THE FUNDAMENTAL FACTORS THAT INFLUENCING MOBILE LEARNING ACCEPTANCE IN HIGHER EDUCATION INSTITUTION

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DECLARATION

We hereby declare that:

1. This undergraduate research project is the end result of our own work and that due acknowledgement has been given in the references of ALL sources of information be they printed, electronic or personal.

2. No portion of this research project has been submitted in support of any application for any other degree or qualification of this or any other university, or other institutes of learning.

3. Equal contribution has been made by each group member in completing research project.

4. The word count in this research project is 9,181.

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DEDICATION

This research project is dedicated to our beloved supervisor, Dr. Gengeswari a/p Krishnapillai who guided, assisted and lead us all the way in the process of this research study.

Secondly, we would also dedicate this research project to our family and friends for their continuous support. It would be impossible for us to complete this project successfully without their support.

Lastly, this project is also dedicated to the respondents who are willing to spend their precious time and effort for helping us to complete questionnaires for this research study.

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BI   Behavioral Intention

EE   Effort Expectancy

FC   Facilitating Conditions

GDP   Gross Domestic Profit

ICT   Information and Communication Technologies

IDT   Innovation Diffusion Theory

UTAR   Universiti Tunku Abdul Rahman

IT   Information Technology

MPCU   Model of Personal Computer Utilization

PC   Personal Computer

PDA   Personal Digital Assistant

PE   Performance Expectancy

PP   Perceived Playfulness

SAS   Statistical Analysis System

SI   Social Influence

SM   Self-management of Learning

TAM   Technology Acceptance Model

UTAUT Unified Theory of Acceptance and Use of Technology Model

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ABSTRACT

The advancement of technology has evolved electronic learning (E-learning) to mobile learning (M-learning). Since the first introduce of m-learning, the use of m-learning has increased significantly especially in developed countries and it still continues to grow in other countries. As education industry is one of the important drivers of the economy of Malaysia, the low acceptance rate seems as a barrier for the growth in Malaysia's economy as well as education industry in Malaysia. Thus, this study will investigate and identify the factors that influencing the acceptance of mobile learning in higher education institution in Malaysia. By using the five independent variables, effort expectancy, performance expectancy, perceived playfulness, and self-management of learning has positive relationship with behavioral intention to use mobile learning. However, social influence has negative relationship towards the behavioral intention to use mobile learning. The findings has shown the variables that affect the student's behavioral intention to use mobile learning in higher education institution in Malaysia, which contribute to the effectiveness of m-learning to implement in universities in Malaysia.

CHAPTER 1: RESEARCH OVERVIEW

1.0 Introduction

The current study is carried out to explore the fundamental factors that influencing the mobile learning acceptance in higher education institution in Malaysia. This research starts with research background, problem statement, following by research objectives, research significance, and conclusion.

1.1 Background of Study

Education system in Malaysia had undergoes dramatic changes and development which lead to transformation of Malaysia into an education hub especially in Southeast Asia region (Grapragasem, Krishnan & Azlin, 2014). Malaysia government had taken considerate moves in developing education industry as education is essential to contribute into national GDP and also development in human capital (Grapragasem et al., 2014).

Growth in education sector has further been facilitated with utilization of technologies and it enables different educational communication. It involves both educators and students in develop equally in competence, feelings and thoughts via open discussion (Hawkins and Collins, 1995). E-learning derived the information and communication technologies (ICTs) in the past decade to reenter and change the traditional teaching and learning models. According to Sun, Lubega, & Williams (2004), the process which learners undergo to achieve the learning goal by reflecting their understanding through different learning activities and interaction with each other can best defined the word 'learning'.

The latest technology advancement had significantly influenced the usability of mobile devices as a communication tool in the current world (Tajudeen, Basha, Michael & Mukthar, 2013). According to eLearn Magazine, (2011) (as cited in Garry, Ooi, Sim & Kongkiti Phusavat, 2011), there was a prediction shows that the latest learning trend is the mobile-based education. Smart phone, personal digital assistant (PDA), tablet PC are built-in with applications that enable connectivity (Tajudeen et al., 2013). Mobile device innovation enables students to access educational email, portal, library assistant, Internet-based information and teamwork on projects (Robin Lee, 2011). Mobile devices aid in access to information in the class without time-limit or boundaries (Akour, 2009). Mobile learning is develops from electronic learning so it is essential to suit the learning style into new generation's capabilities and experience (Samsiah Bidin & Azidah, 2012).

1.2 Problem Statement

The acceptance of technology in education has been continued as major concern for researchers, platform and application developers, and educators. The advancement of technology along with the availability of affordable, fast, and reliable networks have boosted the demand by students for better ways to complement their mobile lifestyles in support of their learning (Kathleen, 2013). The advancement of technology nowadays makes accessing to education easier than ever, especially mobile technologies. Mobile technology is subsequently being studied for its capability in improving the education experience and learning process for the learners and universities (Akour, 2009). The advancement of technology has a huge impact in education field. It had transform distance-learning into electronic learning and the latest mobile learning (Neha, 2008). Evolving into the 21st Century, the increases of using handheld mobile devices are significantly observed (Neha, 2008).

The conjunction of mobile technology and education is a significant development in learning and teaching activities. Therefore, mobile education has a huge

potential to be the stage of instruction and accessing educational material and learning resources in developing countries like Malaysia (Neha, 2008). Mobile learning has develops a new academic platform, becoming popular particularly in Malaysia's higher education institutions (Mahat, Ayub, & Wong, 2012).

Mobile learning is new technology pattern that meet student requirements and combines the materials in education and learning and the innovative thinking (Akour, 2009). Mobile learning concern of student acceptance of the technology to be successful implemented in higher education (Akour, 2009).

Besides, mobile learning has unique features that are not reflected in the fundamental factors of the original UTAUT model. Pedersen and Ling (2003); Wang et al., (2009) suggested modification on the traditional acceptance model can be made to fit mobile learning services. The extended UTAUT model proposed by Wang et al., 2009 suggest two additional constructs on affect acceptance in mobile learning context and had proven positive relationship between the variables. Further research should be carried out in university of Malaysia to determine the reliability and validity of the framework. Determinants (performance expectancy, effort expectancy, social influence, perceived playfulness and self-management of learning) that affect the acceptance level of m-learning among the student will be examined. According to Donaldson, 2011, the successful for the implementation of mobile learning is critical when the students in the university do not value it and do not accept the innovative information technology.

Students nowadays equipped with multiple digital knowledge that is different from former generation (Carlson (2005) (as cited in Akour, 2009)). This may results in the gap towards perception in adopting or accepting new technology between the university and students. Thus, it is very important to conduct this research on the fundamental factors towards the acceptance of mobile learning in higher education institutions. Better understanding on the factors enables university management to allocate the fund wisely and identify content in mobile

learning system (Lam, Lam, Lam, & McNaught, 2008).

1.3   Research Objectives

1.3.1 General Objective

To understand the fundamental factors that influencing the acceptance of Mobile Learning in higher education institution in Malaysia.

1.3.2 Specific Objectives

- To examine the correlation between performance expectancy and mobile learning acceptance in higher education institution in Malaysia.
- To examine the correlation between effort expectancy and mobile learning acceptance in higher education institution in Malaysia.
- To examine the correlation between social influence and mobile learning acceptance in higher education institution in Malaysia.
- To examine the correlation between perceived playfulness and mobile learning acceptance in higher education institution in Malaysia.
- To examine the correlation between self-management of learning and mobile learning acceptance in higher education institution in Malaysia.

1.4   Significance of the Study

According to Liu (as cited in Tan et al., 2014), mobile learning is preferable in life-long learning and higher education in every country. However, mobile

learning is still in infancy stage in Malaysia and only a few universities had implemented this technology in their education context. The factors affecting mobile learning acceptance are still unclear in spite of the rapid development of mobile technologies as a brand-new platform for learning. The study on the Mobile Learning acceptance is important because it able to help to identify the important of drivers of acceptance. The findings of this research enable higher education institutions of Malaysia to understand clearer on this new technology and decide whether to adopt the mobile learning in order to enhance the delivery of academic information.

By knowing factors that can influence acceptance, higher education institution can capitalize and adopt these theories to enhance the mobile learning. Universities can understand students perception and preference on m-learning before invest large amount of academic fund in develop this mobile education service. Designers of m-learning can take account on the importance of the factors towards mobile learning acceptance to design applications. This can then further add value to education system.

According to Oberer et al. (2013), mobile learning also improves the overall educational process and learning experience. According to Gil and Pettersson (as cited in Tan, Ooi, Leong, & Lin, 2014), the growth of the mobile learning not only provides learning through a multiple of settings, but it also allow the users to learning at different time and location. Educators can be beneficial from this research by gain general information and university staff able to know how they can support the system.

Lastly, this research is significant because extended UTAUT had been used and additional variables (Perceived Playfulness and Self-management of learning) included as independent variables that affect m-learning acceptance. The research re-measure the potential construct toward student acceptance on the system. The findings indicate that effort expectancy was found not significant to behavioural intention. Hence, future researchers can refer this result as a base to further the

relevant topic.

1.5   Conclusion

In conclusion, this current chapter outline the whole research study. In background of study, it described the advancement of technology which has leads to an evolution from electronic learning to mobile learning. This further discussed in problem statement, which discuss the gap that exists between the university and students in terms of the perception in adopting or accepting new technology. Follow by the research objectives, which mentioned the purposes for conducting this research. Lastly is the research significance. Research significance described the importance of conducting the current research and the benefits for conducting this research. Overall, the information collected in this chapter can serve as preference for the following chapters.

Chapter 2: LITERATURE REVIEW

2.0 Introduction

Chapter 1 had listed research background, problem statement, research objectives and research significance, hence, current chapter focus on providing relevant theoretical models, the assessment of past studies and proposed framework.

2.1 Review of Relevant Theoretical Models

This part focus on the review of relevant theoretical models including Technology Acceptance Model (TAM), Unified Theory of Acceptance and Use of Technology Model (UTAUT) and extended UTAUT Model which provides basic understanding of the constructs.

