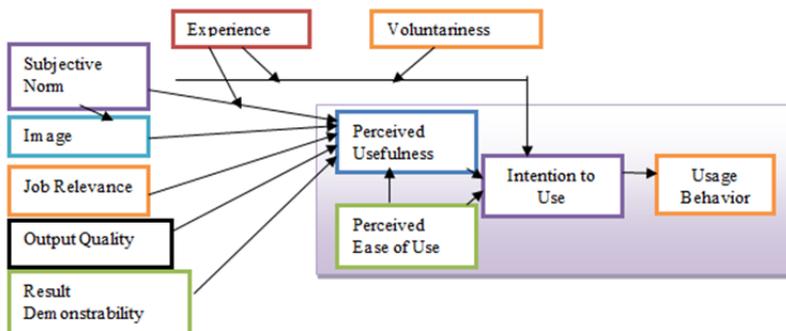


Figure 2.2: UTAUT Model

Source: Venkatesh et al. (2003)

Both TAM and UTAUT model lack recognizing the individual differences such as age, gender and educational levels (Gunawardana & Ekanayaka, 2009). However, researchers such as Liu et al. (2010), Suki and Suki (2011), Fadare, Babatunde, Akomolafe and Lawal (2011), Donaldson (2011), Channar, Khoumbati, Ujan, Bhutto and Pathan (2019), Yang and Du (2018) used TAM as the base model which focuses on the behavioral intention towards mobile learning. Theory of Planned Behavior (TPB) model was used to understand the aspects of human perception that would later determine their behavior in accepting of a good or service. This confirms the assumed role of the system in the probability of acceptance of the system and criteria to play with the use of perceived ease of use, perceived usefulness and subjective norms (Ajzen, 1991). There are two key factors which is perceived usefulness (PU) and perceived ease of use (PEOU) which predicts the development of an innovation in relation to intention and are linked with TAM model development (Davis, 1989; Channar et al., 2019; Yang & Du, 2018). Some argue that Personal Innovativeness (Abu-Al-Aish & Love, 2013; Y. Liu et al., 2010), Performance Expectancy, Effort Expectancy, Social influence, Self-Management of Learning (Abu-Al-Aish & Love, 2013), Perceived Self Efficacy (Gunawardana & Ekanayaka, 2009), Perceived Playfulness (Abu-Al-Aish & Love, 2013; Agarwaal & Karahanna, 2000) also affects mobile learning. Meanwhile, there is no single theory or model which supports all these factors. Thus, theoretical investigations yet needs to be addressed in examining these determinants.

## 2.2 Empirical Review

### 2.2.1 Mobile Learning

Previous researchers define this new learning environment the new term 'M-Learning' or 'Mobile Learning' in different ways. Rosman (2008) defines mobile learning as "using mobile technologies to enhance the learning process". Further, he points out that mobile learning allows on-the-go professionals to connect to training courses anytime and anywhere. Korucu and Alkan (2011) defines mobile learning as "a point interacted to provide mobile computer technologies and internet-based learning to be every time, everywhere learning experience". According to Keegan (2005) mobile learning is with the use of pocket PCs, PDAs and mobile phones, conducting the education.

Korucu and Alkan (2011) explains mobile learning as a distance learning model where with the support of mobile devices conduct the educational needs and mobile learning can be used to support traditional learning (Wang et al., 2009) as well as distance learning (Chee, Yahaya, Ibrahim, & Hasan, 2017). Biggs and Justice (2011) indicated that it is a learning delivery method using mobile technology. Traxler (2018) highlights mobile learning as any kind of educational facility where handheld or palmtop devices play the sole or dominant role. Andronico et al. (2003) highlights that it is any method of learning or teaching and studying which carries out in a mobile environment or with the use of a mobile device, such as smart phones, tablet PCs, etc. M-learning is a lifelong learning activity that can occur in fluctuating communities and associated with ordinary life situations in which people continually enhance their skills and update their knowledge (Sharples, 2000).

