

Factors affecting customer's Adoption of Mobile Banking in the Sultanate of Oman

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Abstract - This study aimed at identifying the major factors that affect customer's adoption of Mobile Banking (m-banking) services in Oman. The study followed the quantitative research method and adopted the Unified Theory of Acceptance and Use of Technology (UTAUT) model. A conceptual model was formulated and tested using the Partial Least-Squares Structural Equation Modeling (PLS-SEM) technique. Moreover, correlation and multiple linear regression analyses were performed to assess fit of outputs of this model with the results obtained from the survey. It was found that individual's intention to adopt m-Banking services in Oman is significantly influenced by several factors whose effects decrease in the order: personal innovativeness, facilitating conditions, social influence, effort expectancy, and performance expectancy. The results of this study are expected contribute to in-depth understanding of how demographic and other factors affect adoption of m-Banking services in sultanate of Oman and play critical role in improving the level of their adoption.

Keywords: *Effort Expectancy, Mobile Banking, Personal Innovativeness, Performance Expectancy, and UTAUT.*

I. INTRODUCTION

The fast-paced technological innovations, vigorous global competition, and growth in the knowledge-driven economies have been enabled by the growth and development of the Internet as an information source and a service-delivery channel. The Internet has the attribute and advantage of being able to surpass the limits of distance and space, thus greatly facilitating delivery of services anywhere and at any time from Internet-enabled device (Tung et al., 2014). The varied technological advances enabled the customers worldwide to access Banking services without need for physical visiting of banks. The financial institutions too have realized the tremendous chances which these technological advancements offer so as to maintain and develop the current customers' relationships, attract new customers, cross-sell their products, and develop new innovative services (Kearney, 2012, Nel & Boshoff, 2014; Shaikh & Karjaluo, 2014).

II. CONCEPTUAL FRAMEWORK

A. The Unified Theory of Acceptance and Use Of Technology (UTAUT) Model

The UTAUT model was originally developed by Venkatesh et al. (2003) in an effort to compile the previous TAM-related studies. The UTAUT aims at explaining the

user's intention to use an Information System (IS) and her/his subsequent use behavior. The theory posits that the main determinants of the use intention and behavior are four principal constructs: effort expectancy (EE), performance expectancy (PE), facilitating conditions (FCs), and social influence (SI). Age, gender, experience, and voluntariness of use are hypothesized to mediate the effects of these four major constructs on the use intention and actual use behavior (Venkatesh et al, 2003). This theory was formulated in view of review and compilation of the constructs of eight previous models which the early studies employed so as to explain the IS use behavior.

The UTAUT is anticipated to become the founding theory for the technology adoption research in the Information Systems (ISs) field in the future. The UTAUT model was examined empirically and found to outpace its antecedent models, including the Technology Acceptance Model (TAM) (Carlsson, Carlsson, Hyvonen, Puhakainen & Walden, 2006). For example, Carlsson et al. (2006) implemented a study in Finland using the UTAUT and found that EE and PE were the main determinants of the user's behavioral intention to use mobile services. However, the UTAUT model is not perfect and, thereupon, to be able to apply it to specific IT applications like m-banking, revision and modification of this model is required as recommended by Venkatesh et al. (2003). In

this context, the UTAUT model has been revised to explore the user’s acceptance of the mobile commerce, where additional determinants of acceptance like privacy, trust, cost, and convenience were shown to influence the user’s behavioral intention to use mobile commerce services (Min, Ji & Qu, 2008). As well, Lee (2009) studied the factors influencing adoption of the Internet Banking in Taiwan. They integrated the Theory of Planned Behavior (TPB) with TAM and added the constructs of the perceived benefit and perceived risk to the integrated model. As far as the perceived risk is concerned, these researchers took into account five risk antecedents of the

perceived risk, namely, the social, performance, security, time, and financial risks.

