

# M-BANKING CONCEPT of DELEON and McLEAN'S MODEL THEORY

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**Abstract-**As technology develops both financial institutions and commercial aspects and consumers are taking advantage of the efficiencies it brings. On the other side the cost of a financial transaction is becoming lower when using an electronic device. The research model proposed and described how we use mobiles, how we get information and from various adopting models how can we get the result for the future. By interacting the models of TAM, TPB, UTAUT, Deleon and McLean models are mobile banking adoption model. We found that performance expectancy, technology adaptation, social influence and facilitating conditions have significant effects on user adoption. In addition we also found a significant effect of task technology fit on performance expectancy.

**Keywords-**i) Mobile Banking-Theory of Planned Behavior (TPB), ii) Technology Acceptance Model (TAM), iii) Task Technology Fit Model (TTF), iv) Unified Theory of Acceptance and Usage of Technology (UTAUT) & v) Deleon and McLean model of Information System Success.

## I. INTRODUCTION

Mobile Banking also referred to as "Cell Phone Banking". It is use for mobile terminals such as personal phone (cell phone) and Personal Digital Assistants (PDA) to access banking networks via the "Wireless Application Protocol (WAP)", through the mobile banking user can access banking services such as account management, information inquiry, fund transfer, bill payments, recharge etc[1]. Compared with internet based online banking services mobile banking is free of temporal and special constraints. Nowadays more and more banks are offering mobile banking services via third or fourth generation networks (3G/4G) (Haworth 2008) and wireless application protocol since customers look for convenient and alternative modes to complete their banking transactions.

## II. PROPOSED MODELS

a. Technology Acceptance Model (TAM) & b. Theory of Planned Behavior (TPB):

All though million of dollars have been spent on build of mobile banking systems, reports on mobile banking shows that potentials users may not be using the systems, despites their availability. This research is needed to identify the factors determining user's acceptance of mobile banking. [2, 3] Where they have been considerable research on the Technology Acceptance Model (TAM) that predicts where individual will accept a voluntarily use information system. Limitation of the TAM includes the omission of an important trust based construct in the context of electronic mobile commerce and the assumption that there are no barriers preventing an individual from using of information system if he or she chooses to do so. Based on literature relating Theory of Planned Behavior (TPB) and this study extends the applicability of the TAM in a mobile banking context, by adding one trust based construct (perceived credibility) and two resource based constructs (perceived self efficacy and perceived financial cost) to the model, while paying careful attention to the placing of this constructs in the TAM's existing homological structure [4]. In addition recent research reveals that the perceived trust or credibility of users in relation to web system and had a striking influence on their willingness to engage in online shopping, banking and the exchange of money and sensitive personal information. Most users who refused to provide sensitive information to mobile banking systems, for the purpose of banking transactions report of they do not trust those collecting data. The primary objective of this research is to extend the TAM, while retaining its parsimony and information system focus in the context of mobile banking. Based on the literature regarding the TPB and TAM, the study extends the TAM's applicability to the context of mobile banking by adding one trust based construct (perceived credibility) and the two resource based construct (perceived self efficacy and the perceived financial cost) to the model with careful attention to the placing of these constructs within the TAM's existing homological structure and the important goal of this work is to develop a model that can provide useful information to mobile banking practitioners, while at the same time maintaining the TAM's theoretical psychometric rigor. By explaining users intentions from a user's perspective, the findings of this research cannot only help mobile banking authorities develop a more user accepted mobile banking system, but can also provide insight into the best way to promote new IT Systems to potentials users and the research model showing below [5].