2.1.1 Technology Acceptance Model (TAM)

Technology Acceptance Model (TAM) is a framework that describes why people choose to adopt or not to adopt a particular technology while performing some tasks (Wallace and Sheetz, 2014). According to Davis (as cited in Oh and Yoon, 2014), TAM also can be used to predict the adoption intention of users toward the information system. TAM predicts and explains the systems use in terms of its two components which is Perceived Ease of Use and Perceived Usefulness, which will affected by external elements, according to Elbeltagi's study (as cited in Dulcic, Pavlic, and Silic, 2012).

TAM proposes that if particular innovation or technology improves an individual's performance and does not significantly increase the effort required to perform a task, it is considered as useful and easy to use, and that individual will prone to use the new system, behavior, or service (Wallace et al., 2014).

2.1.2 Unified theory of acceptance and use of technology model (UTAUT) Model

Figure 2.1: Unified theory of acceptance and use of technology model (UTAUT) Model
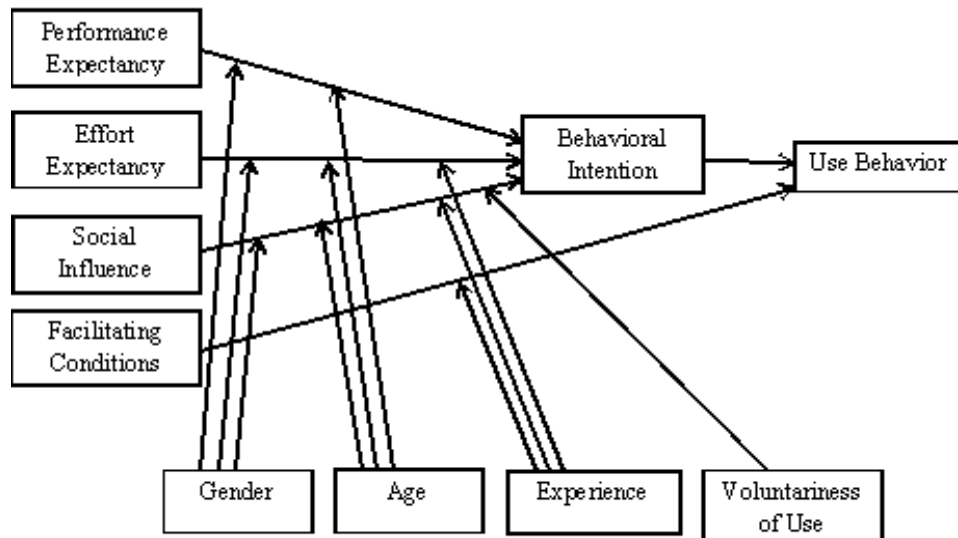
Source: Vankatesh, V., Morris, M.G., Davis, G.B., & Davis, F.D. (2003). User Acceptance of Information Technology: Toward a unified view. *MIS quarterly, 27(3),425-78.*

Unified Theory of Acceptance and Use of Technology (UTAUT) model combines the features in eight prominent frameworks that determine information technology (IT) acceptance (Venkatesh et al, 2003).

Refer to Venkatesh et al (2003), there are four core constructs under UTAUT model which comprise of performance expectancy (PE), social influence (SI), effort expectancy (EE), and facilitating conditions (FC) and four moderators which are gender, age, experience and voluntariness of use that influence behavioral intention and use behavior.

In Malaysia, many studies on m-learning had been carried out to examine the educational effectiveness and adoption of using mobile devices (Garry Tan et al., 2011; Christer, Joanna, Kaarina, Jussi Puhakainen & Walden, 2006; Mohamed & Norazah, 2013; Liu, n.d.), but only few studies have been conducted on m-learning acceptance (Sahar Ghazizadeh, 2012; Chen, Chew, Stephanie Yeoh, Tan & Yap, 2012). Some of the past studies has examined the m-learning acceptance using technology acceptance models (TAM models) (Wang, Wu & Wang, 2009; Park, Nam, & Cha, 2011; Liu, Li & Carlson, 2010). UTAUT model can be modified as much as technology acceptance model frameworks to completely reflect the definite impact of user behavioural intention towards mobile learning (Pedersen and Ling, 2003). Two independent variables (Perceived Usefulness, Perceived Ease of Use) in TAM model is similar to Performance Expectancy and Effort Expectancy in UTAUT model. UTAUT outperform TAM model as it provide more comprehensive explanation by providing more variables. However, due to the limitation of UTAUT in explain every characteristic of new technologies, the researcher suggested minor constructs can adjust for future research. To better explain Mobile Learning, extended UTAUT is applied.

2.1.3 Extended UTAUT (Wang, Wu & Wang, 2009)

Figure 2.2: Extended UTAUT Model
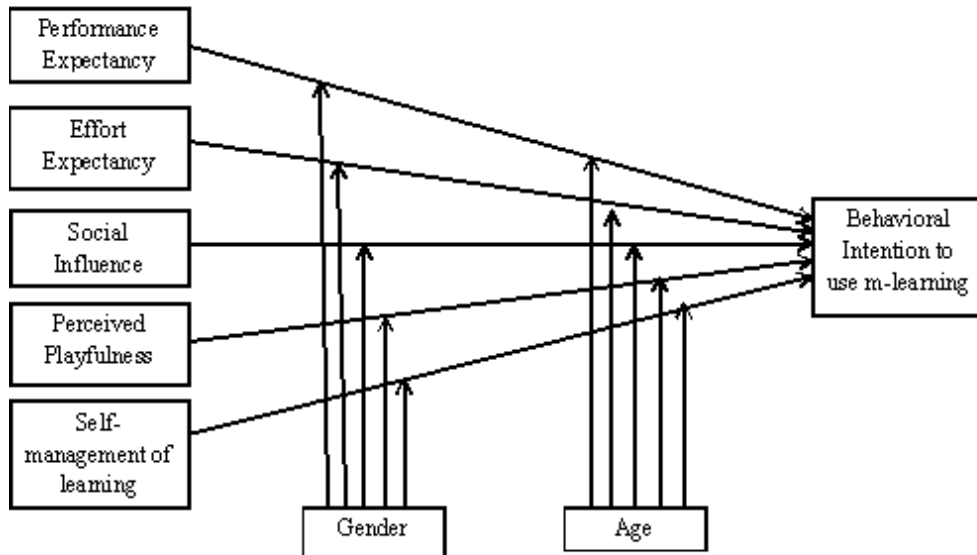
Source: Wang, Y. S., Wu, M.-C., & Wang, H.-Y.(2009). Investigating the determinants and age and gender differences in the acceptance of mobile learning. *British Journal of Educational Technology, 40*(1), 92-118.

Wang, Wu and Wang (2009) extend the original UTAUT model to conduct a research to find the factors that influence the mobile learning acceptance in Taiwan. In their study, they incorporated Performance Expectancy (PE). Effort Expectancy (EE), Social influence (SI) from the original UTAUT model and add in two constructs which are Perceived Playfulness (PP) and Self-management of Learning (SM). All these factors are moderated by gender and age to influence behavioural intention to use m-learning. This research interpreted 58% variance in behavioural intention to use mobile learning (Wang, Wu, & Wang, 2009).

This study consider the extended UTAUT model that Wang, Wu, and Wang (2009) proposed that previously showed the key constructs are

significant factors of m-learning acceptance. In order to examine determinants that affect student acceptance in UTAR, perceived playfulness and self-management of learning were included. Moderating variables were omitted in proposed framework.

Also, since m-learning have not been adopted in UTAR, this study uses behavioural intention to use mobile learning as dependent variable. Experience, Facilitating conditions, Voluntariness of use and Use behaviour in the original UTAUT framework will be eliminated in proposed research model.

2.2 Literature Review

2.2.1 Mobile Learning Acceptance

Mobile learning has been explained by different researchers and organizations. According to Molenet, (n.d.) (as cited in Hashemi, Azizinezhad, Vahid & Ali, 2011), the utilization of universal wireless handheld devices and the mobile network which assist and enhance the range of learning and teaching that well defined the mobile learning. Mobile learning can happen in any place at any time, including home, any public locations, and also traditional learning places such as classrooms (Hashemi et. al., 2011; Shih, Chuang & Hwang, 2010). Ally (2009) defines that mobile learning as the distribution of learning gratified to mobile devices.

Mobile learning has become more and more important as the rapidly development and acceptance of mobile technologies and wireless communication (Mohamed & Norazah, 2013 (as cited in Hwang & Tsai,

2011)). According Wexler et al. (2007) (as cited in Mohamed et al., 2013), the definition for m-learning is any action which enable users to be further creative and dynamic when communicating with, consuming, or generating information by using a portable wireless digital device that enables users to carriers anywhere and fits in a purse or pocket. Mobile learning has been described by Lan & Sie (2010) (as cited in Fezile Ozdamli & Nadire Cavus, 2011) as one type of learning model that letting the users to get learning resources in wherever and whenever they use wireless mobile devices and the existing of Internet.

Refer to Dillon and Morris (1996) (as cited in Bibiana, Hong & Tan, 2008), acceptance can stated as the patent enthusiasm inside a team to engage information technology for the jobs it is intended to sustenance. User acceptance can be defines as obvious enthusiasm in a team to gather information technology to support the jobs (Dillon & Morris (1996) (as cited in Liew, Kang, Yoo & You, 2013)). As stated by Wang et al., (2009), the willingness of users to adopt the new technology in education will strongly influence the successful of acceptance towards m-learning.

Behavioural intention is defined as the motivation factors that affect the action and specify the attentiveness and force that people assert to accomplish the action (Ajzen, 1991). An user intention lead to an actual behaviour and also explained as measurement tool to calculate user's intention to act behaviour (Ajzen & Fishbein, 1975). According to Chau & Hu (2002), behavioural intention act as a predictor on individual's possibility of execute an action such as intention to use a technology. Behavioural intention forecast use behaviour as stated in Hill et al. (1987); De Sanctis (1983) (as cited in Garry et al., 2011). According to Dillon and Morris (1996), behavioural intention can be explained by the degree of willingness of a group of user towards information technologies to complete their tasks. Apart from that, willingness can be evaluated based on the intention or actual use of information technology (Martocchio,

2005).

