The Structural Equation Model of Behavioral Intention to Use Mobile for Learning in the 21ST Century

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Abstract—**This is a part of research in the structural equation model of behavioral intention to use mobile for learning in the 21ST century. The objective of this study is to synthesize and design a concept framework structural equation model of behavioral intention to use mobile for leaning in the 21ST century. The first section involves a synthesis concept framework for process acceptance structural equation model of behavioral intention to use mobile for learning in the 21ST century. The second section proposes the design concept framework of the model. The research findings are as follows:1) The exogenous latent variables included in the causal model of behavioral intention to use mobile for learning in higher education students in the 21ST century are Basic ICT, Convenience and Social Interaction.**
2) The mediating latent variables included this model are TAM Model: this includes three components: 1) Perceived Usefulness, 2) Perceived Ease of Use and 3) Attitude
3) The outcome latent variable of this model is Behavioral intention to use.

Keywords-component; Technology Acceptance Process, Mobile Learning Structural Equation Model

I. INTRODUCTION

As the present, Information and Communication Technology has been developed continuously and all the time thus it influences to social, business, industry, medication, and education. With the development of Information and Communication Technology, especially mobile technology is concerned as the one of the technology which has been developed further as a new paradigm [4] that could be response to higher education in 20th century. According to mobile technologies, it has been used for learning would comfort the users can access to the system any time for teaching, learning, searching [1], [2] therefore the Ministry of Information and Communication Technology has established ICT Policy Framework of Thailand (B.E. 2553-2563, ICT 2020) focusing on the smart Thailand through the use of ICT as a key driving force. By the 6 strategies mentioned, development and application of ICT are for creating the equality to access to the resources for everyone, hence Thai people are motivated to access to the online system as a form of life-long learning and ICT is promoted for this regarding [49]. From the policy, the office of the higher education commission of Thailand has been launched the Thai Higher Education Policy Framework 2008-2020, with the goal is for developing and expanding the potential of Information Communicating Technology to support e-Education by using Information Communicating Technology as an instrument to support the learning in the 21ST century [50], particularly mobile technology. As all mentioned, the researcher has an idea to conduct this study in the topic of structural equation model of behavioral intention to use mobile for learning in the 21ST century.

II. RESEARCH OBJECTIVES

The purposes of this study were;

2.1. To synthesize a concept framework the structural equation model of behavioral intention to use mobile for learning in the 21ST century.

2.2. To design a concept framework the structural equation model of behavioral intention to use mobile for learning in the 21ST century.

III. RESEARCH QUESTION

What are the structural equation model of behavioral intention to use mobile for leaning in the 21ST century?

IV. REVIEW OF LITERATURE

A. Mobile Learing

Mobile learning is a new way of learning which combines mobile computing technologies and e-learning. Users can access the learning materials anywhere at any moment [11] for formal and informal learning, both inside and outside the classroom [12] with the help of this type of learning environment. Nowadays, mobile learning has been recognized as the activity involving using capable of electronic information communication technologies and devices to facilitate students to access meaningful learning materials [13] through the wireless network which can adjust at any moment to meet changing learning needs by focusing on the mobility of the learner, and interacting with portable technologies.

Instructors and other learners can get a benefit to be better at learning from the implementation of this type of learning [14].

B. *Technology Acceptance Model (TAM)*

Technology Acceptance Model (TAM) has been emerged by [15]. It has been supported the users to understand, and provided the explanation of user behavior to the information system [16]. Additionally, TAM can be used for prediction and acceptance of the information systems and technologies by the users individually [17]. As stated by The Technology Acceptance Model (TAM), perceived usefulness and perceived ease of use are concerned as a new technology [18].

C. *Perceived Usefulness(PU)*

Perceived usefulness is a main determinant of Technology acceptance model resulting to Behavioral Intention [19], [20], [21] and perceived usefulness is considered as the total of valuation that the user perceives from a new technology usage [22], also is a critical factor to be successful in technology effectiveness [23].

D. *Perceived Ease of Use (PEOU)*

Perceived ease of use is an element of technology acceptance model [22] which considered as a representative of an innovation that is easy to understand, learn, and operate with [29]. More importantly, perceived ease of use was stated that is beneficial for preliminary acceptance, elemental for adoption through continued using onward [15] [27], [28], [26], [25].