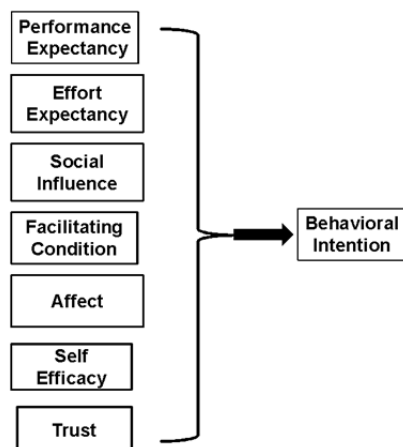


Fig.1. Variables of Behavioral Intention

c. Task Technology Fit Model (TTF):

Due to its advantages such as ubiquity and immediacy mobile banking has attracted traditional bank's interests. However a survey report showed that user adoption of mobile banking much lower than the other mobile services. The extend research focuses on explaining user adoption from technology perceptions such as perceived usefulness, perceived ease of use, interactivity and relative advantage. However user adoption is determined not only by their perception of the technology but also by the task technology fit. In other words even though a technology may be perceived as being advanced, if it does not fit user's task requirements may they not adopt it. By integrating the Task Technology Fit (TTF) model and the Unified Theory of Acceptance and Usage of Technology (UTAUT), this research proposes a mobile banking user adoption model. We found the performance expectancy, task technology fit; social influence and facilitating conditions have significant effects on user adoption [7]. In addition we also found a significant effect of task technology fit on performance expectancy. In this Paper a combined Task Technology Fit (TTF) and UTAUT model is proposed to explore the adoption of mobile technologies in the banking industry. The research result indicate-

A. Five constructs- 1. Data Quality 2. Authorization 3. Timeliness, 4. Reliability and 5. Relationship with users extracts from TTF theory are the dominant factors in measuring the TTF for using mobile business systems.

B. Performance expectancy and effort expectancy mediate the influence of TTF on intention to continuing using mobile business systems.

C. Data quality and relationship with users in TTF are the two factors that affect performance expectancy in using mobile commerce systems.

D. Relationship with users in TTF is the only factor that affects the effort expectancy in using mobile commerce systems.

The TTF model originated from the Cognitive Fit Theory (CFT) of Vesey's (1991), Cognitive Fit Theory is based on the problem solving aids and the problem solving tasks can reduce the complexity of the tasks and improve the problem solving effectiveness. The TTF theory believes that fit among the task technology and the users positively affects the adoption of information technology (Goodhue and Thompson 1995, 1998). TTF focuses on the degree to which system features fit user task needs and posits the higher TTF will result in better performance (Goodhue, 1995). Eight general factors were developed to measure the TTF. Data quality, floatability, authorization, compatibility, production timeliness, system reliability, eases of use /training and relationship with users (Goodhue, Thompson, 1995).

### TTF Model by Goodhue and Thompson (1995)

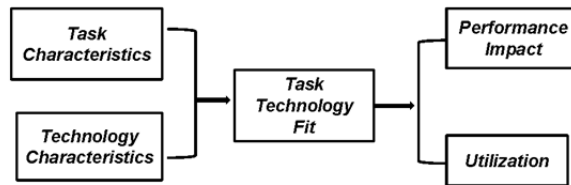


Fig. 2. TTF Model by Goodhue and Thompson, (1995)

#### d. Unified Theory of Acceptance and Usage of Technology (UTAUT):

User adoption in Information Technology is an important issue in information research and practice. Researcher has proposed eight competing technology adoption models. Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975), Technology Acceptance Model (TAM) (Davis, 1989), Motivational Model (Davis et.al, 1992), Theory of Planned Behavior (TPB) (Ajzen, 1985), combined TAM and TPB (C-TAM-TPB) (Taylor and Todd, 1995), Model of PC Utilization (MPCU) (Thompson et.al, 1991), Innovation Diffusion Theory (IDT) (Rogers, 1995, Moore and Benbasat, 1991) and Social Cognitive Theory (SCT) (Bandera, 1986, Compeau and Higgins, 1995, Compeau et.al, 1991). Each Technology Acceptance Model has different sets of adoption determinants. In order to integrate the fragmented theory and research on Information Technology adoption (Venkatesh et. al, 2003) formulate the UTAUT model that captures the essentials elements of the eight existent models. The elements are Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, Gender, Age, Experience, Voluntariness of use, Behavioral Intension and Use Behavior.