Behavioural intention was applied in many studies for the acceptance or adoption of technology (Wang et al., 2009; Gunawardana & Ekanayaka, 2009; Lee, 2006; Keshtgary & Khajehpour, 2011, Venkatesh & Zhang, 2010).

2.3 Determinants of Attributes

2.3.1 Performance Expectancy (PE)

According to Chong (2013), performance expectancy is known as the extent to which the information system will give advantage to the users. According to Venkatesh (2003) (as cited in Casey, and Evered, 2012), performance expectancy was conceived by combining extrinsic drive, job-fit, perceived usefulness, expected result, and comparative benefit. According to Suki and Suki (2011), performance expectancy has positive influence towards use behaviour and behavioural intention. The system feasibility is mainly affects the individuals to apply the technological service like learning via mobile device (Suki et al., 2011). The ability and capability of the system to support users to accomplish task faster will encourage the adoption of the system (Taiwo and Downe, 2013).

According to Akour (2009) (as cited in Marrs, 2013), usefulness encompasses the dimensions of usability and utility. Akour (2009) (as cited in Marrs, 2013) also stated that utility is the functionality of the system while usability means the degree to which the system functions that a user's effort to utilize the system to complete specified tasks. According to Teo (as cited in Marrs, 2013), researchers normally refer to usefulness

as users' perception of the degree to which the system will improve or enhance performance. Teo (as cited in Marrs, 2013) also stated that the technology acceptance literature provides evidence that shows a significant and positive correlation between acceptance and perceived usefulness.

Refer to Suki and Suki (2011), performance expectancy has significant and positive relationship towards use behavior and behavioral intention. The feasibility of system is still the dominant element that affects the individuals to use mobile device to learn (Suki et al., 2011). The ability and capability of the system to assist individuals to accomplish job faster will encourage the individuals to use the system (Taiwo and Downe, 2013).

2.3.2 Effort Expectancy (EE)

Effort expectancy meant by a consumer's personal evaluation on the ease of engaging with an information system (Casey & Elisabeth, 2012). According to Venkatesh (2003), effort expectancy has been explained as the extent of easiness a user trusts that after using a technology. From the past documents, Venkatesh arranged there are three sub-dimensions which are perceived ease of use (TAM/TAM2), systematic complexity (MPCU) and operating simplicity (IDT). This means that the key factors of information technology acceptance is based on the user can easily use the information system or not (Yu, Yu, & Pei, 2008).

According to Nasri & Chafeddine (2012) said that perceive ease of use shows the effort that needed by an individual when they use the system. Easiness of use is non-complexity and use of target system without psychological effort (EssafiRaida & Néji, 2014). Ease brings the meaning of autonomy from difficult effort. Effort is defined as a limited source that a person can utilize to a number of actions that he or she is responsible to perform. In addition, easiness of use summarizes time saving, location

navigation, location design, information planning, payment process, location speediness, search facilities and convenience. (AL Ziadat, AL-Majali, Al Muala , & Khawaldeh, 2013). Perceived ease of use is the key factor of attitudes towards adoption of new technology. From Juliet (2010) study, perceived ease of use is a significant determinant that will affect user acceptance and behaviour towards information technologies.

From Yang (2005) study (as cited in Jeong & Yoon (2013)) state that attitude towards m-commerce are affected by perceived usefulness and perceived ease of use. The perceived ease of use can be applied in m-commerce whereby a consumer trusts that get the merchandises info from a retailer by using a mobile device will free from effort. The ability and confidence of customer in getting information in m-commerce will be increase because of the perceived ease of use of the mobile device (Paul, Ting & Angelika Dimoka, 2007).

2.3.3 Social Influence (SI)

Venkatesh et al. (2003) defines social influence as the degree in which an individual thinks that others believe he or she should use a new technology system. Social influence was conceived as user's views of social advantage from the use of IT application (Casey et al., 2012). Social influence is taken into account in TAM and TPB as determinant to describe system use. Social influence integrates elements on the user's view that others think that he should adopt the new technology, the view that others that are support the use of the new technology, and the view that the individuals who adopt the system has higher status quo (Raaij, & Schepers, 2008). According to Taiwo and Downe (2013), other than an

easiness to use and effective information system, individuals might not be willing to use the new system unless they are encouraged by important people around them who impact their behaviour and attitude.

Social influence can be categorized into interpersonal influence and mass media Rogers (1995) (as cited in Abdul Mohsin & Steve, 2012). Interpersonal influence originates from family, peer group and superiors while mass media influence includes newspapers, radio, television and other media (Abdul Mohsin et. al., 2012). Akour, 2009 (as cited in Marrs, 2013) described superior influence as the degree to which "instructors or immediate faculty members directly stimulate or encourage their students in using mobile learning services".

2.3.4 Perceived Playfulness (PP)

Perceived playfulness was added into TAM as an intrinsic motivator (Moon and Kim, 2001). An intrinsic motivator can be explained by a person's act or commitment based on personal interest (Deci (1975) (as cited in Liew, You & Kang 2012)). Refer to Moon and Kim (2001), there are three dimensions included in perceived playfulness that the users (1) perceived that his or her attention is concentrated in the mobile learning interface (2) is in curiosity within the communication process and; (3) is feeling pleasant when interact in m-learning. When a person emerge in playfulness condition, he or she will be absorbed into the activity, loses his self-consciousness and his attention will be concentrated in the interactions. Perceived playfulness can also embarked curiosity and desire to achieve competency with the technology such as bookmark and hyperlink that encourage further exploration. A person will also enjoy and feel pleasure in the interaction when he is in the playfulness situations.

2.3.5 Self-management of Learning (SM)

Smith, Murphy and Mahoney, (2003) (as cited in Wang et al., 2009) defines self-management of learning as the degree a person feel he is self-controlled and able to involve in self-directed learning. Wang et al. (2009) also mentioned the necessity of direct or manage self-learning activity in distance-learning and source-oriented flexible educational context. Learner autonomy on the educational activity, explore and conduct experiment, questioning, and involve in two-way argument can result in successful learning (Ravenscroft, 2000; Sharples, 2003) (as cited in Donaldson, 2011).

McFarlenne et al (2007) (as cited in Liu, n.d.) stated that the increasing autonomy in learning and personalization increase suitable condition for self-directed competence in terms of m-learning. This autonomy enable development in critical thinking abilities, allocate resources and identify learning requirement (Liu, Han, & Li, 2001; McVay, 2001) (as cited in Wang et al., 2009). Hence, self-management of learning is important to be included in our study.

2.4 Proposed Conceptual Framework

Figure 2.3 Proposed Research Framework
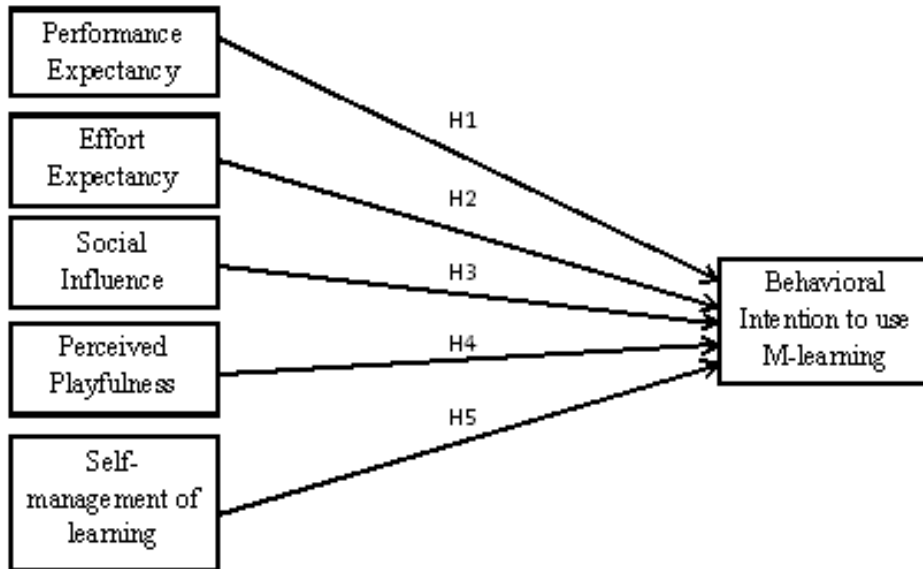
Source: Developed for the research

The proposed research framework comprises five independent variables: Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Perceived Playfulness (PP) and Self-management of learning (SM). Behavioural intention is the dependent variable that used to examine the relationship with the IV on mobile learning acceptance.

2.5 Hypothesis Development

H1: There is correlation between performance expectancy and mobile learning acceptance in higher education institution in Malaysia.

Based on the past research, according to Davis (1989) (as cited in Ahmad & Steve, 2013), perceived usefulness had most frequently test on higher or lower adoption rate. Students found that m-learning very useful and enable them to learn faster and convenience (Wang et. al., 2009). The past study of Ahmad et al., 2013 showed that there is a positive correlation between performance expectancy and the behavioural intention of m-learning acceptance. This study attempted to investigate how performance expectancy of mobile learning will affect learner behavioural intention of mobile learning acceptance.

H2: There is correlation between effort expectancy and mobile learning acceptance in higher education institution in Malaysia.

According to Chiu and Wang (2008), effort expectancy has positive related to the behavioural intention and performance expectancy in the e-learning situation. The same relationship also can be found in mobile learning (Liu, n.d.). In addition, students had reported that using devices in learning tasks are both competence and ease to use. However, this researcher believed that it is easy for students to learn through mobile devices because students familiar and more accessibility for leaning opportunities with mobile devices (Pamela Pollara, 2011). In another research, Wang et al. (2009) specified that there is a positive correlation in effort expectancy and behavioral intention of mobile learning acceptance. It was predicted that students' acceptance towards mobile learning follow the level of effort expectancy based on UTAUT model.

