

## **Students' Adoption of Mobile Learning: An Investigation in Indonesia Higher Education**

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### **Abstract**

Mostly, mobile technologies are adopted and used without critical examination of how they help students learn. Nowadays, mobile learning (m-learning) becomes principally imperative challenge for the contemporary higher education management. The aim of this study therefore, is to explore requirements that could influence the students' adoption of m-learning. An empirically based framework will be established to identify mobile learning adoption needs using The Unified Theory of Acceptance and Use of Technology (UTAUT) and two other relevant factors, perceived playfulness and self-management of learning. This study involves the university students of Universitas Negeri Makassar as respondents using both email and online-based questionnaire. It is expected that this study will be providing both a theoretical and practical contributions for m-learning adoption and should be of interest to both researchers and practitioners across higher education sectors, particularly in Indonesia.

**Keywords:** Students adoption, Mobile learning, Higher education

### **Introduction**

As a new instructional method, mobile learning joins a lengthy range of alternative delivery options for students to consider. To determine whether m-learning approaches are appropriate, key components must be supplied (managed) inside the academic at universities or colleges. Most significantly, the use of m-learning must be motivated by a clear requirement that this is the most appropriate and strategic method of providing content or assisting students in focusing their attention on a certain topic or its application. Too often, The adoption and use of technology without a comprehensive study of how they aid student learning is a particularly critical challenge for higher education governance today.

The popular of mobile devices and wireless networks within university campuses makes higher education a suitable place to integrate student-centered m-learning (Cheon et al., 2012). Mobile learning that utilizes ubiquitous devices will be a successful approach now and in the future because these devices including PDA, tablet PC, smart phone are more attractive among higher education students for several reasons; one of them is that the mobile devices are cheaper compared with normal PCs; also, they are satisfactory

and economical tools (Mohamad et al., 2010). Mobile devices have become more affordable, effective, and easy to use (Nassuora, 2012; Syafar & Husain, 2017; Syafar et al., 2017; Syafar & Gao, 2013b). These devices can extend the benefits of e-learning systems (Motiwalla, 2007) by offering university students opportunities to access course materials and ICT, learn in a collaborative environment (Nassuora, 2012; Syafar & Gao, 2013a), and obtain formative evaluation and feedback from instructors (Crawford, 2007).

Wireless communication between lecturers and students, as well as between students and their friends, is possible with M-learning. It can work as additional support to complement and add value to existing learning models (Motiwalla, 2007). In addition, mobile technologies can be integrated/interoperable with others devices and systems (Syafar et al., 2015; Syafar et al., 2014a). Therefore, it is expected to become one of the most effective ways of delivering higher education materials in future (El-Hussein & Cronje, 2010).

In university teaching and learning contexts, mobile learning applications have been used. Cavus and Ibrahim (2009) investigated the ability of learning new English language words using short message service (SMS). Wu et al. (2012) designed a context-aware mobile learning system for nursing training courses. The learning system's goal is to help nursing students through the process of doing a physical exam, which includes gathering patient symptoms, detecting illness, and delivering nursing care. According to Syafar et al. (2015), mobility of the students as the users, and mobility of the devices and learning services are fit with the technology and applications of mobile learning in higher education context. Furthermore, Syafar et al. (2014b) have found that mobile technologies support individual and work capability of the users (students and lecturers).

There are several issues facing the adoption of m-learning, and there are pedagogical issues regarding the use of mobile devices in classrooms; will it disturb the learning process? (Corbeil & Valdes-Corbeil, 2007; Park, 2011). Users may not be willing to accept m-learning (Wang, Wu, & Wang, 2009). In addition, some university lecturers do not want to apply this technology or might face difficulties in trying to use it effectively as this new technology may require a lot of effort to implement (Abu-Al-Aish, Love, & Hunaiti, 2012).

Students' perceptions of m-learning need to be investigated at the initial step of implementing m-learning in higher education (Cheon et al., 2012). As a result, research must be conducted to identify the needs or elements that university students deem crucial in the adoption of m-learning.