B. Conceptual Model and Research Hypotheses

Taking into consideration the reported factors which may have impacts on the user’s acceptance of m-Banking services, the researcher developed a conceptual model for the present study that modifies the UTAUT model of Venkatesh et al. (2003) by proposing and incorporating additional factor into the original UTUAT model so as to identify the factors that influence the user’s acceptance of m-Banking by banks in Oman. Therefore, this section elaborates on the constructs of this model (Figure 1).

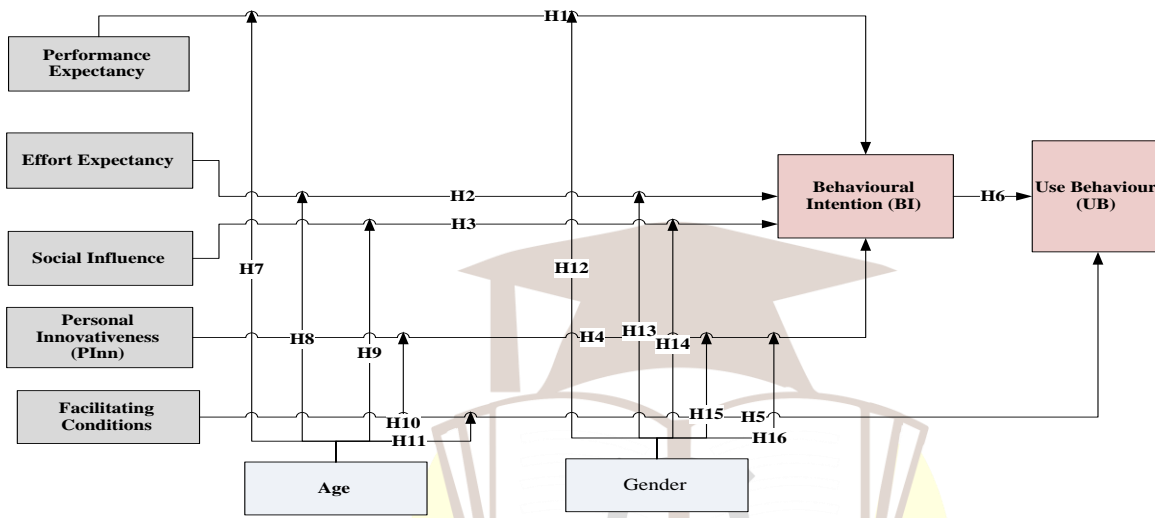


Figure 1: Conceptual Model

III. RESEARCH METHODOLOGY

A. Research Objective

- To identify the factors that are affecting the customer adopting of mobile banking in the sultanate of Oman.
- Adoption of quantitative research method and adopted the Unified Theory of Acceptance and Use of Technology (UTAUT) model

B. Research Problem:

There were various problems faced by the customers when using mobile banking, such as security, online transactions not done effectively. E payment got delayed and sometimes immediate transfer is not promptly done and so on...

C. Research Hypotheses

In light of the literature review and the foregoing discussion, the researcher developed 16 hypotheses to be tested in the present study. These hypotheses are:

H₁: Performance Expectancy (PE) has a statistically-significant ($\alpha = 0.05$) direct effect on the user’s Behavioral Intention (BI) to adopt the m-Banking services.

H₂: Effort Expectancy (EE) has a statistically-significant ($\alpha = 0.05$) direct effect on the user’s Behavioral Intention (BI) to adopt the m-Banking services.

H₃: Social Influence (SI) has a statistically-significant ($\alpha = 0.05$) direct effect on the user’s Behavioral Intention (BI) to adopt the m-Banking services.

H₄: Personal Innovativeness (PI) has a statistically-significant ($\alpha = 0.05$) direct effect on the user’s Behavioral Intention (BI) to adopt the m-Banking services.

D. Methodology

This empirical study adopted the quantitative research method. Within this context, the study used a questionnaire to survey the target population and collect the research data. The research Philosophy used in this study was positivism. Research approach adopted was inductive approach and survey as research strategy. Research design adopted as empirical analysis. Simple random sampling techniques were used for this study covering all the demographic characteristics. The

investigation was intended to uncover whether the explanatory variables do, or do not, significantly affect use of m-Banking services in Oman.