H3: There is correlation between social influence and mobile learning acceptance in higher education institution in Malaysia.

Prior studies had shown that social influence significantly affects the behavioural intention to use new technology (Cheon, Lee, Crooks & Song, 2012; Taiwo & Downe, 2013; Wang et al, 2009). Venkatesh and Davis (2000) recommend social influence as strong predictor on explain user intention to use a new system.

H4: There is correlation between perceived playfulness and mobile learning acceptance in higher education institution in Malaysia.

Refer to past research, there is positive analyst for perceived playfulness in mobile research (Liew et al, 2012). As stated by Wang, Wu and Wang (2009), perceived playfulness found to be an important factor towards behavioral intention of m-learning acceptance. Cheong and Park (2005) study indicates positive correlation between perceived playfulness and behavioral intention to use the Internet on mobile devices. Hence, this research expected that essential drive in perceived playfulness would have a significant relationship on behavioral intention of users to adopt mobile devices for their learning.

H5: There is correlation between self-management of learning and mobile learning acceptance in higher education institution in Malaysia.

Self-management of learning was established positively significant in predicting m-learning acceptance (Wang et al., 2009; Lowenthal, 2010). Individual with high autonomous learning capability would prefer to adopt m-learning.

2.6 Conclusion

The review of existing researches and theoretical framework was included in current chapter. Based on the prior researches that were reviewed, the research framework and hypotheses were developed. Chapter 3 would further discuss research methodology.

CHAPTER 3: RESEARCH METHODOLOGY

3.0 Introduction

In Chapter 3, it is the methodologies that are used to collect the data. This is to answer the hypotheses and research questions. Methodology stated theoretical investigations of determining the appropriate methods to conducts the research. After that, the pilot testing was tested in this chapter and the methods of data analysis.

3.1 Research Design

Research design is a comprehensive description of how a research is occurs. Research design generally contains data collection method, which tools will be used, how the instruments will be used and the projected purposes for analysing data.

3.1.1 Descriptive Research

Descriptive research typically offers data about the characteristics of the population being learned. Descriptive research was employed in this study to find out how are the fundamental factors that influencing the mobile learning acceptance in higher education institution in Malaysia. Besides, relationship among variables also being examine in this study.

3.1.2 Quantitative Research

Conducting quantitative research involves collecting measurable data to the variables being studied and analysing the data using statistical procedures. This method is employed as the research need to collect relevant data from a numbers of target respondents an measure how students think or feel in a particular way toward mobile learning in Higher Education Institution in Malaysia.

3.2 Data Collection Method

Information derived from primary data and secondary data. Both will be used in this study to answer the hypotheses. Primary data obtained by using questionnaire, while secondary data obtained from online databases.

3.2.1 Primary Data

Primary data are the information collected for particular research problems, employing the steps and methods that suit the research problem (Hox & Boeije, 2005). In current study, primary data is obtained through survey method. Questionnaires are distributed to target respondents to obtain specific information. Survey method is employed because the size of coverage of many people means that data will be collected based on a representative sample more likely than some other approaches, and therefore can be generalized to a population (Kelly, Clark, Brown & Sitzia, 2003). A total of 400 sets questionnaires are face-to-face distributed to target respondents in a week. Data is collected from a clustered sample of university students whose age primarily ranges from 18 to 30 years old.

3.3 Sampling Design

3.3.1 Target Population

Population can be explained as a complete set of elements which included objects and persons that own some similar characteristics well-defined by the sampling standard recognized by the researcher (University of Missouri). On the other hand, in more specific, target population is defined as groups of people that researcher meant to generalize to draw a conclusion (Paul, 2008). The target population for the study are private university students in Kampar, Perak, Malaysia.

3.3.2 Sampling Frame and Sampling Location

The subdivision of population is sampling. There will be a dramatically decreased in the cost and time when conducting survey project by using samples as compared to population studies (The Jackson Group).

To access in this research model, this study focused at Universiti Tunku Abdul Rahman (Perak Campus), one of the largest private university in Perak state, Malaysia. There is a population more than 12,000 students in the university that can represent the Malaysian context (Garry, Sim, Ooi & Kongkiti, 2011).

The sampling frame is not available because UTAR does not have the data

and information of their students who possess to mobile devices.

3.3.3 Sampling Elements

Overall population of mobile users in the age range of 18-30 years old in UTAR, Kampar will take part in the studies since the study aim to determine the m-learning acceptance in higher education institution.

3.3.4 Sampling Technique

Probability sampling technique had been selected as an instrument to determine respondents as a sample. Sampling units are selected by chance based on probability sampling. There will be less disposed to bias and allows approximation of extent of sampling error by using probability sampling, which able to regulate the statistical impact of changes in indicators.

Cluster sampling method is chosen because the respondents for this study are mostly from the age range in between 18-30 years old in UTAR, Kampar. Besides that, it is easy to implement and cost effective relative to other sampling method.

3.3.5 Sampling Size

The sample size of population of 12,000 is 372 respondents. According to Krejcie & Morgan, 1970, the sample proportion is in between ± .05 of the population with a 95 per cent level of confidence.

3.4 Research Instrument

The research instrument used is self-administered questionnaire. Self-administered questionnaire is a information gathered way where the respondents can understand the questions and able to answer by his or her own without any interviewer (Hair, Bush & David, 2006).

According to Zikmund & Babin (2007), questionnaire is the faster way to gather information. Besides that, questionnaires are easier to examine and manage (Alvin & Ronald, 2009). Standardization of the question makes the measurement more accurate by applying consistent definitions upon the participants (Malhotra, Birks & Peter, 2012). Questionnaire can reduce low response rate problem even when the sampling size is large (Malhotra et. al., 2012).

3.4.1 Scale of Measurement

Structured questions / closed-ended questions had been designed in this study which specifies the set of response alternative and the response format. Multiple choices of answers had been provided and respondents are asked to select from the alternative given. The results that collected from structured questions will be more accurate, faster and comparable. Furthermore, structured questions only required short period of time as the answers are provided and respondents would only answering based on the questions.

There are 2 sections in this study questionnaire. Section A is about demographic profiles which use nominal scale as scale of measurement. The choices for the questions are divided to represent the dissimilar group of classifications. Section B use interval scale where questions are designed by using 5-Likert scale. Respondents are required to specify

extent of agreement / disagreement with each of the chains of testimonial about a stimulus provided.

3.4.2 Operationalization of Construct

Table 3.1 show the original sources of measurement.

Table 3.1 The Original Sources of Measurement

Construct	Adopted From
Performance Expectancy (PE)	Venkatesh et al. (2003)
Effort Expectancy (EE)	Venkatesh et al. (2003)
Social Influence (SI)	Venkatesh et al. (2003)
Perceived Playfulness (PP)	Wang et al. (2009)
Self-management of Learning (SM)	Wang et al. (2009)

Source: Developed for the research

The definition of construct is provided in Appendix A.

3.4.3 Pilot Test

Pilot test is carried out before the questionnaires are being used to collect data to examine the easiness of comprehended, normality, clarity and questions reliability. According to Alvin et. al. (2009), pilot study is used to conducting a trial survey on a small group of respondents to avoid from errors before a research is launched. In addition, it helps to improve and make the changes on questionnaires accuracy while reducing the error of the survey.

30 sets of questionnaire were distributed during pilot testing stage. Respondents are motivated to give comment to ambiguous or unclear questions or statements. Responses were collected in the clarity of the data on how questionnaire can be enhanced.

3.5 Data Analysis Techniques

Once the information is gathered from the respondent, data will be coded and analysed using SAS software. The result of the analysed data will be represented using graphic display.

3.5.1 Descriptive Analysis

Descriptive analysis transforms raw data into useful data. It is to make the researchers easier to understand and make interpretation of the data gathered. In Section A, demographic profile, the descriptive analysis has been used.

3.5.2 Measurement of Accuracy

3.5.2.1 Reliability Test

Reliability test is used to determine the steadiness of the constructs measured. The power of correlation between the variables can be examined. Hence, to test the reliability of this study, the rules of Cronbach's Alpha Coefficient have been used. The Cronbach;s Alpha ranges from 0-1. Refer to the table 3.2, rules of thumb of the Cronbach's

Alpha Coefficient shown that if the value less than 0.60 is considered as poor result while the value closer to 1.00 is considered the greater reliability.

Table 3.2 Rules of Thumb of Cronbach's Alpha Coefficient Size

Alpha Coefficient Range	Strength of Association
= 0.9	Excellent
0.8 to <0.9	Very Good
0.7 to <0.8	Good
0.6 to <0.7	Moderate
< 0.6	Poor

Source: Matkar. A. (2011). *Cronbach's Alpha Reliability Co-efficient for standard of customer services in Maharashtra State Co-operative Bank.* Journal of Research in Commerce and Management, 1, 67-74.

3.5.2.2 Validity Test

Validity is the measurement precision. It assess of the measurement accuracy compare to what truly exists. Therefore validity is measure the accuracy of the responses. Test validity includes face validity, construct validity, consequential validity and criterion-related validity.

Face validity is the extent to which an examination appears to calculate what it is designed to be calculated. It can be test how the extent of learners trusts the questions are appropriate to the exploration. Therefore

during the pilot test, the face validity will be tested. The questionnaire distributed to the lecture and they provided comments and feedbacks. So the layout of questionnaire can be improve and rewording many of the questions for simplicity. Pilot test help to reduce the problems for respondents in term of clarity and language.

Content validity is the extent to which a examination evaluates an planned range. Content validity is measured by professional evaluation of both item validity and sampling validity. Item validity is about whether the examined elements are appropriate to calculating the planned context. Whereas sampling validity is about how the examined samples the total context that tested. There will be accessed for analysis of the quality, clarity and suitability of the questions by experts in various areas. It was tested during pilot test that involving a small sample of UTAR students and lectures. The comments that obtained is used to modify the instrument according to recommendations.

3.5.3 Inferential Analysis

The Pearson correlation analysis and multiple regression analysis have been used in inferential analysis.