The goal of this study is to look into the factors that influence university students' acceptance of m-learning and to see if the following factors influence students' intention to use mobile learning in Indonesian higher education: expectancy of performance, expectancy of effort, factors of social, enabling circumstances, perceived fun, and learning self-management

## **Literature Background**

M-learning refers to using of mobile and handheld IT devices, such as Personal Digital Assistants (PDAs), mobile telephones, laptops and tablet PC technologies, in teaching and learning process (Alsaadat, 2009). As computer and Internet become essential tools for education, technology become more accessible, ubiquity, affordable, effective and easy to use (Syafar et al., 2015; Syafar et al., 2014). This provides many opportunities to widen participation and access to ICT, particularly the Internet (Trucano, 2015). Mobile devices such as phones and PDAs are much more affordable than desktop computers, and therefore represent a less expensive access to the Internet (even if the cost of the connection may be higher) (Trucano, 2015). Users can now access the mobile Internet with better capabilities than desktop PCs thanks to the introduction of the Tablet PC. The Quality Improvement Agency (2008) cited the following benefits of mobile devices in the sphere of education:

- Using the infrared capabilities of a PDA or a wireless network such as Bluetooth, students and professionals may e-mail, cut, copy, and paste text, pass the device around a group, or beam their work to one another.
- Because mobile devices (such as PDAs) are sometimes less expensive than desktop computers, they may be used anywhere and at any time, including at home, on the train, and in hotels — this is essential for work-based training.

Furthermore, findings from studies conducted by Whilst Kennedy et al. (2008a) and Kennedy et al. (2008b), mobile devices allowed users to conduct at least nine activities in higher education as the following:

- sharing photos or videos to coworkers
- utilizing a smartphone as an MP3 player
- obtaining information or services through the internet,
- video conferencing
- When shooting digital photographs or videos,
- email sending and receiving
- using a cell phone as a personal organizer (e.g. diary, address book),
- SMS sending or receiving messages from coworkers, and
- contacting coworkers or others

In universities, mobile learning helps educational institutions to enhance the accessibility, interoperability and reusability of educational resources and also to improve flexibility and interactivity of learning behaviors at convenient times and places (Murphy, 2006; Bohm & Constantine, 2016) . As opposed to traditional learning, mobile learning focuses on the mobility of the learner as well as the mobility of the learning process itself (Constantine, 2016). For learners in general, mobile learning facilitates the use of previously unproductive time, enables learning behaviors regardless of time and place and brings about the great possibilities for personalized, customized and context-aware learning support services (Constantine, 2016). Through mobile learning, users can download different learning apps to their smart phones or other mobile devices via Apple App Store, Google Play, Windows Phone Store and BlackBerry App World (Chung et al., 2015).

Despite the availability of studies on mobile learning, its theoretical foundations have not yet matured (Muyinda, 2007). Despite the high degree of insertion of mobile devices in current society, the mere availability of technology itself does not guarantee that its potential will be used for learning or accepted by all evenly (De Carvalho 2012). Others also argued that the understanding of the adoption of mobile technologies in educational environments is still incipient and in particular, questions about how to promote the acceptance of mobile learning by users are still largely unresolved (De Carvalho 2012; Pozzi, 2007). In addition, students' needs with regard to mobile learning is still not fully understood (Al Masri, 2016). Mobile technologies is highly situated, personal, collaborative and long term (Syafar et al., 2018). According to Naismith et al. (2004) Mobile learning is also considered as truly promoting learner-centred learning because of the following features:

- Portability—due to the compact size and light weight of mobile devices, they may be carried everywhere, allowing learning to take place at any time and at any place.
- Connectivity—giving learners access to other forms of learning, such as through interaction with other people, equipment, or networks Mobile gadgets with interactivity have the ability to improve a cooperative learning environment.
- Context sensitivity—mobile devices allow for learning that can make better use of a person's,
- Immediate surroundings and context,
- There is no beginning, middle, or finish to lifelong mobile content consumption.
- Individuality—learning may be tailored to the learner's preferences and based on prior learning experiences.

## Research Method

The Unified Theory of Acceptance and Use of Technology (UTAUT) model is one of the most widely used in the field of information and communication technology acceptance modeling which was developed by Venkatesh et al (2003). UTAUT could explain 70% of technology acceptance behavior (Masrom, Hussein, 2008). UTAUT consists of four key concepts that are, Performance Expectancy (perceived usefulness), effort expectancy (perceived ease of use), facilitating conditions and social factors that have a direct influence on intention to use it (Venkatesh et al., 2003). We will have investigated the role of perceived playfulness and self-management of learning in addition to these four categories. Based on this assumption, the current study will evaluate the adoption of mobile learning using the approach depicted in Figure 1.

The four direct factors is defined as follows:

- Expectancy of Performance , is "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);
- Expectancy of Effort, is "the degree of ease associated with the use of the system" (Venkatesh et al., 2003);
- Influence of Social, is "the degree to which an individual perceives that important others believe he or she should use the new system" (Venkatesh et al., 2003);
- Facilitating of conditions, is "the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system" (Venkatesh et al., 2003).

