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Explicating mobile banking acceptance in Oman: Structural Equation Model

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ABSTRACT

The objective of this paper is to empirically examine important factors influencing users' intention to acceptance mobile banking in a developing country like Oman. The proposed research model includes two key constructs namely perceived ease of use and perceived usefulness from well-known Technology Acceptance Model (TAM) and two other variables namely perceived trust and mobility. The research model was empirically tested using survey data. Data were collected from 122 mobile banking users and analyzed by employing structural equation modeling. The findings of this paper suggested that trust and perceived usefulness were key constructs influencing mobile banking in one of the important oil-producing nation among Gulf Cooperation Council (GCC) Countries.

KEYWORDS: Mobile banking, Trust, Mobility, SEM, Oman

INTRODUCTION

Mobile banking (M-Banking) is defined as " the use of mobile devices such as mobile phones, smartphones, personal digital assistants (PDA), and tablet computers to access banking networks via the wireless application protocol (WAP) for financial services (Shaikh & Karjaluoto, 2015). The penetration of mobile Internet is growing exponential in younger generation around the globe. The growing density of mobile phones can be attributed to multiple uses of mobile instead of simple chatting and SMSs. A mobile phone has become a lifestyle device especially among youngsters and has evolved into a device that can perform services such as finding location of a store, selling and purchasing of products and services, payment of utility bills, performing banking transactions and connecting to social networks (Khalifa & Shen, 2008; Hsu & Wang, 2011; Hanafizadeh et al, 2014). There are various advantages of mobile devices. However, usage of mobile devices for banking activities is relatively low ((Wei et al, 2009).

There are evidences in the literature of having different patterns of M-Banking acceptance in different countries. For example, the geographically smaller eastern countries such as Singapore, Japan, Korea and Taiwan display a higher degree of m-commerce adoption at par or even faster than several developed countries of West (Zhang et al, 2012). The possible reason is high quality mobile telecom infrastructure, high degree of technology adoption readiness and pro-government policy to boost basic telecom infrastructure in the developed countries. The scenario in the context of developing countries is different. There are huge opportunities in developing countries but actual use of M-Banking is low. Therefore, it is important to understand and explore the key factors influencing the M-Banking acceptance from a developing country perspective, like Oman.

On the basis of the above discussion, this study has three objectives. First, it intends to explore factors that influence users to acceptance M-Banking. Second, the study extends a widely known TAM (Technology Acceptance Model) by integrating two more constructs namely perceived trust and mobility. Third, the paper intends to understand users behavior towards M-Banking acceptance from a developing country perspective.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

There are significantly large numbers of studies examining the new technology acceptance from users point of view. The literature on IT/IS adoption has widely used empirical work based on Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975), Technology Acceptance Model (TAM) (Davis, 1989), Theory of Planned Behaviour (TPB) (Ajzen, 1991)   and Innovation Diffusion Theory (IDT) (Roger, 1995). TAM is considered as powerful and robust model to understand user behavior towards new technology. However, it is considered incomplete in the opinion of various researchers (Brown & Venkatesh, 2005). There are various studies available in the literature where researchers have extended TAM by integrating new constructs (Chong, 2013). Barki (2007) discussed that TAM has limitations as it is being considered simple and over studied. Venkatesh & Davis (2000) and Venkatesh & Bala (2008) developed TAM 2 and TAM 3 by incorporating social influence, facilitating conditions and others into original TAM. Furthermore, TAM and TAM2 are able to explain 40% of the information system usage. Venkatesh et al (2003) developed Unified Theory of Acceptance and Use of Technology to overcome limitations of TAM. Therefore, it may be imperative to understand the intention of mobile banking acceptance in an integrated framework and useful to consider extending the established IT/IS adoption theories. In order to address limitations of TAM, this study extend original TAM by incorporating two more constructs namely perceived trust and mobility.

Behavioral intention is assumed to be the best predictor of behavior i.e. the actual usage of new technology and represents the main idea of the widely accepted model i.e. TAM (Davis, 1989). This study attempts to understand the behavioral intention as M-Banking is in its initial stage in Oman.

Perceived ease of use

Perceived ease of use (PEOU) is one of the key constructs of TAM and the construct has been used widely to explain the adoption intention of new technology. Davis (1989) defined PEOU as "the degree to which a person believes that using a particular system would be free from efforts". PEOU has been key factor in many Internet based studies in different areas such as mobile Internet (Kim et al. 2007), mobile commerce (Chong, 2013), mobile instant messaging (Hsu et al, 2009). However, perceived ease of use was not statistically significant predictor of behavioral

intention in the context of cross-cultural study (Chong et al. 2012). It is assumed that higher level of complexity; lower would be the intention to accept M-Banking. Therefore, we propose the following hypothesis:

H1 Perceived ease of use has a significant relationship with M-Banking acceptance.