3.5.3.1 Pearson's Correlation Analysis

Pearson's correlation analysis is applied to examine the correlation between the independent variables and dependent variable. In current research, Pearson's correlation coefficient is applied to measure the power and direction between dependent variable behavioural intention of M-learning acceptance and the independent variables are performance expectancy (PE), effort expectancy (EE), social influence (SI), perceived

playfulness (PP) and self-management of learning (SM).

The correlation coefficient, "r" ranges from -1 to 1. The higher the correlation coefficient value significant stronger correlation between two variables. If value of r is 1 mean that there is a positive correlation between two variables. In contrast, if value of r is -1 mean that there is a negative correlation between two variables. Value of "0" means that there is no correlation between two variables.

3.5.3.2 Multiple Regression

The multiple regression also applied in this research study. Multiple regression is a statistical method to estimate coefficient for equation of a straight line in order to evaluate liner relationship between dependent variable and independent variables. The multiple regression analysis had been chosen because it has correlation between more than one independent variables and one dependent variable. However the scale measurement that used is Likert scale. To evaluate the correlation between the variables, the multiple regression equation is indicated as following:

$Y = a + b1X1 + b2X2 + b3X3 + b4X4 + b5X5 + … + bkXk$

For this research study, the equation is as below showing five independent variables influences behavioural intention to use M-learning:

Behaviour Intention to use M-learning = a + b1 (performance expectancy, PE) + b2 (effort expectancy, EE) + b3 (social influence, SI) + b4 (perceived playfulness, PP) + b5 (self-management of learning, SM)

3.5.3.3 T-test

T-test is to make comparison of sample means to identify whether enough prove to conclude that there is difference in the means of corresponding population distribution. The research consists of two samples which compare gender (male and female) on variables (behavioural intention, performance expectancy, effort expectancy, social influence, perceived playfulness and self-management of learning), therefore, independent samples t-test is applied.

3.6 Conclusion

In conclusion, this chapter was about the process and methods that have been used in research design. Data that have been collected will be investigated by using SAS for the Chapter 4.

CHAPTER 4: DATA ANALYSIS

4.0 Introduction

In chapter 4, the research findings will be analysed and disclosed. Information from 372 questionnaires is analysed using SAS system. Interpretation of result is made to examine correlation between all the variables. Demographic analysis, analysis based on reliability test and additional findings are listed in this chapter.

4.1 Survey Responses

400 sets of questionnaires were distributed for the respondents in UTAR, Perak. Only 387 sets of questionnaires had been collected while there are 5 sets with incomplete answers. There are response rate of 98% from the questionnaires distributed.

4.2 Demographic Analysis

According to table 4.1, there are total 180 out of 372 respondents are male while 192 of them are females. This shows that female respondents are 3.12% higher than male respondents. The percentage of age group below 20 years old is 18.55% and 20-30 years old are majority of respondents with 81.45%.

Table 4.1 Gender and Age

		Gender		
		Male	Female	Total
Age	< 20 years old	34	35	69
	20 – 30 years old	146	157	303
	Total	180	192	372

Source: Developed for the Research

4.3 Reliability Test

The tables below showed the results of reliability test for the research.

Table 4.2 Cronbach Coefficient Alpha

Cronbach Coefficient Alpha	
Variables	Alpha
Raw	0.817092
Standardized	0.819520

Source: Developed for the research

The overall alpha value = 0.8171 consider very good for the research.

Table 4.3 Cronbach Coefficient with Deleted Variable

Cronbach Coefficient with Deleted Variable				
Deleted Variable	**Raw Variables**		**Standardized Variables**	
	Correlation with Total	**Alpha**	**Correlation with Total**	**Alpha**
Mean Performance Expectancy	0.702068	0.762018	0.706286	0.763930
Mean Effort Expectancy	0.620473	0.782162	0.625784	0.781851
Mean Social Influence	0.630591	0.777419	0.633503	0.780160
Mean Perceived Playfulness	0.412989	0.821639	0.412228	0.826455
Mean Self-management of Learning	0.495165	0.808664	0.489641	0.810770
Mean Behavioural Intention	0.652323	0.771733	0.650536	0.776407

Source: Developed for research

Table 4.3 showed that the acceptance of mobile learning is adequate with 0.7717 alpha values. Performance expectancy (0.7620), effort expectancy (0.7822), social influence (0.7774), perceived playfulness (0.8216) and self-management of learning (0.8087), all the independent variables alpha values are greater than 0.5, hence, this research consider reliability.

4.4 Multiple Regression Analysis

The table below showed multiple linear regression analysis to estimate coefficient for equation of a straight line in order to evaluate liner relationship between dependent variable and independent variables (Tables 4.4 – 4.6).

Table 4.4 Analysis of Variance

SAS Output Multiple Regression Analysis					
Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F-Value	Pr > F
Model	5	96.26051	19.25210	58.06	< .0001
Error	366	121.37001	0.33161		
Corrected Total	371	217.63053			

Source: Developed for the Research

Table 4.5 Analysis of Variance

Root MSE	0.57586	R-Square	0.4423
Dependent Mean	3.60125	Adj R-Sq	0.4347
Coeff Var	15.99047		

Source: Developed for the Research

There are 43.5% of variance in behavioural intention is influenced by performance expectancy, effort expectancy, social influence, perceived playfulness and self-management of learning. The remaining 56.5% of the difference in behavioural

intention can be clarified by other reasons that not considered in this study. Referring to Bonate (2005), R-Square > 0.4 is considered acceptable.

Table 4.6 Parameter Estimates

Parameter Estimates						
Variable	**DF**	**Parameter Estimate**	**Standard Error**	**t-Value**	**Pr > |t|**	**Standardized Estimate**
Intercept	1	-0.01299	0.23082	-0.06	0.9552	0
Performance Expectancy	1	0.40487	0.06542	6.29	< .0001	0.35059
Effort Expectancy	1	0.05459	0.07059	0.77	0.4399	0.04224
Social Influence	1	0.12815	0.05773	2.22	0.0270	0.11222
Perceived Playfulness	1	0.22026	0.04991	4.41	< .0001	0.18682
Self-Management of Learning	1	0.20750	0.04605	4.51	< .0001	0.20162

Source: Developed for the Research

$H_0 1$: **There is no correlation between performance expectancy and mobile learning acceptance in higher education institution in Malaysia.**

From Table 4.4, the p-value for performance expectancy is < 0.0001. As the p-value is < 0.0001 which is less than $\propto = 0.05$, performance expectancy may affect the behavioural intention of university students to accept mobile learning. Hence, reject the null hypothesis.

$H_0 2$: **There is no correlation between effort expectancy and mobile learning acceptance in higher education institution in Malaysia.**

From Table 4.4, the p-value for effort expectancy is 0.4399. As the p-value is 0.4399 which is greater than $\propto = 0.05$, effort expectancy may not affect the behavioural intention of university students to accept mobile learning. Hence, do not reject the null hypothesis.

$H_0 3$: **There is no correlation between social influence and mobile learning acceptance in higher education institution in Malaysia.**

From Table 4.4, the p-value for social influence is 0.0270. As the p-value is 0.0270 which is less than $\propto = 0.05$, social influence may affect the behavioural intention of university students to accept mobile learning. Hence, reject the null hypothesis.

$H_0 4$: **There is no correlation between perceived playfulness and mobile learning acceptance in higher education institution in Malaysia.**

From Table 4.4, the p-value for perceived playfulness is < 0.0001. As the p-value is < 0.0001 which is less than $\propto = 0.05$, perceived playfulness may affect the behavioural intention of university students to accept mobile learning. Hence, reject the null hypothesis.

$H_0 5$: **There is no correlation between self-management of learning and mobile learning acceptance in higher education institution in Malaysia.**

From Table 4.4, the p-value for self-management of learning is < 0.0001. As the p-value is < 0.0001 which is less than $\propto = 0.05$, self-management of learning may affect the behavioural intention of university students to accept mobile learning. Hence, reject the null hypothesis.

The ranking is arranges starting from performance expectancy followed by perceived playfulness, self-management of learning, social influence and effort expectancy. The result of all Parameter Estimates is greater than alpha = 0.05 starting from effort expectancy (p-value = 0.05459), social influence (p-value = 0.12815), self-management of learning (p-value = 0.20750), perceived playfulness (p-value = 0.22026) and performance expectancy (p-value = 0.40487).

There will be an increase of 0.4049, 0.2203, 0.2075, 0.1282 and 0.0546 units respectively in behavioural intention due to one unit increase in performance expectancy, perceived playfulness, self-management of learning, social influence and effort expectancy.

Y = -0.01299 + (0.40487)(Performance Expectancy) + (0.05459)(Effort Expectancy) + (0.12815)(Social Influence) + (0.22026)(Perceived Playfulness) + (0.20750)(Self-management of Learning)

Table 4.7 SAS Output of Pearson Correlation

Table 4.7 showed the analysis for Pearson Correlation between behavioural intention and independent variables (performance expectancy, effort expectancy, social influence, perceived playfulness and self-management of learning).

SAS Output of Pearson Correlation				
Pearson Correlation Coefficient, N=372				
Prob > |r| under H_0: $\rho=0$				
	Performance Expectancy	Effort Expectancy	Social Influence	Perceived Playfulness	Self-Management of Learning
Behavioral Intention	0.58401	0.45775	0.47452	0.39148	0.45549
	<.0001	<.0001	<.0001	<.0001	<.0001

Source: Developed for the Research

The ranking is arranges starting from performance expectancy followed by social influence, effort expectancy, self-management of learning and perceived playfulness. The similarity in between Pearson Correlation and Multiple Regression which is performance expectancy has the highest ranking for all the other independent variables. Performance expectancy influence the most the acceptance of mobile learning in higher education institution.

4.5 Additional Findings

The following table shows additional findings for the research.