E. *Social interactions*

Due to the decline of traditional learning that has gradually changed because of the rapid emerge of technologies, this has led to a new form of interaction between mobile users and their devices also known as Human-Mobile Interaction [38]as mobile devices could facilitate human interaction and accessing learning materials anytime and anywhere [39]. Social interactions which are part of social environment refer to interactions among students themselves, the interactions between teachers and students or between students [40]. In addition, perceived social interaction also includes the extent in which a certain learning mode is perceived to be helpful for learners to enhance peer relations and social connections between other learners [41]. From the above, it can be summarized as follows: interaction plays an important role in students' satisfaction and learning levels. Moreover, Interactivity and active learners contribute a great impact upon successful learning; however, lack of interaction has no impact towards the learning motivation of the students [42].

F. *Basic Information Commuication Technology*

Presently, information technology can be considered as a key of important material to improve student skill in university level, thus to create a strategy associating to the learning that has been changed incessantly is a trend by institutions. With reference to the competencies of students especially their information technology skill, can be concordance with ICT digital literacy concept, which is under consideration of the institutions. As per the functions of knowledgeable society (see table 1), consisting of: 1. Access, 2. Manage, 3. Integrate, 4. Evaluate, 5. Create, and 6. Communicate Information [33].

TABLE I.
BASIC ELEMENTS OF ICT DIGITAL LITERACY

Basic Elements of Digital Literacy		
Elements	**Definitions**	**Competencies**
Access	Knowing about and knowing how to collect and/or retrieve information	Search, find, and retrieve information in digital environments.
Manage	Applying an existing organizational or classification scheme.	Conduct a rudimentary and preliminary organization of accessed information for retrieval and future application
Integrate	Interpreting and representing information - summarizing, comparing, and contrasting	Interpret and represent information by using ICT tools to synthesize, summarize, compare, and contrast information from multiple sources.
Evaluate	Making judgments about the quality, relevance, usefulness, or efficiency of information.	Judge the currency, appropriateness, and adequacy of information and information sources for a specific purpose (including determining authority, bias, and timelines of materials).
Create	Generating information by adapting, applying, designing, inventing, or authoring information.	Adapt, apply, design, or invent information in ICT environments (to describe an event, express an opinion, or support a basic argument, viewpoint or position).
Communicate	Communicate information persuasively to meet needs of various audiences through use of an appropriate medium	Communicate, adapt, and present information properly in its context (audience, media) in ICT environments and for a peer audience

G. *Attitude Towards (AT)*

Attitude towards using technology in Technology acceptance model refers to an individual's feelings, individual's positive or negative on using a system [29] or evaluations generated when an individual uses new information technologies or the system [31]. Assessing attitudes has been an important role in analyzing consumer behavior [30] to determine whether accepting or rejecting the use of information technology [32]. Moreover, Attitude is interrelated with Perceived Usefulness and Perceived Ease of

Use which contribute to influencing behavioral intention of user [18].

H. Convenience

Convenience refers to the ability to use self-service technology [34] and convenience in use is similar to ease of use in Technology acceptance model considered as a salient determinant of the individual's acceptance and use of technology [35]. Indeed, convenience can be divided into convenience towards time, place, and execution [36]. As mentioned, in brief, convenience is one of the significant variables of the acceptance of mobile learning technology due to its capability of supporting users. For instance, users could access to the system at anytime and anywhere [37]. Moreover, when users use it, they could experience convenience towards execution that one feels when using the technology.

1. The first stage is to synthesize concept framework of the structural equation model of behavioral intention to use mobile for learning in the 21ST century.

2. The second stage proposed that the design the structural equation model of behavioral intention to use mobile for learning in the 21ST century. Therefore, the researcher created the model from resources of the subject, official public research, and related journals of the factors were included. Additionally the related ten papers were selected to create the model which is shown on the FIGURE 1.