Perceived usefulness

Perceived usefulness is another important construct of TAM and defined as "the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989). It is considered one of the key the consistent predictors to explain the adoption intention in various studies of information systems (Zhang et al, 2012; Chong, 2013). In comparison to other important predictor of TAM i.e. perceived ease of use, perceived usefulness is considered relatively more important. Perceived usefulness has been examined as key predictor in many domains such as m-commerce (Chong, 2013), mobile Internet (Kim et al. 2007). Since perceived usefulness has been consistent predictor in many domains, it is assumed that its will influence M-Banking acceptance. Therefore, we propose the following hypothesis:

H2 Perceived usefulness has a significant relationship with M-Banking acceptance.

Perceived Trust

Trust is an important construct influencing the users decision to accept new technology such as mobile banking (Chong, 2013). Trust can be defined as "a person's feeling or belief that the processes, systems and environment in which he/she transact has appropriate safeguards and measures" (Vance et al, 2008). Mobile banking transactions are conducted in a virtual environment and therefore sharing personal and confidential information creates risk and uncertainty in the minds users (Lu et al. 2003). Mobile devices may get virus as users browse various types of frequently visited webpages. Trust has been consistently key predictor of behavioral intention towards new technology acceptance pertaining to commerce domain. Therefore, we propose the following hypothesis:

H3 Perceived trust has a significant relationship with M-Banking acceptance.

Mobility

Mobility is one of the most important features of mobile technology in comparison to other technologies (Kim et al. 2010). Mobile banking is relevant is very much in today's life style of many users. The main advantage of mobile technology is its mobility (Mallat et al. 2009). It is expected that mobility have significant potential to influence the mobile banking acceptance. Therefore, we propose the following hypothesis:

H4 Mobility has a significant relationship with M-Banking acceptance.

RESEARCH MODEL DEVELOPMENT

This research study proposes a conceptual framework in which behavioral intention to mobile banking acceptance is considered as dependent construct and perceived ease of use, mobility, perceived usefulness, and perceived trust are considered as independent constructs influencing mobile banking acceptance in a developing country like Oman. The proposed research diagram is given in figure 1.
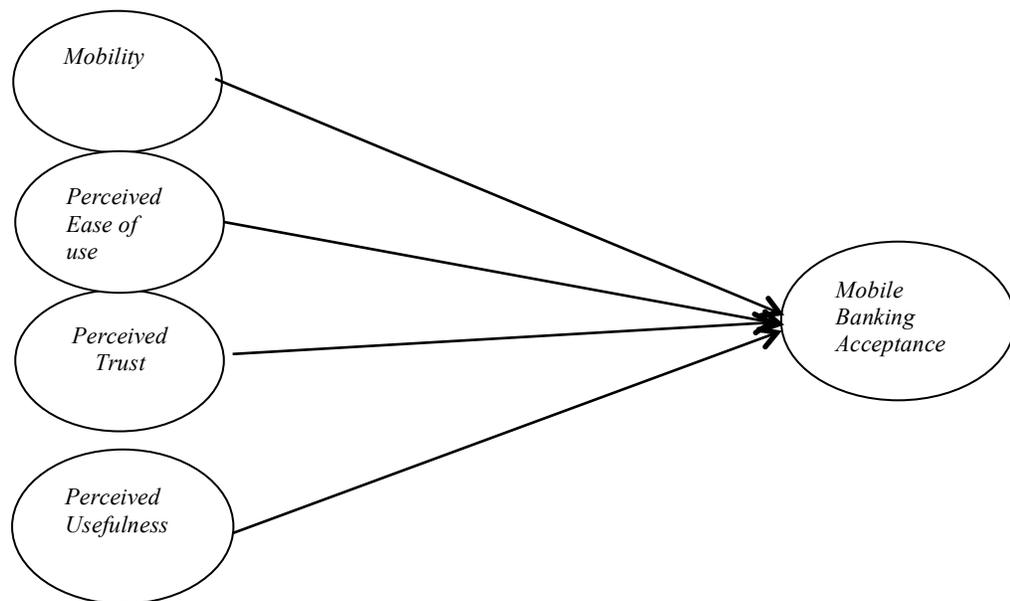

Figure 1 Research diagram

RESEARCH METHODOLOGY

Sample and procedure
A survey questionnaire was developed to collect primary data from respondents to test the research model proposed in this study. There were two parts in the survey questionnaire. In the first part a set of questions on demographic details were asked whereas four independent constructs and one dependent construct were asked in second part of the survey questionnaire. The survey was developed in an English language. The survey questionnaire was pre-tested with 2 university professors whose main area of research in e-commerce and a set of five students who are using mobile banking since 3 years. The survey questionnaire was modified on the basis of recommendations after pre-test results. The final survey was distributed among college students in a public university in Oman in the month of January 2016. A total of 122 mobile users responded to the survey. The demographic summary of respondents is given in table 1.

Variables and measurement

The proposed research model included four independent constructs and one dependent construct from the existing literature on technology adoption studies as their internal reliability

and convergent validity have been tested successfully in previous research studies. Fourteen indicators were used to measure four independent constructs namely perceived usefulness, perceived ease of use, perceived trust, and mobility and 3 indicators were used to measure dependent variable namely M-Banking acceptance. All indicators were measured using five-point Liker scale ranging 1 (strongly disagree) to 5 (strongly agree), whereas demographic variables namely gender, age, and area of residence were measured on nominal scale and ordinal scale.