Learners use mobile or portable technologies for learning and, the ubiquity and convergence of mobile technologies make them more influential tools for more informal and personalized learning (Cook et al., 2006) while using devices which are easy to carry with them everywhere are regarded as friendly in a variety of diverse settings (Keegan, 2005). Brink (as cited in Korucu and Alkan, 2011) points out mobile learning as micro learning which training titbits are delivered via a mobile device such as a Smartphone, MP3 player, net book, Kindle, or iPad. It is predicted that mobile learning is to be one of the top trends in the learning field.

Mobile technologies are the least stable component in mobile learning (Frohberg, Göth, & Schwabe, 2009). During the past few years, technology has changed rapidly which has resulted in the transformation of the learning methodologies. For the success of m-learning, the acceptance of mobile learning should have a positive behavior on the users' intention to use mobile technology for their knowledge enhancement. From the literature, previous researchers have discovered the factors

affecting peoples' behavioral intention to use mobile learning. But, researches in Sri Lankan context are in short supply (Liyaganunawardena et al., 2013). It is required to find out the factors that have been discovered around the world to suit the Sri Lankan context. Although the researchers have found many factors in the literature review, this study is focused on nine main factors which were found to be more related to the acceptance of this new technology, as still the mobile learning is new to Sri Lankan population. The literature review of this was mainly focused on finding out the factors that have a relationship with the behavioral intention to use.

### 2.2.2 Perceived Ease of Use

Perceived ease of use is “the degree to which the individual considers that the usage of a particular technology does not entail extra effort; the greater the perceived complication, the lower the degree” and has a positive effect on perceived usefulness (O’Cass & Fenech, 2003; Venkatesh & Davis, 2000). Marchewka and Kostiwa (2007) drew upon conclusion that “ease of use may become non-significant over extended and sustained usage. Therefore, perceived ease of use can be expected to be more salient only in the early stages of using a new technology”. Mobile learning is a new enhancement of the educational process. It is still in the initial stages of the educational process; thus, the ease of use should have an impact on influencing the user for mobile learning.

Findings of study conducted by Clark (as cited in Lu, Yao, & Yu, 2005) shows that ease of use is a single factor which influence the wide-ranging use of wireless handheld devices. An individual might have a higher intention to adopt mobile learning, if a person thinks mobile learning is easy to operate while inevitably increase the intention to adopt mobile learning. Therefore, can hypothesize perceived ease of use of mobile learning will have a positive effect on behavioral intention to adopt mobile learning for their knowledge enhancement.

### 2.2.3 Perceived Usefulness

Perceived usefulness is derived from the Innovation Diffusion Theory which has two distinct aspects; near-term usefulness and long-term usefulness (Chau, 1996). It is defined as “the degree to which users believe that usage of the system would boost their learning capabilities” (Davis, 1989). Efficiency and efficacy of learning are considered as the measurements in proving the results of improvements in mobile learning (Bajaj & Nidumolu, 1998; Iqbal & Qureshi, 2012). TAM claims that perceived usefulness has a direct impact on future intention to use the systems (Bajaj & Nidumolu, 1998). The usage of specific information systems is affected by perceived ease of use and perceived usefulness in different sectors (Iqbal & Qureshi, 2012; Liu et al., 2010; Lu et al., 2005; Nayanajith & Dissanayake, 2019).

In the studies of Thompson, Higgins and Howell (1991), they have adopted the concept of near-term or long term usefulness in relation to the acceptance of personal computers related to job-fit and defined as “the extent to which an individual believes that using a technology can enhance the performance of his or her job” (Dwivedi et al., 2019). Davis (1989) states that “Perceived usefulness is considered to be an extrinsic motivation for the user and is defined as the degree to which a person believes that the use of a particular system can enhance work performance”. Both Davis (1989) and Thompson et al. (1991) studies predict that perceived usefulness of the technology is directly related to the work performance and it enhances the efficiency of work. This will definitely influence the mobile learner. The learner always seeks to compete with the co-workers, which require work performance drastically. Therefore, the use of this new technology, the mobile technology for learning will definitely boost their work performance giving the steppingstone to enhance the skills by acquiring knowledge required to compete in the busy environment.