Table 4.8 t-Test

	SAS Output of Independent t-Test				Equality of Variance		Pooled Method		Satterwaite Method	
	Mean		Standard Deviation		F-Value	Pr > F	t-Value	Pr > |t|	t-Value	Pr > |t|
	M	F	M	F						
BI	3.5963	3.6039	0.8338	0.6985	1.43	0.0162	-0.12	0.9040	-0.12	0.9045
PE	3.6411	3.5979	0.7310	0.5939	1.52	0.0048	0.63	0.5309	0.62	0.5336
EE	3.6989	3.6688	0.6151	0.5722	1.16	0.3254	0.49	0.6247	0.49	0.6255
SI	3.4478	3.4375	0.7457	0.5937	1.58	0.0020	0.15	0.8828	0.15	0.8837
PP	3.5733	3.5424	0.6596	0.6415	1.06	0.7051	0.46	0.6474	0.46	0.6477
SM	3.5361	3.4388	0.7899	0.6977	1.28	0.0921	1.26	0.2080	1.26	0.2098

Source: Developed for the Research

When the equality of variance test shows p-value is smaller than $\propto = 0.05$, Satterwaite method is chosen to continue the analysis. When the equality of variance test shows p-value is greater than $\propto = 0.05$, Pooled method is chosen to continue the analysis. All the p-value in additional findings are greater than $\propto = 0.05$, therefore, gender does not affect behavioural intention, performance expectancy, effort expectancy, social influence, perceived playfulness and self-management of learning.

4.6 Conclusion

Chapter 4 shows the survey responses, demographic analysis of the respondents and results from different data analysis. The major findings, implications and limitation of this research will be state in next chapter. Recommendation for future research will be suggested in Chapter 5.

CHAPTER 5: DISCUSSION, CONCLUSION AND IMPLICATIONS

5.0 Introduction

In chapter 5, results that collected in chapter 4 will be summarized and discuss in details. Summary of statistical analysis, discussions of major findings, implication, limitations and recommendations of this study will be stated in this chapter. Lastly, an overall conclusion will be made.

5.1 Overall Conclusion

This study is about the fundamental factors that influencing the acceptance of mobile learning in higher education institution. 27 questions are designed for the questionnaires for the analysis of data. The results from Multiple Linear Regression showed that there are correlation between performance expectancy, social influence, perceived playfulness and self-management of learning between behavioural intentions except effort expectancy. Since the p-value is less than $\propto = 0.05$, all the hypotheses are accepted except the effort expectancy (p-value = 0.4399) which greater than $\propto = 0.05$.

5.2 Discussions of Major Findings

5.2.1 Correlation between Performance Expectancy and M-Learning Acceptance

In the study, performance expectancy founded that is the strongest among the other independent variables and be positively related to acceptance of mobile learning. According to Suki & Suki (2011), (Teo (2011) (as cited in Marrs (2013)) and Taiwo and Downe, (2013), this result is corresponding with their studies. The cause that performance expectancy has the strongest outcome because acceptable of mobile learning will rise as researchers normally refer to usefulness as users' perception of the degree to which the system will improve or enhance performance (Teo (2011) (as cited in Marrs, 2013)).

5.2.2 Correlation between Effort Expectancy and M-Learning Acceptance

In the study, effort expectancy is negatively linked to behavioral intention to use m-learning. According to Juliet (2010), the past research showed that there is a positive relationship between effort expectancy and behavioral intention. However, the result from this study is not related with past study which there is no correlation in between effort expectancy and behavioral intention.

5.2.3 Correlation between Social Influence and M-Learning Acceptance

The results indicate there is positive correlation between the social influence and m-learning acceptance. However, it is also the weakest variable among the other independent variables.

According to Jairak, Praneetpolgrang, & Mekhabunchakil, K. (2009), social influence is also the weakest variables among performance expectancy, effort expectancy and social influence. There is minimum proportion of agree and strongly agree in the questions for lecturers in the class have been helpful to use mobile learning. As mobile learning not implemented in UTAR Kampar, lecturers are not encouraging the students to use mobile learning for the study.

5.2.4 Correlation between Perceived Playfulness and M-Learning Acceptance

It is a positive correlation between perceived playfulness and mobile learning acceptance in the study. Perceived playfulness acts as an intrinsic motivator to accept mobile learning (Moon & Kim, 2001; Deci 1975). Hence, it able to motivate and provide enjoyable experience as one of the factors to raise up the acceptance of mobile learning.

After comparing with other independent variables, perceived playfulness is greater influence than self-management of learning, social influence and effort expectancy. It is matched with the past studies showed that it has greater influence (Gunawardana & Ekanayaka, 2009; Wang et. al, 2009). Motivation will lead to more voluntary basis compare to compulsory basis as increase the acceptance of mobile learning.

5.2.5 Correlation between Self-management of Learning and M-Learning Acceptance

According to Smith, Murphy and Mahoney (2003), self-management of learning explained as the extent of a person feel he or she is self-controlled and able to involve in self-directed learning. As self-management of learning been chosen in current research, it found that there is a positive correlation between self-management of learning between acceptances of mobile learning.

There is extended UTAUT model that using self-management of learning to evaluate the acceptance level of mobile learning. There is an increasing autonomy in learning and personalization increase suitable condition for self-directed competence in terms of mobile learning (Mc Farlenne et. al, 2007). Therefore, self-management of learning been chosen as one of the independent variable for this study.

5.3 Implication of Study

5.3.1 Theoretical Implication

From the theoretical implications, the research provides insights on the determinants that influencing the Mobile Learning acceptance in higher education institution in Malaysia. This research has contributed from the perspective of University Tunku Abdul Rahman Perak Campus. This research basically uses the framework which consists of independent variable such as Performance Expectancy, Effort Expectancy, Social

Influence, Perceived Playfulness, Self-management of learning, and dependent variable which is the Behavioral Intention to use Mobile Learning. Besides, this research's proposed conceptual framework actually is extend of the original UTAUT model, in which we replace the independent variable (Facilitating Conditions) from original UTAUT model with Perceived Playfulness and Self-management of learning, in order to examine the relationship with the Behavioral Intention of m-learning acceptance. This integrated framework was to test about the reasons that impact the acceptance of mobile learning in higher education institution with different angle, rather than using original UTAUT model. Secondly, this research enable future researchers gain better understanding towards the level of acceptance and reasons that influence m-learning acceptance in higher education institution in Malaysia. Thirdly, the research served as guidance for future academics. Hence, the extended UTAUT model acts as a rich explanation regarding mobile learning acceptance.

5.3.2 Managerial Implication

The aim of the research is to learn the impact of Performance Expectancy, Effort Expectancy, Social Influence, Perceived Playfulness, and Self-Management of Learning on the students' acceptance towards m-learning. In view that the m-learning is getting important and simplified the process of study for students, therefore it is important that students adopt mobile learning in their study.

The result shows that Performance Expectancy has a positive impact on the behavioural intention towards the acceptance of mobile learning. Performance expectancy is important factor that will affect the students in higher education institution because they want the system that able to

improve the task performance and accomplish the task faster by using the system.

Social Influence has a positive influence behaviour intention towards mobile learning. Students in higher education institution often follow their friends, peers, and family members, if people around them use certain new system; they tend to follow along with them. Lecturers in higher education institution should voluntarily demonstrate and use mobile learning in front of their student, in order to encourage them to use mobile learning.

Besides, based on the research done, Perceived Playfulness also has the positive relationship in this study. The mobile learning system design needs to be easy-to-use, user-friendly, and multifunctional such as chat box that enable user to chat with friends, search engine, video learning, and so on. Young people like students usually drive by curiosity to explore or try new thing, therefore mobile learning should have those functions in order to attract them. The faculties of higher education institution should insert more elements in the mobile learning system, so that students are attracted and feel pleasant to use mobile learning.

Self-Management of Learning also found to has significant relationship in the research. Self-Management of Learning is also important because the users who use the mobile learning are mainly drive by their own attitude and learning intention. The lecturers of higher education institution should encourage students to use mobile learning by teaching them how to use and assist them in using mobile learning.

In the past research, according to Juliet (2010) study found that effort expectancy is a significant factor that will influence user acceptance and behaviour towards information technologies. However, our research shows that there is no correlation between effort expectancy and behavioural intention. The degree of easiness in using the mobile learning may not be

the key factor that affecting the students in higher education institution. Therefore, we suggest that the researchers who doing similar topic research maybe exclude effort expectancy in their research.

5.4 Limitations of the Study

Several limitations had been determined during the research periods. First, due to limited past researches that available and less higher education institution in Malaysia are using mobile in the learning process. Most journals are conducted in other nation had been used so it might be inadequate to identify the factors affect m-learning acceptance in Malaysia higher education institution. Collection of information is limited.

Next, respondent's bias and errors in answering the questionnaires is another limitation. Respondents might have different interpretation in the questions and might simply answer. Some questionnaires collected are shown with incomplete data. Also, respondents who weak in English face difficulty in answer questionnaires. All the reasons can eventually affect the accuracy of data analysis.

Lastly, UTAR students do not have prior experience in using mobile learning. Therefore, it can influence their answers and comments on the questionnaires.

5.5 Recommendations for Future Research

Studies in m-learning acceptance are relatively fresh in Malaysia and much work is needed to be done to further the knowledge base in this area. To have a better influence to the research in the future, awareness and attention should be given on the importance of mobile learning, so that more research will be conducted in

Malaysia with better and more accurate data can be collected. The following are some recommendations for future research.

To solve the potential biases and errors from respondents, careful question structure and construction is recommended in order to obtain more accurate and useful information. A certain degree of caution should be done to generalize the findings according to the context and the nature of the respondents. Besides that, a variety of methods can be used to collect immediate feedbacks and responses, such as focus group and face-to-face interview with respondents. By conducting with focus group or face-to-face interview, the researcher can lead and guide respondents how to answer, hence also reduce missing or incomplete data.

Besides, due to different background of the all respondents, different culture and education background may affect the respondent's choices and preferences. To reduce this problem, future study can investigate more variables such as age, the Effect on the student's perceived use of mobile learning, and perceived acceptance.

Finally, a thorough investigation on the cost of mobile learning services and alternative providers are also recommended because it could helps to provide insight into ways in which universities could implement mobile learning more cost effectively.