E. Sampling And Location

The population of interest to this study was bank clients in Oman. In the beginning, a pilot study of 35 respondents was conducted in Amman to assess the validity of the self-administered questionnaire and the convenience sampling approach was followed in the pilot study to secure the target number of suitable respondents. The main inclusion criterion was that the respondent is 22 years old or older. Later to this pilot study, the questionnaire was distributed online in Oman following the snowball sampling technique so as to collect the final research data. By the end of the study, a total of 216 complete questionnaire forms were retrieved.

F. Measurement of Variables

The research questionnaire was made up of two major sections. The first section was intended to collect some background information about the demographic characteristics of the sample members. Meanwhile, the second part of the questionnaire was devoted to the research variables, both the explanatory and outcome variables. Overall, the second section of this questionnaire comprised 25 items that were rated following the five-point ordinal scale and which addressed each of the following variables: behavioral intention to use m-Banking(3 items), behavioral use of m-Banking(3 items), performance expectancy (4 items), effort expectancy (3 items), social influence (4 items), facilitating conditions (4 items), and personal innovativeness (items). The instrument items defining the seven foregoing variables were adapted by the researcher from Agarwal and Prasad (1998) and Venkatesh, et al. (2003).

G. Data Analysis

The collected data were analyzed using the Statistical Package for Social Science (SPSS, v. 13.0). Descriptive analysis based on frequencies and percentages was performed to define the major demographic characteristics of the respondents. Moreover, the study applied Pearson's Product-Moment Correlation Analysis; the two, independent-sample *t*-test; the Chi square test of independence; and multiple linear regression analysis. In all tests, the significance level (α) was set at 0.05, unless otherwise specified.

IV. RESEARCH FINDINGS

This section is the results and discussion section. It presents and discusses the demographic profile of the sample members, results of testing for reliability of the research questionnaire, and outcomes of the hypothesis testing.

A. Profile of the Respondents

Table 1: The Demographic Profile of the Respondent Bank Clients

Measure	Item	Frequen	Percenta	Cumulat
Gender	Male	119	55.1	55.1
	Female	97	44.9	100
Age (Years)	22-32	54	25.1	25.1
	33-43	82	37.5	62.6
	44-54	32	15.4	78
	55 and	48	22.0	100
Educational Level	Element	67	31.2	31.2
	High	45	20.8	52
	College	62	28.7	80.7
	Graduate	42	19.3	100
Income	No	23	10.6	10.6
	OR500–	40	18.4	29
	OR1101	41	19.0	48
	OR2001	40	20.0	68
	OR3001	29	14.0	82
	Above	43	18.0	100
Total		216	100%	

As regards education, the majority of the respondents (31.2%) had elementary school education, followed by those with college level education (20.8%). Meantime, the sample comprised somewhat equal proportions of bank clients with high school education (20.8%) and graduate degrees (19.3%).

With respect to the monthly income, Table 1 discloses that the smallest percentage of the respondents (10.6%) was that of the bank clients having no incomes, followed by respondents with monthly incomes ranging from OR3001 to OR4000 (14.0%). The bank clients with monthly incomes greater than OR4001 and incomes in the range of OR500–OR1000 constituted approximately equal proportions of the sample of the bank clients in this study; 18.4% and 18.0%, respectively. The same applies to bank clients whose monthly incomes lie within the ranges of OR1101–OR2000 (19.0%) and OR2001–OR3000 (20.0%).

V. INSTRUMENT RELIABILITY

The researcher tested the questionnaire for its reliability and for internal consistency of its items using the Reliability Analysis, with the value of Cronbach's alpha coefficient serving as the indicator of reliability. The value of Cronbach's alpha coefficient should be equal to, or higher than, 0.70 for the instrument to be considered as sufficiently reliable. Table 2 shows that the values of Cronbach's alpha coefficient were larger than 0.70 for all seven constructs of the research instrument. They ranged

from 0.821 for the BI construct to 0.891 for the UB construct, hence indicating that the seven constructs of the research questionnaire were all reliable and that their items have high internal consistency.