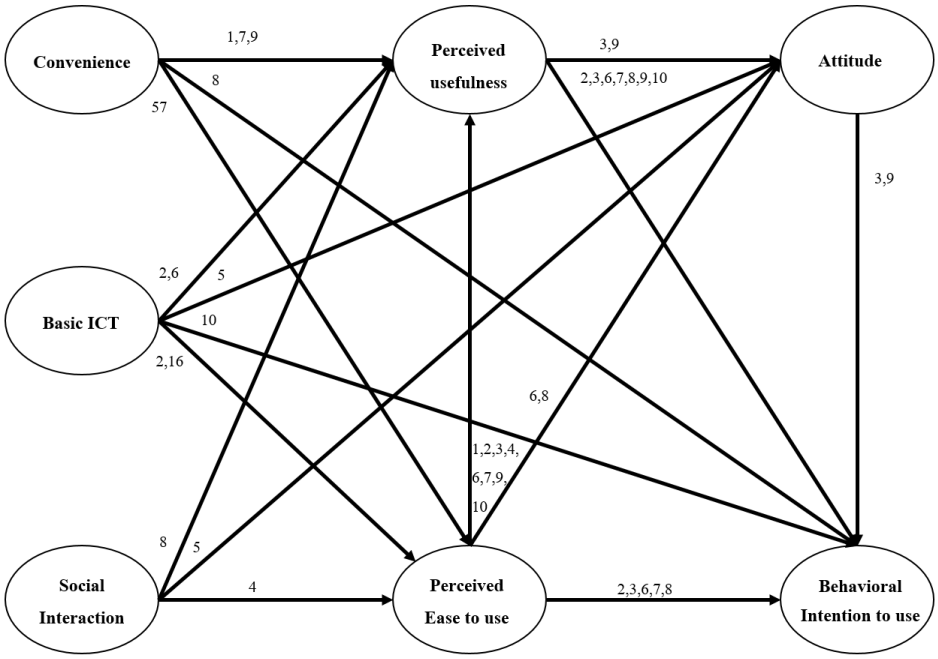

Figure 1. The concept framework of the structural equation model of behavioral intention to use mobile for learning in the 21ST century.

I. Behavioral intention to use (BI)

Behavioral intention to use is the prime determinant of actual usage behavior [43], [44] and is a key construct in various models developed in the academic field which is designed to explain the user behavior in technology acceptance [15]. Behavioral Intention to use is a measure of the likelihood that a person will adopt the technology [18] or the level of a person's willingness to use information technology [45].

V. Research Methodology

This research has two stage methodologies.

VI. Research Hypotheses

1. Variable of the study: Research variables considered in this study are:

1.1 Exogenous latent variables: Basic ICT, Convenience and Social Interaction.

1.2 Endogenous variables:

Mediating latent variables: Perceived Ease of Use, Perceived Usefulness and Attitude.

Outcome latent variables: Behavioral intention to use.

2. Hypotheses

This study employed correlational research to developing six hypotheses and then tests the relationships among variables which are considered in this study which are;

2.1 Convenience has a positive effect on Perceived Usefulness.

2.2 Convenience has a positive effect on Perceived Ease of Use.

2.3 Convenience has a positive effect on Behavioral intention to use.

2.4 Basic ICT has a positive effect on Perceived Useful

2.5 Basic ICT has a positive effect on Perceived Ease of Use.

2.6 Basic ICT has a positive effect on Attitude.

2.7 Basic ICT has a positive effect on Behavioral intention to use.

2.8 Social Interaction has a positive effect on Perceived Useful.

2.9 Social Interaction has a positive effect on Perceived Ease of Use

2.10 Social Interaction has a positive effect on Attitude.

2.11 Perceived Ease of Use has a positive effect on Perceived Usefulness.

2.12 Perceived Ease of Use has a positive effect on Attitude.

2.13 Perceived Ease of Use has a positive effect on Behavioral intention to use.

2.14 Perceived Usefulness has a positive effect on Attitude.

2.15 Perceived Usefulness has a positive effect on Behavioral intention to use.

2.16 Attitude has a positive effect on Behavioral intention to use.

VII. CONCLUSION

The researcher has proceeded on the studies and synthesis by collecting from journals, designing conceptual framework of causal model that related to behavioral intention for mobile for learning in higher education student group in the 21st century. There are seven factors of the model which is as following; the first four factors are Basic ICT, Convenience, Social Interaction and TAM Model, and another four components: perceived usefulness, perceived ease of use, attitude and behavioral intention to use.

As the result, the researcher found that the research is valuable as the model can be facilitated to the management of university's administrators, and supported teaching and learning as well. Furthermore, to making a plan and manage technology to support both teaching and learning, the model is based on the information. As well as the learning management can be worked by this model, especially in developing countries, the model is suitable.

VIII. RECOMMENDATIONS FOR RESEARCH

The basic structure should be prepared by the educational institutions, also internet and other devices should be ready to access for learning management system that is supported mobile learning usage.

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