Studies of Chiu and Wang (2008) further stated that improving the performance in learning, productivity and effectiveness represent students perceived near-term usefulness when targeting a job, raise on salary, or promotion on the job are bases of perceived long-term usefulness. People tend

to focus on both long-term and near-term usefulness. If they are likely to think there is perceived long-term and near-term usefulness, it will motivate the learner to use mobile learning as their learning method. Eccles and Wigfield (2002) also stated that to gain achievements on the future goals' students may adopt a learning activity even though they lack the interest in self-centered learning activities. The past researches reveal that there is a positive feeling of perceived near-term/long-term usefulness for behavioral intention.

#### 2.2.4 Personal Innovativeness

According to Agarwal and Prasad (1998), personal innovativeness refers to individuals' willingness to try out any new information technology. Nowadays, most individuals are keen to try new things and always look for innovative things (Mills et al., 2018). When it comes to learning, mobile learning tends to be an innovative way for learning. When users are more personally innovative, more the success of mobile learning becomes. People who are higher in personal innovation compared with those with lower level of innovativeness are more motivated towards new information system innovations (Lu et al., 2005). Thus, high level of personal innovativeness is an important factor for intention to use the new technology. More the people are personally innovative more the people tend to use mobile learning. Personal innovativeness is an important interpreter for perceived ease of use (Lu et al., 2005; Yi et al., 2006).

Liu (2011) points out that "innovative individuals tend to be more daring, venturesome and risk takers, and they are more likely to accept a new IT innovation despite a high level of uncertainty and risk related to the technology adoption". More the people are personally innovative more the risk takers they are. When using new learning environment, the users should take the risk of accepting the new environment. The past researches predict that there is a relationship between the personal innovativeness and intention to use the new technology.

#### 2.2.5 Performance Expectancy

Performance expectancy is originally defined as "the degree to which an individual believes that using the system will help him or her to attain gains in job performance". Venkatesh et al. (2003) pointed out that performance expectancy is similar as perceived usefulness in some extent. Gunawardana and Ekanayaka (2009) stated that performance expectancy is a collection of factors which can be observed individually or collectively with relation to intention to use. The factors include job-fit, outcome expectations, relative advantage, extrinsic motivation and perceived usefulness. Further, findings of studies show that performance expectancy (PE) has a significant effect on the intention to use (Channar et al., 2019; Grant & Danziger, 2007; Park, Yang, & Lehto, 2007; Wang et al., 2009). Wang et al. (2009) drew upon the conclusion that performance expectancy has a positive influence on the intention to use mobile learning. Most of the studies found in recently derived the conclusion that PE has a positive relationship with intention to use mobile learning. Thus, educational institutions have to address this matter as a motivational clue to encourage learning-partners to get used to M-learning practices. Some cultural specific matters may obstruct students to adopt the high-tech learning atmospheres. Thus, establishing performance expectancy via seminars, displays, simulation workshops and precursor programs could encourage more M-learning practices.

#### 2.2.6 Effort Expectancy

Effort Expectancy is the second construct of the UTAUT model (Venkatesh et al., 2003). Venkatesh et al. (2003) defined effort expectancy as the "degree of ease associated with the system by an individual". Effort expectancy combines the factors perceived ease of use and complexity. Venkatesh et al. (2003) further stated that effort expectancy is more important for individuals with less experience and with accretion of experience the effort expectancy to intention to use decreases. More

experienced a person is the more familiar with the technology, so the effort required to adopt that technology is less. This depicts that there is a significant relationship between effort expectancy and intention to use mobile learning. Further, Grant and Danziger (2007), Park et al. (2007) and Wang et al. (2009) shows that there is a relationship between effort expectancy and intention to use. Thus, institutional strategies must be there to motivate students to practice M-learning methods as a push for them to be friendly with the learning systems.

### 2.2.7 Social influence

Venkatesh et al. (2003) defined social influence as “the degree to which an individual perceives that important others believe he or she should use the new system”. Social influence is a construct of TAM and it is suggested to be a determinant of behavioral intention. The past researchers found that social influence makes the decision of learners whether to accept new learning environment or not (Venkatesh & Davis, 2000). Al-Qeisi (2009) also states that “individual’s intention to adopt (or continue usage of) the IT is determined by two factors: one reflecting personal interest and one reflecting social influence. The first refers to attitudes or personal evaluation of performing the behavior, which may be formed based on three general classes of information: information concerning past behavior, affective information, and cognitive information” (Agarwal & Karahanna, 2000). The second, social influences (subjective norms), refers to the individual’s insight towards social pressures whether to adopt or not or to continue or not using the IT (Agarwal & Karahanna, 2000).