Table 2: Results of Reliability Analysis of the Research Instrument

Construct	No of Items	Item deleted	Cronbach's Alpha Coefficient
PF	4	None	.871
EE	3	None	.875
SI	4	None	.871
FCs	4	None	.826
PI	3	None	.872
BI	3	None	.821
UB	3	None	.891

On the other hand, the third column in Table 2 indicates that there was no need for removal of any instrument item. In this respect, Nunnally (1978) suggested that if removal of an instrument item leads to only small increment in

value of Cronbach's alpha coefficient, then there will be no need for removal of this item. In the current study, no single item was eliminated from the questionnaire because elimination of no item resulted in tangible increase in instrument reliability.

VI. Evaluation of the Quality of the PLS-SEM

The present study employed the SmartPLS software, v. 2.0 M3, to perform partial least-squares structural equation modeling (PLS-SEM). This software is widely employed in the management and Banking research (Henseler *et al.*, 2009). The PLS model is usually analyzed and interpreted in two phases (Hair *et al.*, 2011; Valerie, 2012). In the first phase, the measurement model (i.e., the outer model) is tested to confirm its reliability and validity. The psychometric characteristics of the multi-item construct, including its reliability and convergent and discriminant validities, are examined via confirmatory factor analysis (CFA). In the second phase, the structural model is analyzed by assessing its coefficient of determination (R^2), effect size, predictive relevance of model, the goodness of fit of model, and the associated path coefficients. These two stages are illustrated in Figure 2.

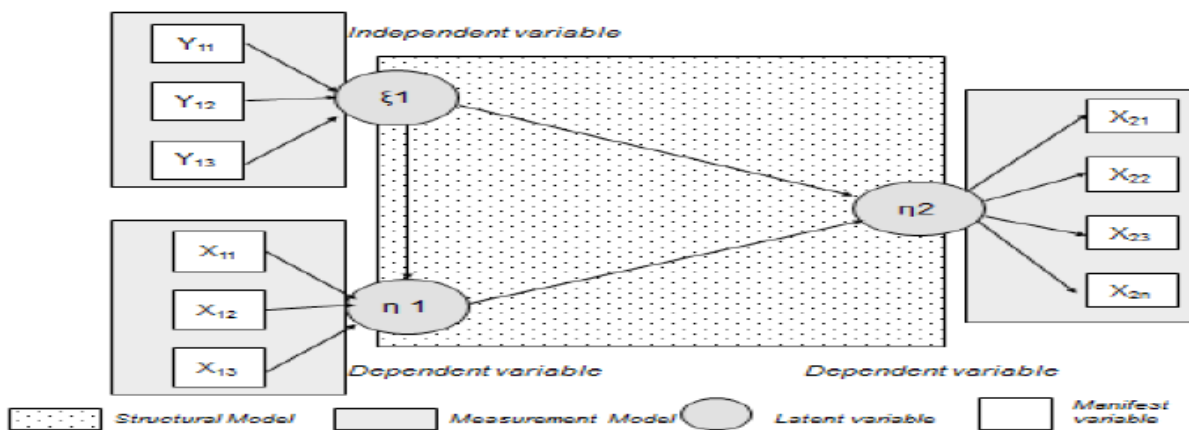


Figure 2: The Measurement and Structural Models

a. The Original Study Model

The original model in this study included 25 reflective measurement items (i.e., manifest indicators or variables) pertaining to eight latent variables that are made

up of five antecedent (or independent) variables, two moderating variables, and one dependent variable (Figure 3). Together, these variables imply 14 potential mutual relationships based on the hypotheses proposed by this study (Figure 3).