5.6 Conclusion

This study investigated the factors influencing the m-learning acceptance in higher education institution in Malaysia. The results show that 43.5% of the behavioural intention of mobile learning acceptance. The outcome of the results has stated that all hypotheses are accepted except effort expectancy towards behavioural intention. In conclusion, the analysed results can offer insights for future research relating to mobile learning in higher education institution.

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Appendix A: Definition of Construct

Multi-item Scale Measure	No. of Items	Sample Items
Performance Expectancy (PE)	5	- I find m-learning useful for my studies. - Using m-learning will enables me to accomplish learning task more quickly. - Using m-learning enables me to increase my productivity in learning. - M-learning can improve my performance in my studies. - Overall, I find mobile learning beneficial.
Effort Expectancy (EE)	5	- I would find an m-learning system flexible and easy to use. - Learning to operate m-learning system would not require much effort. - I would find my interaction with m-learning to be clear and understandable. - I would find it easy to get m-learning to do what I want it to do. - It would be easy for me to become skillful at using m-learning.

Social Influence (SI)	5	• It would be easy for me to become skillful at using m-learning. • Family members important to me would think that using m-learning would be a good idea. • My friends whom are important to me would think that using m-learning would be a good idea. • Lecturers have been helpful in the use of m-learning. • The administration of this university has been supportive in the use of mobile learning.
Perceived Playfulness (PP)	5	• When using m-learning, I will not realize that the time has elapsed. • When using m-learning, I will forget the work I must do. • Using m-learning will give enjoyment to me in my learning. • Using m-learning will stimulate my curiosity. • Using m-learning will lead to my exploration.

Self-management of Learning (SM)	4	• When it comes to learning and studying, I am a self-directed person. • In my studies, I am self-disciplined and find it easy to set aside reading and homework time. • I am able to manage my study time effectively and easily complete assignments on time. • In my studies, I set goals and have a high degree of initiative.
Behavioural Intention (BI)	3	• I plan to use m-learning in my studies. • I predict that I will use m-learning frequently. • I intend to increase my use of mobile services in the future.

APPENDIX B

Appendix B: Definition for Each Variable

Variables	Description	Adopted from
Performance Expectancy (PE)	The extent to which the information system will give benefit to the users.	Vankatesh, V., Morris, M.G., Davis, G.B., & Davis, F.D. (2003)
Effort Expectancy (EE)	The degree of ease associated with the use of system.	Vankatesh et al.(2003)
Social Influence (SI)	The degree in which a person perceives that others believe he or she should use a new technology system.	Vankatesh et al.(2003)
Perceived Playfulness (PP)	A state of mind contains of 3 aspects: The degree of which the users (1) perceived that his or her attention is concentrated in the m-learning interface (2) is in curiosity during the communication and; (3) is feeling pleasant when interact in m-learning.	Wang, Wu & Wang (2009)
Self-management of Learning (SM)	The degree a person feel he or she is self-controlled and able to involve in self-directed learning.	Wang et al. (2009)
Behavioral Intention (BI)	The motivation factors that affect the behaviour and specify the attentiveness and effort that people put forward to accomplish the behaviour.	Wang et al. (2009)

<div align="right">**APPENDIX C**</div>

<u>Appendix C: Questionnaire</u>

Title: The Fundamental Factors That Influencing Mobile Learning Acceptance in Higher Education Institution

Dear respondent,

We are final year undergraduate students of Bachelor of Marketing (Hons), from Universiti Tunku Abdul Rahman (UTAR). The purpose of this questionnaire is to examine the Fundamental Factors That Influencing Mobile Learning Acceptance in Higher Education Institution.

Specific instructions are given at the beginning of each section of the questionnaire. Kindly complete the questionnaire by answering all questions in each section.

Voluntary Nature of the Study

Participation in this research is entirely voluntary. Even if you decide to participate now, you may change your mind and stop at any time. There is a no foreseeable risk of harm or discomfort in answering this questionnaire. This is an anonymous questionnaire, as such, it is not able to trace response back to any individual participant. All information collected is treated as strictly confidential and will be used for the purpose of this study only.

(   ) Yes

(   ) No

We wish to thank you in advance for your cooperation and participation in this

study.

Yours sincerely,

Research Group

Section A: Demographic Profile

In this section, we are interested in your background in brief. Please tick your answer and you answer will be kept strictly confidential.

1. Gender

   ☐ Male

   ☐ Female

2. Age

   ☐ < 20

   ☐ 21 – 30

Section B: Factors that influence you to accept Mobile Learning

This section is seeking your opinion regarding the factors that influence your intention to use mobile learning. Respondents are asked to indicate the extent to which they agreed or disagreed with each statement using 5 Likert scale [(1) = strongly disagree; (2) = disagree; (3) = neutral; (4) = agree; (5) = strongly agree] response framework. Please circle one number per line to indicate the extent to which you agree or disagree with the following statements.

No	Questions	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
B1 Performance Expectancy (PE)						

PE1	I find mobile learning useful for my studies.	1	2	3	4	5
PE2	Using mobile learning will enables me to accomplish learning task more quickly.	1	2	3	4	5
PE3	Using mobile learning enables me to increase my productivity in learning.	1	2	3	4	5
PE4	Mobile learning can improve my performance in my studies.	1	2	3	4	5
PE5	Overall, I find mobile learning beneficial.	1	2	3	4	5
B2 Effort Expectancy						
EE1	I would find an mobile learning system flexible and easy to use.	1	2	3	4	5
EE2	Learning to operate mobile learning system would not require much effort.	1	2	3	4	5
EE3	I would find my interaction with mobile learning to be clear and understandable.	1	2	3	4	5
EE4	I would find it easy to get mobile learning to do what I want it to do.	1	2	3	4	5

EE5	It would be easy for me to become skillful at using mobile learning.	1	2	3	4	5

B3 Social Influence

SI1	People who influence my behavior think that I should use mobile learning.	1	2	3	4	5
SI2	Family members important to me would think that using mobile learning would be a good idea.	1	2	3	4	5
SI3	My friends whom are important to me would think that using mobile learning would be a good idea.	1	2	3	4	5
SI4	Lecturers have been helpful in the use of mobile learning.	1	2	3	4	5
SI5	Mass media (e.g. newspaper, radio, television) will influence me to use mobile learning.	1	2	3	4	5

B4 Perceived Playfulness

PP1	When using mobile learning, I will not realize that the time has elapsed.	1	2	3	4	5
PP2	When using mobile learning, I will forget the work I must do.	1	2	3	4	5

PP3	Using mobile learning will give enjoyment to me in my learning.	1	2	3	4	5
PP4	Using mobile learning will stimulate my curiosity.	1	2	3	4	5
PP5	Using mobile learning will lead to my exploration.	1	2	3	4	5

B5 Self-Management of Learning

SM1	When it comes to learning and studying, I am a self-directed person.	1	2	3	4	5
SM2	In my studies, I am self-disciplined and find it easy to set aside reading and homework time.	1	2	3	4	5
SM3	I am able to manage my study time effectively and easily complete assignments on time.	1	2	3	4	5
SM4	In my studies, I set goals and have a high degree of initiative.	1	2	3	4	5

B6 Behavioral Intention

BI1	I plan to use mobile learning in my studies.	1	2	3	4	5

BI2	I predict that I will use mobile learning frequently.	1	2	3	4	5
BI3	I intend to increase my use of mobile services in the future.	1	2	3	4	5

APPENDIX D

Appendix D: Gender and Age

One-Way Frequencies

Results

The FREQ Procedure

Gender				
Gender	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	180	48.39	180	48.39
2	192	51.61	372	100.00

Distribution of Gender

Age				
Age	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	69	18.55	69	18.55
2	303	81.45	372	100.00

Distribution of Age
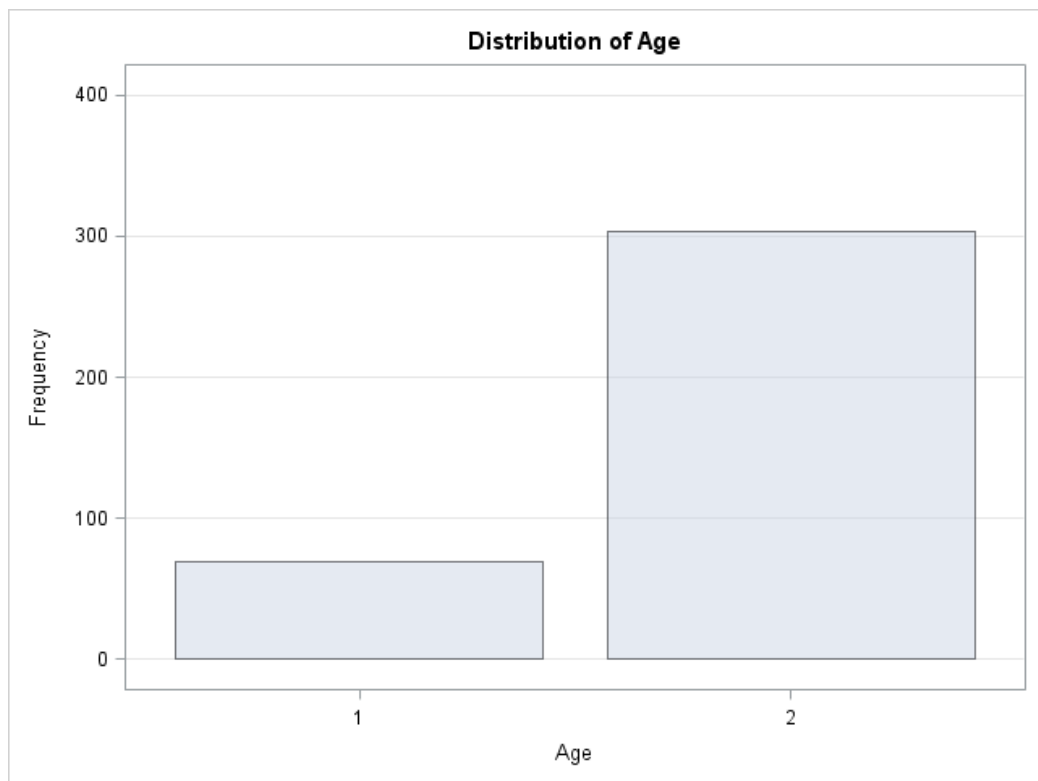
APPENDIX E

Appendix E: Cronbach Coeffcient Alpha

Cronbach Coefficient Alpha	
Variables	Alpha
Raw	0.817092
Standardized	0.819520

Cronbach Coefficient Alpha with Deleted Variable					
Deleted Variable	Raw Variables		Standardized Variables		Label
	Correlation with Total	Alpha	Correlation with Total	Alpha	
mean_Performance Expectancy	0.702068	0.762018	0.706286	0.763930	mean_Performance Expectancy
mean_Effort Expectancy	0.620473	0.782162	0.625784	0.781851	mean_Effort Expectancy
mean_Social Influence	0.630591	0.777419	0.633503	0.780160	mean_Social Influence
mean_Perceived Playfulness	0.412989	0.821639	0.412228	0.826455	mean_Perceived Playfulness
mean_Self-management of Learning	0.495165	0.808664	0.489641	0.810770	mean_Self-management of Learning
mean_Behavioral Intention	0.652323	0.771733	0.650536	0.776407	mean_Behavioral Intention