According to Venkatesh and Davis (2000), Venkatesh et al. (2003) and Al-Qeisi (2009) it shows that social influence is a significant influencing factor for mobile learning. Miller, Ranier and Corley (2003) points out that the decision of learner influences the others such as peers and instructors. Thus, it means social influence has a greater impact on the intention to use mobile learning.

### 2.2.8 Self-Management of Learning

Smith, Murphy and Mahoney (2003) points out that self-management of learning is the “extent to which an individual feels he or she is self-disciplined and can engage in autonomous learning”. It is essential the self-management of learning in the context of mobile learning. In order to take the maximum benefit from learning through mobile learning, self-management or self-direction for learning is a must. The user gets the ability to learn anywhere anytime, which means the user, should keep the self-direction towards learning to get the maximum gain from it.

Mobile learning is a kind of distance learning method. Therefore, the flexibility to learn from anywhere at any time leads to the freedom of learning at user’s own convenience. If a person lacks the level of self-management, it decreases the intention to use mobile learning. McFarlane, Roche, and Triggs (2007) pointed out, “the increased learner autonomy and personalization posit a heightened requirement for appropriate self-direction learning capability, such as capabilities of locating and evaluating resources, critical thinking and reflecting on their own learning”. In the findings of Wang et al. (2009) it is explored that there is a positive significant relationship between self-management of learning and intention to use m-learning where the results revealed that better autonomous learning skills are more likely to adopt m-learning. To have a better learning environment and to get the maximum gain of its self-direction is imperative.

### 2.2.9 Perceived Self-Efficacy

Perceived self-efficacy is the belief of ability to use the mobile devices effectively in a given scenario. Perceived self-efficacy has been defined as “people’s beliefs about their capabilities to exercise control over their own level of functioning and over events that affect their lives” Bandura (as cited in Ajzen, 2002). Ju, Sriprapaipong and Minh (2007) findings prove that perceived self-efficacy has a significant

impact on perceived ease of use and has an impact on intention to use. Thus, it is assumed that there is a relationship between perceived self-efficacy and the intention to use mobile learning.

### 2.2.10 Perceived Playfulness

Perceived playfulness is a motivating factor for the acceptance of technology. As stated by Agarwaal and Karahanna (2000), when an individual completely immerse themselves in a technology with the intention of establishing pleasure out of it, then the intrinsic motivation occurs. The researchers show that Perceived Playfulness, perceived enjoyment and cognitive absorption are all aspects of intrinsic motivation. Wang et al. (2009) in the studies exposed that there is a significant positive relationship between perceived playfulness and intention to use m-learning. Further, Huang, Lin and Chuang (2007) drew upon the conclusion that perceived enjoyment has a positive effect on attitude towards intention to use m-learning. Wang, Wu and Wang (2009) and Huang et al. (2007) predict that there is a relationship between perceived playfulness and the intention to use mobile learning. Thus, it is assumed that there is a relationship between perceived playfulness and the intention to use mobile learning.

## 3. Discussion: Case Insights

Mobile learning is a positive learning method in many countries. In Pakistan, students have a positive attitude towards m-learning, but in the education context there were significant differences in the perception of students in diverse degree programs towards the use of mobile phones (Iqbal, Khan, & Malik, 2017). According to Jairak et al. (2009), mobile learning in Thailand is not a new while few universities have already embedded m-Learning in their learning environment. In addition, showed that they have a good perception on mobile learning and performance expectancy (PE), perceive usefulness, effort expectancy (EE) and perceive ease of use are the factors affecting adoption. Malaysia is prepared to satisfy the requirements of m-learning as a model for teaching and learning. Most of the learning institutions have their own learning management systems (LMS) and Wi-Fi services and the students have compatible smart phones. Also, the learner readiness and interest in m-learning is also high. Malaysia has been certified as one of the seven high-tech cities with its multimedia cyber corridor (Mohammad et al., 2012). In Africa more people are using mobile phones, thus, mobile learning has the potential to grow in form, statue and importance. In Japan, many companies, schools, organizations, and individuals are successfully implementing mobile learning solutions and m-learning is already a rich mode of learning (Mohammad et al., 2012).