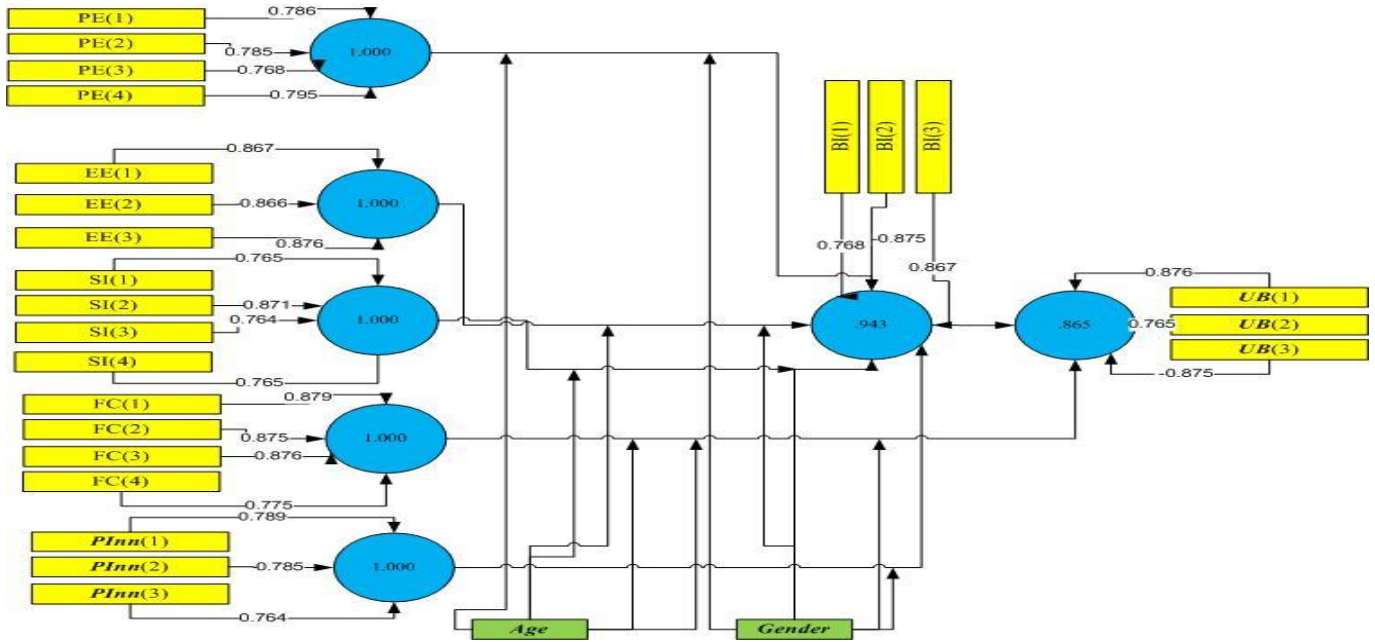


Figure 3: The Original Study Model

b. Hypotheses Testing

The predictive model with the R^2 values and path coefficients associated with the investigated variables are given by Figure 5. In sum, it was found that 15.6%

of the variance in the sample bank client's BI to adopt m-Bankingservices in Oman is explained by PE, EE, SI, and PI. Moreover, the modeling outcomes uncover that 65.7% of the variance in the UB is accounted for by the FCs. In the meantime, nearly 65.8% of the total variance in the UB is explained by BI.