Table 1: Demographic details

Variables		Frequency
Gender	Male	80
	Female	42
Age	Less than 20 years	30
	Between 20 & 23 years	51
	More than 23 years	41
Area of residence	Urban	92
	Rural	30

Scale reliability

The reliability of all five constructs was assessed using Cronbach alpha and summarized in table 2. The reliability coefficients of all constructs were higher than 0.72 and hence confirming the reliability of constructs.

Table 2: Reliability analysis

Constructs	Cronbach alpha
Perceived ease of use	0.856
Perceived usefulness	0.785
Perceived trust	0.847
Mobility	0.903
Mobile banking acceptance	0.912

Fitness of the research model

The fitness of the research model was analyzed using a set of goodness of fitness indices. The result of indices in table 3 confirms the fitness of the model. All fitness indices are within the threshold limits recommended by Hair et al. (2010).

Table 3: Fit indices

Fit indices	Yielded values
Chi square/degree of freedom	2.31
GFI	0.936
AGFI	0.912
CFI	0.947
RMSEA	0.065

Testing of hypotheses

In this study, Structural Equation Modeling (SEM) was employed to test the causal relationship among decision variables. The SEM is a commonly used statistical modeling approach to test linear relationship proposed in the hypotheses. The hypotheses testing results are summarized in table 4. Perceived ease of use has a significant relationship with M-Banking acceptance (estimate = 0.137, $p < 0.05$) supporting hypothesis H1. Further, perceived usefulness was also found influencing the M-Banking acceptance (estimate = 0.224, $p < 0.05$) supporting hypothesis H2. Mobility is considered another important construct influencing M-Banking acceptance (estimate = 0.187, $p < 0.05$) supporting hypothesis H3. Finally, perceived trust is also influencing the M-Banking acceptance (estimate = 0.289, $p < 0.05$). The statistical significance of variables was tested at the 5% level of significance as recommendations made in Hair et al, (2010).

Table 4: Structural results

Hypotheses	Variables	Estimates	S.E.	P-values	Remarks
H1	Perceived ease of use	0.137	0.046	0.004	Supported
H2	Perceived usefulness	0.224	0.059	***	Supported
H3	Mobility	0.187	0.049	***	Supported
H4	Perceived trust	0.289	0.032	***	Supported

Note: Significant at 5% level of significance

DISCUSSION

This study proposed a research model to test the M-Banking acceptance in the context of a developing country like Oman. The findings of this study show that the most important predictor of M-Banking acceptance was perceived trust. Trust is considered one of the main features when it comes to use a new technology. As new technology is related to financial activities, trust becomes even more important. This finding is consistent with the study conducted by Chong et al. (2012) in the context of m-commerce. Perceived usefulness is another important predictor of M-Banking acceptance. It is very much understandable that usefulness remains always in the priorities of customer and this finding is consistent with Hsu et al (2009) and Chong (2013). Mobility is the key feature of M-Banking as users are performs financial transactions without location constraints. As significant percentage of the respondents in this study belong to youth segment. Such a segment typically displayed more interest to learn technological innovations and use them easily in their daily life (Wei et al, 2009). In this study, mobility is also an important predictor of M-Banking acceptance. This finding is consistent with the study conducted by Kim et al (2010). Finally, perceived ease of use is also an important predictor of M-Banking acceptance. In a developing country like Oman, mobile banking users still believe that ease in operation is important. This finding is consistent with Kim et al (2007). The findings are important to various decision makers like banking sector administrators, mobile service providers and others.

CONCLUSION

This study attempted to investigate the key constructs influencing M-Banking acceptance by extending the widely known technology acceptance model (TAM) with two more constructs namely perceived trust and mobility. This research offers a set of implications. Firstly, these study extended research models with a new construct namely mobility that has been explored

rarely in the context of M-Banking acceptance. Secondly, this study offers important insights to banking administrators so that they can focus more on building trust among mobile banking users to motivate them for continuous usage. Finally, it is also recommended to designers of mobile applications in such a way that it is easier and user friendly. Such steps will boost morale of mobile banking users and they will use such services on regular basis. Further, the findings of this study provided strong empirical base to all concerned decision making authorities, who are looking to tap the vast potential of M-Banking in near future. Based on the results of this study, they can formulate the appropriate strategies to attract, educate and retain the customer towards the use of M-Banking.

LIMITATIONS AND FUTURE WORK

This study has a number of limitations. First, the research design is this study was cross-sectional and futher study can be conducted in the longitudinal settings. Second, the sample size is relatively small and is being considered as pilot study. Therefore, this study will be extended to a larger sample to generalize results to the whole country. As sample size recommended to apply SEM is minimum 200, hence results will most likely change after getting good sample size. Finally, this study focused on M-Banking accpetance with four key constructs and hence it is recommended to include more construcs namely social influence, customization, customer involvement, autonomous motivation to explain M-Banking acceptance in a comprehensive manner.

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