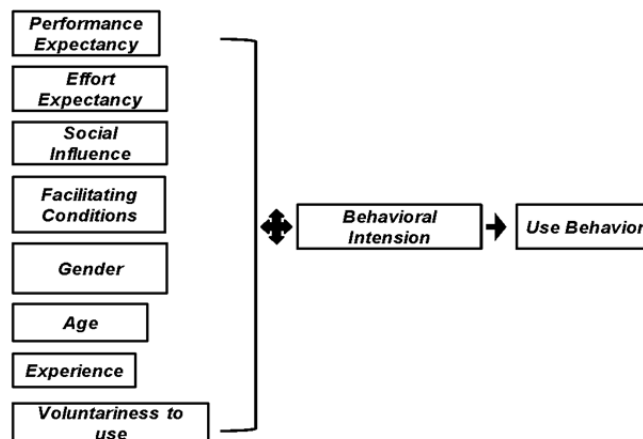


Fig. 3. UTAUT model by Venkatesh, 2003

#### d. DeLeon and McLean Model of Information System Success:

DeLeon and McLean Information System (IS), is a success model of a framework and model for measuring the complex dependent variables in IS research. In this model focusing mainly on research efforts that apply validate, challenges and proposed enhancements to the original model. Based on the evaluation of those contributions, it proposed minor refinements to the model and updated DeLeon and McLean IS Success Model. The DeLeon and McLean Information System (IS) Success Model through published in 1992, was based on theoretical and empirical IS research, conducted by no. of researchers in the 1970's and 1980's [8]. The role of IS has changed and progressed during the last decade. Similarly academic enquiry into the measurement of IS effectiveness has progressed over the same period. The articles in information research system, Journal of

management information system and MIS quarterly since 1993 in order to inform this review of IS success management. The DeLeon and McLean Success Model "System Quality" measures technical success, "Information Quality" measures semantic success and use, user satisfaction and individual impacts, "Organizational impacts" measures success of effectiveness. Based on both the progress and casual considerations those six dimensions of success are proposed to be interrelated rather than independent[9]. This has important implications for the measurement, analysis and reporting of IS success in empirical studies. A temporal process model suggest that an IS is first created, containing various features which can be characterized as exhibiting various degrees of system and information quality. Next users and managers experience these features by using the system and either satisfied with the system or its information products. The use of the system and its information products then impacts or influences the individual user in conduct of his or her work and these individual impacts collectively result in organizational impacts. The resultant DeLeon and McLean Information System Success Model is reproduced in below mentioned diagram [10,11].

D and M IS SUCCESS MODEL(1992)

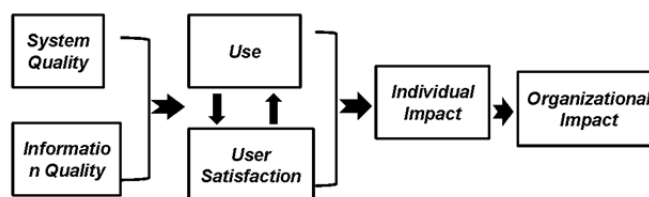


Fig. 4. D & M IS Success Model

### III. CONCLUSION

Many of the suggested improvements to the D&M IS Success Model flow from a confusion between what is an independent variable and what is part of the dependent variable. IS Success "User Involvement" and "Top Management Support" are two example of suggested addition to the D&M IS Success Model, yet these are clearly variable that may cause success rather than being a part of success. "Investing in ERP" may or may not lead to improved "Information Quantity" (as accept of IS Success), but the former is an independent variable whereas the latter is part of the dependent variable. It is essential that IS researchers distinguish between the measurement control variables and the desired results in the term of quality use satisfaction and impacts.

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