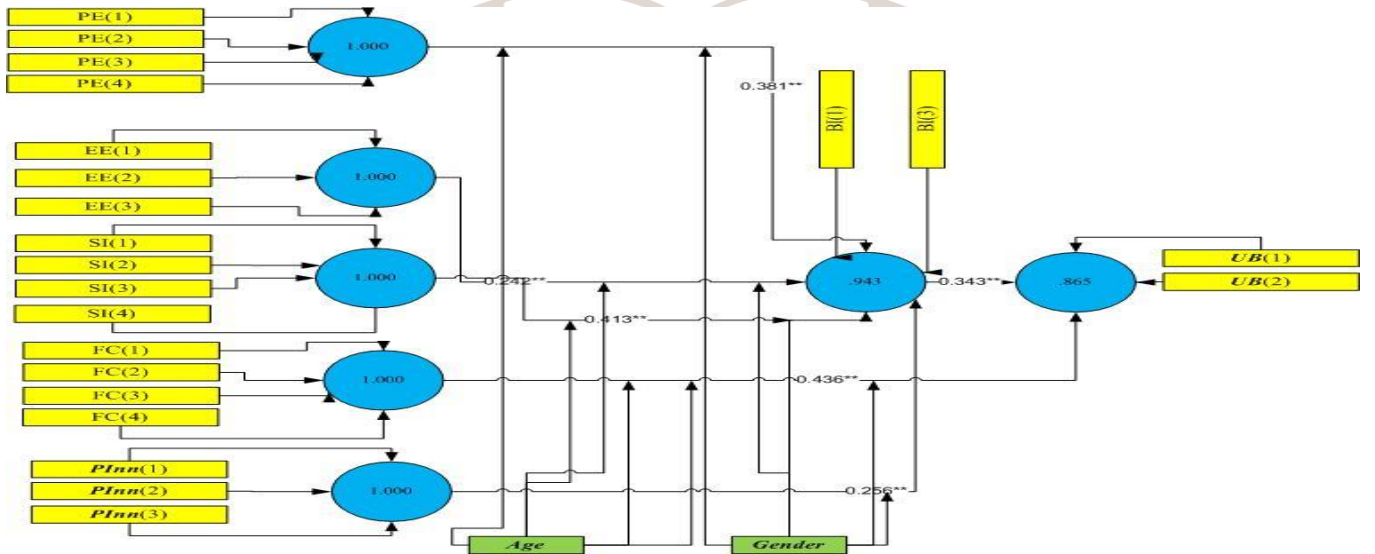


Figure 4: The t values for the Study PLS Model

An attempt was made to identify the variables that have the highest capacity to significantly predict acceptance of m-Banking services by the bank clients in Oman. Table 4 summarizes the results of multiple regressions for the variables predicting BI, with moderating variables included in the analysis. The analysis (Table 4) disclosed that the prediction power of the model did not improve significantly upon inclusion of the moderating variables.

Table 4: Summary of multiple regressions for variables predicting behavioral intention (with moderating effects)

Constructs	$B^{a,b}$	t	Sig. ^c
PE × Age	-.078	-2.000	.046*
EE × Age	.050**	1.315	.189
SI × Age	.032	.877	.381
PI × Age	.055*	1.504	.113
FC × Age	.043**	.369	.712
PE × Gender	-.119	-1.160	.247
EE × Gender	.110	.993	.321
SI × Gender	.053**	.471	.638
PI × Gender	-.115	-1.140	.283
FC × Gender	.110**	.867	.637

- a. *: The coefficient is significant at the 0.05 level of significance.
- b. **: The coefficient is significant at the 0.01 level of significance.
- c. *: The effect is significant at the 0.05 level of significance.

VII. CONCLUSIONS

This study could successfully determine impacts of several factors on the BI of the user to adopt m-Banking services in Oman as one example of developing country. Furthermore, the study highlighted influence of personal innovativeness on m-Banking adoption and defined its relation with the user's BI to adopt m-Banking services. The findings of this study are anticipated to contribute to an in-depth understanding of how the studied factors, in general, and personal innovativeness, in particular, influence adoption of m-Banking services and applications in developing countries. In other respects, the outcomes of this study have potential play substantial role in boosting the level of adoption of the provided m-Banking services in these countries. Therefore, future research must investigate the likely effects of demographic factors (e.g., experience, awareness, and monthly income) on m-Banking adoption as well as their potential moderating effects on the relationships between (i) the investigated factors and the user's BI to adopt the m-Banking services, and (ii) the studied factors and the user's UB of the m-Banking services.

In view of the results of this study, the researcher thinks that the factors examined in the present study are critical to take into account when introducing m-Banking services and applications to customers in developing countries. The m-Banking service providers should strive continuously to simplify their services and tailor them to the needs of their clients. In addition, the Banking institutions have to pay effort to design and develop applications that meet the needs of their clients.

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