While, the two additional factors explaining as follows:

- Perceived playfulness is regarded as one of the essential characteristics that may influence learner engagement with the use of new instructional innovations and technology (Tan et al., 2004). When people become thoroughly immersed in a technology, their perceived playfulness will offer intrinsic drive (Agarwal & Karahana, 2000). An intrinsic motivator is a person's performance or participation in an activity as a result of his or her excitement for the activity (Iqbal & Qureshi, 2012).
- Self-management of learning is the degree to which a person believes he or she is self-disciplined and able to learn on his or her own (Smith et al., 2003). In fact, research on both distance education and resource-based flexible learning shows that people want to be in charge of their own learning (Smith et al., 2003; Warner & Choy, 1998; Evans, 2000). Because mobile learning is a type of e-learning that is done on mobile devices, it is expected that a person's level of learning self-management will have a positive effect on his or her intention to use mobile learning.

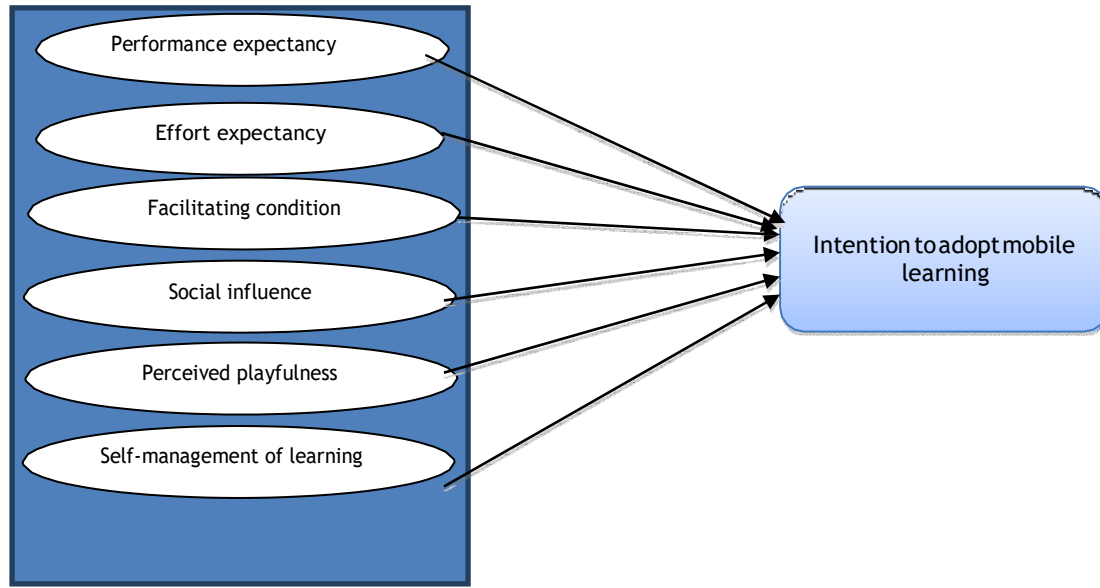


Figure 1: Research model

Based on the theoretical foundation, this research led to testing the following hypothesis:

**H1:** significant predictor of intention to adopt mobile learning (Performance expectancy)

**H2:** significant predictor of intention to adopt mobile learning (effort expectance)

**H3:** significant predictor of intention to adopt mobile learning (Facilitating conditions)

**H4:** significant predictor of intention to adopt mobile learning (Social influence)

**H5:** significant predictor of individual intention to adopt mobile learning (Perceived playfulness)

**H6:** significant predictor of individual intention to adopt M-Learning (Self-management of learning)

## Data Analysis

The data analysis approach was divided into two components. The initial phase consisted of evaluating the measurement model to determine if it was a good fit with the data collected from the satisfactory findings (i.e., after the construct reached the required measurement standard). Then, we may go to step two (the structural model) and test our hypotheses.

## Measurement Model

At the start of the analysis, using IBM SPSS v.21 or the most current version, an exploratory factor analysis will be done to extract six factors using principal components extraction with varimax rotation. The measurement model will next be tested. Factor loading, measure reliability, convergent validity, and discriminant validity are all important considerations using AMOS v.21 confirmative factor analysis.

Convergent validity can be evaluated using three criteria recommended by Fornell and Larcker (1981): (1) Factor loading greater than 0.50 will be considered as highly significant; (2) composite reliability should be greater than 0.8; (3) average variance extracted should exceed 0.5.

## Conclusion

This research should be of interest to both academics and practitioners because it will provide Contributions to understanding the factors of motivation to utilize mobile learning, both theoretical and practical. The framework used in the study can be evaluated by the researcher in different settings with different types of populations, both inside and outside of Indonesia. For practitioners, we hope that our study will send a clear message about the relevance of technology aspects like performance expectation and effort expectancy that must be considered when creating mobile learning apps.

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