APPENDIX F

Appendix F: Multiple Linear Regression

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	5	96.26051	19.25210	58.06	<.0001
Error	366	121.37001	0.33161		
Corrected Total	371	217.63053			

Root MSE	0.57586	R-Square	0.4423
Dependent Mean	3.60125	Adj R-Sq	0.4347
Coeff Var	15.99047		

Parameter Estimates							
Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Standardized Estimate
Intercept	Intercept	1	-0.01299	0.23082	-0.06	0.9552	0
mean_Performance Expectancy	mean_Performance Expectancy	1	0.40487	0.06542	6.19	<.0001	0.35059
mean_Effort Expectancy	mean_Effort Expectancy	1	0.05459	0.07059	0.77	0.4399	0.04224
mean_Social Influence	mean_Social Influence	1	0.12815	0.05773	2.22	0.0270	0.11222
mean_Perceived Playfulness	mean_Perceived Playfulness	1	0.22026	0.04991	4.41	<.0001	0.18682
mean_Self-management of Learning	mean_Self-management of Learning	1	0.20750	0.04605	4.51	<.0001	0.20162

APPENDIX G

Appendix G: Pearson Correlation Coefficients

	mean_Performance Expectancy	mean_Effort Expectancy	mean_Social Influence	mean_Perceived Playfulness	mean_Self-management of Learning	mean_Behavioral Intention
Pearson Correlation Coefficients, N = 372						
Prob > |r| under H0: Rho=0						
mean_Performance Expectancy	1.00000	0.66468	0.54816	0.30629	0.42949	0.58401
		<.0001	<.0001	<.0001	<.0001	<.0001
mean_Performance Expectancy						
mean_Effort Expectancy	0.66468	1.00000	0.53079	0.32265	0.31064	0.45775
	<.0001		<.0001	<.0001	<.0001	<.0001
mean_Effort Expectancy						
mean_Social Influence	0.54816	0.53079	1.00000	0.33439	0.42267	0.47452
	<.0001	<.0001		<.0001	<.0001	<.0001
mean_Social Influence						
mean_Perceived Playfulness	0.30629	0.32265	0.33439	1.00000	0.22873	0.39148
	<.0001	<.0001	<.0001		<.0001	<.0001
mean_Perceived Playfulness						
mean_Self-management of Learning	0.42949	0.31064	0.42267	0.22873	1.00000	0.45549
	<.0001	<.0001	<.0001	<.0001		<.0001
mean_Self-management of Learning						
mean_Behavioral Intention	0.58401	0.45775	0.47452	0.39148	0.45549	1.00000
	<.0001	<.0001	<.0001	<.0001	<.0001	
mean_Behavioral Intention						

APPENDIX H

Appendix H: t-Test for Behavioural Intention

t Test
Gender vs. Behavioral Intention

The TTEST Procedure

Variable: mean_Behavioral Intention (mean_Behavioral Intention)

Gender	N	Mean	Std Dev	Std Err	Minimum	Maximum
1	180	3.5963	0.8338	0.0621	1.0000	5.0000
2	192	3.6059	0.6985	0.0504	1.0000	5.0000
Diff (1-2)		-0.00961	0.7669	0.0796		

Gender	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
1		3.5963	3.4737	3.7189	0.8338	0.7556	0.9301
2		3.6059	3.5065	3.7053	0.6985	0.6349	0.7763
Diff (1-2)	Pooled	-0.00961	-0.1661	0.1469	0.7669	0.7154	0.8265
Diff (1-2)	Satterthwaite	-0.00961	-0.1670	0.1478			

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	370	-0.12	0.9040
Satterthwaite	Unequal	350.02	-0.12	0.9045

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	179	191	1.43	0.0162

APPENDIX I

Appendix I: t-Test for Performance Expectancy

t Test
Gender vs. Performance Expectancy

The TTEST Procedure

Variable: mean_Performance Expectancy (mean_Performance Expectancy)

Gender	N	Mean	Std Dev	Std Err	Minimum	Maximum
1	180	3.6411	0.7310	0.0545	1.6000	5.0000
2	192	3.5979	0.5939	0.0429	2.0000	5.0000
Diff (1-2)		0.0432	0.6638	0.0689		

Gender	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
1		3.6411	3.5336	3.7486	0.7310	0.6625	0.8155
2		3.5979	3.5134	3.6825	0.5939	0.5398	0.6600
Diff (1-2)	Pooled	0.0432	-0.0922	0.1786	0.6638	0.6192	0.7153
Diff (1-2)	Satterthwaite	0.0432	-0.0932	0.1795			

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	370	0.63	0.5309
Satterthwaite	Unequal	345.18	0.62	0.5336

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	179	191	1.52	0.0048

Appendix J: t-Test for Effort Expectancy

t Test
Gender vs. Effort Expectancy

The TTEST Procedure

Variable: mean_Effort Expectancy (mean_Effort Expectancy)

Gender	N	Mean	Std Dev	Std Err	Minimum	Maximum
1	180	3.6989	0.6151	0.0458	1.8000	5.0000
2	192	3.6688	0.5722	0.0413	2.0000	5.0000
Diff (1-2)		0.0301	0.5933	0.0616		

Gender	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
1		3.6989	3.6084	3.7894	0.6151	0.5574	0.6861
2		3.6688	3.5873	3.7502	0.5722	0.5201	0.6359
Diff (1-2)	Pooled	0.0301	-0.0909	0.1512	0.5933	0.5535	0.6394
Diff (1-2)	Satterthwaite	0.0301	-0.0912	0.1515			

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	370	0.49	0.6247
Satterthwaite	Unequal	363.21	0.49	0.6255

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	179	191	1.16	0.3254

APPENDIX K

Appendix K: t-Test for Social Influence

t Test
Gender vs. Effort Expectancy

The TTEST Procedure

Variable: mean_Effort Expectancy (mean_Effort Expectancy)

Gender	N	Mean	Std Dev	Std Err	Minimum	Maximum
1	180	3.6989	0.6151	0.0458	1.8000	5.0000
2	192	3.6688	0.5722	0.0413	2.0000	5.0000
Diff (1-2)		0.0301	0.5933	0.0616		

Gender	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
1		3.6989	3.6084	3.7894	0.6151	0.5574	0.6861
2		3.6688	3.5873	3.7502	0.5722	0.5201	0.6359
Diff (1-2)	Pooled	0.0301	-0.0909	0.1512	0.5933	0.5535	0.6394
Diff (1-2)	Satterthwaite	0.0301	-0.0912	0.1515			

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	370	0.49	0.6247
Satterthwaite	Unequal	363.21	0.49	0.6255

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	179	191	1.16	0.3254

APPENDIX L

Appendix L: t-Test for Perceived Playfulness

t Test
Gender vs. Perceived Playfulness
The TTEST Procedure

Variable: mean_Perceived Playfulness (mean_Perceived Playfulness)

Gender	N	Mean	Std Dev	Std Err	Minimum	Maximum
1	180	3.5733	0.6596	0.0492	1.4000	5.0000
2	192	3.5424	0.6415	0.0463	1.0000	5.0000
Diff (1-2)		0.0309	0.6503	0.0675		

Gender	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
1		3.5733	3.4763	3.6703	0.6596	0.5978	0.7358
2		3.5424	3.4511	3.6338	0.6415	0.5831	0.7130
Diff (1-2)	Pooled	0.0309	-0.1018	0.1636	0.6503	0.6067	0.7008
Diff (1-2)	Satterthwaite	0.0309	-0.1019	0.1637			

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	370	0.46	0.6474
Satterthwaite	Unequal	366.87	0.46	0.6477

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	179	191	1.06	0.7051

APPENDIX M

Appendix M: t-Test for Self-management of Learning

t Test
Gender vs. Self-management of Learning

The TTEST Procedure

Variable: mean_Self-management of Learning (mean_Self-management of Learning)

Gender	N	Mean	Std Dev	Std Err	Minimum	Maximum
1	180	3.5361	0.7897	0.0589	1.0000	5.0000
2	192	3.4388	0.6977	0.0504	1.0000	5.0000
Diff (1-2)		0.0973	0.7436	0.0772		

Gender	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
1		3.5361	3.4200	3.6523	0.7897	0.7157	0.8810
2		3.4388	3.3395	3.5381	0.6977	0.6342	0.7754
Diff (1-2)	Pooled	0.0973	-0.0544	0.2490	0.7436	0.6937	0.8014
Diff (1-2)	Satterthwaite	0.0973	-0.0550	0.2496			

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	370	1.26	0.2080
Satterthwaite	Unequal	357.43	1.26	0.2098

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	179	191	1.28	0.0921