Gunawardana and Ekanayaka (2009) conducted a research in Sri Lanka on identifying what are the barriers in m-learning in the pharmaceutical sector, the factors that will have an impact on representative's intention to use mobile learning and the relationship between these factors to intention to use. According to that, Perceived usefulness and effort expectancy have a high power of influence to learn through mobile technologies (Karunarathna & Thavareesan, 2018). Also, indicated that there is a promising opportunity to promote mobile learning to senior level professionals of organizations in industries to where there is a high potential in the use of technology such as the pharmaceutical or medical industry and secondary audiences such as doctors and medical professionals. In counties such as United States suggests nursing and medical students could be the target segment as the largest market for m-learning (Gunawardana & Ekanayaka, 2009). Sri Lankan experiences for M-learning is attributed by many success factors and also some challenging issues. As per hands-on cases reported in public sector universities, there are many positive incidents with reference to M-learning programs. Some universities like University of Kelaniya has been adopting its system as a green university, thus, virtual learning methods are highly effective for such initiatives. Many state universities in Sri Lanka had adopted M-learning strategies via some World Bank sponsored projects resulting innovative learning experiences (University Grant Commission of Sri Lanka, 2019). Effort Expectancy and Perceived Playfulness are necessary areas to be concerned in

developing mobile learning applications. Gunawardana and Ekanayaka (2009), further points out that the impact of effort expectancy can be increased by initiating the necessary awareness building programs and by including user-friendly and enjoyable content. Further, m-learning service providers can visit organizations and conduct demonstrations on how to use m-learning and encourage and demonstrate the benefits.

#### 4. Conclusion

This paper investigated several factors in relation to the technology acceptance model, Unified Theory of Acceptance and Use of Technology and based on the literature in the context of mobile learning. The literature provided the evidence that there is a positive attitude towards mobile learning. The technologies and the devices exist which support the conversion of the learning method from traditional classroom learning to mobile learning that confirms m-learning as an emerging trend across the borders (Chee et al., 2017). This is a positive side for the educational institutions, organizations and the software development companies (Liyanagunawardena et al., 2013). For the busy people and people who cannot travel from far can easily move into this mobile learning method and enhance their knowledge. Hence, they have the ability to acquire knowledge and also add up qualifications to their profile. The paper reveals that Perceived Ease of Use, Social Influence, Perceived Usefulness, Performance Expectancy, Personal Innovativeness, Effort Expectancy, Self-Management of Learning, Perceived Self Efficacy and Perceived Playfulness has a great effect on improving performance oriented mobile learning. Educational institutions and software development companies should focus on these factors before adopting the learning method and developing educational frameworks. The future is bright for mobile learning and there are fewer barriers for adopting to this new technology era (Mohammad et al., 2012). The mobility is attached to peoples' lives and so the mobile devices are. People are confident on moving to mobile learning and they have the intention to use. Thus, it is just a matter of availability of learning environment for these people. Professionals are ready to adopt and accept this new technology. Mobile learning will help and benefit the professionals in different industries. In addition, it benefits the working organizations, educational institutions and software development companies. Further, state universities and educational bodies can make proper quality assurance procedures and frameworks considering these factors. M-learning will be the new educational era.

The critical success factors for improving performance oriented mobile learning should be linked with the designing of mobile applications (Chee et al., 2017; Karunarathna & Thavareesan, 2018). Thus, future researchers are encouraged to look at mobile application design and development critical success factors. Additionally, the relationship between the application development and the behavioral intention to use can be further studied. Moreover, behavioral intention to use and the actual usage of mobile learning can be further studied. The relationship between mobile learning and different industry fields can also be further studied. Effectiveness of Mobile learning with different educational and professional sectors should be further researched as sector specific issues are encountered.

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