

Investigate the Customers' Behavioral Intention to Use Mobile Banking Based on TPB, TAM and Perceived Risk (A Case Study in Meli Bank)

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Abstract

The aim of this study is to analysis the factors affecting the use of mobile banking in city of Isfahan. For this purpose, Theory of planned behavior (TPB) ,Technology acceptance model (TAM) and perceived risk were used to construct a model to study the adoption intention of mobile banking .We designed a questionnaire and used it to survey a randomly selected sample of customers of Meli bank. A total of 165 pieces of questionnaire papers are given out to the community randomly. We analyzed the data using Structured Equation Modeling (SEM) to evaluate the strength of the hypothesized relationships; the results provide support of the integrated TAM, TPB and perceived risk models and confirm its robustness in predicting customers' intention of adoption of mobile banking. The results indicated that the behavioral intention to use mobile banking is positively affected mainly by perceived behavioral control and subjective norm.

Keywords: mobile banking, TAM, TPB, perceived risk

Introduction

Today , mobile banking services along with Internet Banking Services have fundamentally changed the ways and methods of doing daily activities by bank customers, and banks have also used it not only as a new way to increase customer satisfaction, but also as a model strategy to reduce costs and increase profitability (Liao and Cheung,2002) .banks have laid its emphasis on the implementation on mobile banking services because it shed the light on reduce costs, sustain competitive advantage, create greater convenience to users, and serving 'unbanked' customers.

The term "mobile banking" refers to the use of mobile as a channel of offering and delivering banking services which includes traditional services such as funds transfer, as well as new services such as online and electronic payments. In fact, mobile banking is defined as doing bank transactions via mobile phone (McKnight and Chervany, 2001). Suoranta and Mattila indicated that mobile banking is among the most recent financial channel today. Several authors have further identified the benefits of mobile banking in terms of ubiquity coverage, flexibility, interactivity, and with greater accessibility compared to conventional banking channels such as Automated Teller Machine (ATM), and non-mobile banking (Sim et al, 2011). Despite heavy investment by banks in developing online capabilities, many online consumers are inactive or use online banking sporadically, focusing mainly on verification tasks and avoiding more complex transactions. As moving consumers to the online channel has a clear cost savings goal, succeeding in this objective becomes very important for bank services providers, as meaningful savings are only possible with a significant migration of consumers to online banking. Understanding the key drivers that may be slowing adoption has become a relevant topic for the banking sector (Aldas et al., 2009, Zhou et al, 2010). Meanwhile, one of IT management concerns, particularly in the field of mobile banking is the attitude of customers to this technology and its adoption among customers (Gefen et al., 2003). Studying the determinants of mobile banking adoption will lead to a better understanding of beliefs and ideas that propel the potential users to use the new technologies, and considering how and types of users' attitudes, creates the conditions that accelerates the adoption of mobile banking by customers. So, with the aim of identifying factors related to behavioral intentions of customers in using mobile banking services, the current research investigates the planned behavior (TPB), Technology acceptance model (TAM) and perceived risk Model in the field of mobile banking customers.

The structural flow of this paper begins with literature review. Thereafter, based on review of literatures, we developed our hypotheses and research framework. Then, the data analysis and followed by the findings and discussion.

Theory of Planned Behavior

TPB extends from TRA by incorporating an additional construct, namely perceived behavioral control (PBC), to account for situations in which an individual lacks substantial control over the targeted behavior (Ajzen, 1991). According to TPB, an individual's behavior can be explained by his or her behavioral intention, which is jointly influenced by attitude, subjective norms, and perceived behavioral control (Chau & Hu, 2001). Both TPB and TRA have similar objectives: to understand the human behavior through identifying and analyzing the determinants of behavioral intentions (Ajzen, 1988; Fishbein & Ajzen, 1975). Ajzen introduced TPB in an attempt to provide a better conceptual framework of behavior by addressing TRA's problem of incomplete volitional control (Ajzen 1988; Ajzen & Madden 1986). The Theory of Planned Behavior postulates that the Actual Behavior is the weighted functions of Behavioral Intention and Perceived Behavioral Control. In turn, Behavioral Intention is the weighted function of Attitude toward the Behavior (Attitude), Subjective Norm, and Perceived Behavioral Control.

Subjective Norms

Subjective norm is believed to influence intention to use because people may choose to perform behavior, even if they are not themselves favorable toward the behavior or the consequences (Venkatesh and Davis, 2000). What other individuals or groups will think, agree or disagree about the decision of a person to perform a given behavior and how important these other individuals or groups play a vital role for the decision maker. So sometime people may be seek advice from others before them making any decisions.

H1: Subjective norms will have a positive effect on behavioral intention of mobile banking.

Behavioral Control

Self-efficacy is defined as people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performance (Wu, Chen, 2005). Self-efficacy is a significant determinant for adopters and non-adopters' perceived behavior control (Hung et al., 2006). And self-efficacy was significantly higher for the adopter who has used the mobile banking than non-adopter. It is seems likely that individuals with higher self-efficacy in IT have more opinions available and feel free to choose whatever they want (Lin., 2008). In Wang's (2003) study, its results provide evidence of the significant effect of computer self-efficacy on behavioral intention through perceived ease of use, perceived usefulness, and perceived credibility. His article has indicated users who have higher computer self-efficacy are likely to have more positive usefulness and ease of use beliefs.

H 2: behavioral control will have a positive effect on behavioral intention of mobile banking.

Technology Acceptance Model

Similar to TPB, TAM is also introduced as an extension of TRA (Davis, 1986; Davis, 1989; Davis et al., 1989). However, rather than being a generic model for individual behavior in social environment, TAM has a clear focus on technology acceptance behavior of computer users. The main purpose of TAM is to examine how external factors such as system characteristics, documentation, and training affect internal beliefs, attitudes, and intentions (Davis, 1989). TAM postulates that two beliefs, Perceived Usefulness (PU) and Perceived Ease of Use (PEOU), are important determinants of technology acceptance (Davis et al., 1989).

Perceived Ease Of Use

Extensive research has provided evidence that perceived ease of use had a significant effect on usage intention, it is an important predictor. Perceived ease of use can be an important determinant, perhaps even more than perceived usefulness, of information system success when process-oriented issues are at the forefront of users' minds (Venkatesh, 1999). A considerable of prior studies supported the significant effect of perceived ease of use on

behavioral intention, either directly or indirectly through perceived usefulness and attitude (e.g., Davis et al., 1989; Jackson et al., 1997; Venkatesh, 1999). This study seeks to revalidate such relationships in the context of mobile banking. Attitude is defined as positive or negative sense about the desired behavior. While some theorists argue that beliefs influence behavior only via their indirect influence on attitudes (e.g., Fishbein and Ajzen, 1975), others view beliefs and attitudes as co-determinants of behavioral intentions and still others view attitudes as antecedents of beliefs (e.g., Weiner, 1986). Counter to Fishbein and Ajzen's (1975) position, both Davis (1986) and Davis, et al. (1989) found that attitudes do not fully mediate the effect of perceived usefulness and perceived ease of use on behavior. Behavioral Intention Refers to individual's intention to perform a behavior and is a function of Attitude, Subjective Norm and Perceived Behavioral Control. Attitude Refers to individual's positive or negative evaluation of the behavior (Ajzen, 1988). Subjective Norm Refers to individual's "perception of social pressure to perform or not to perform the behavior" (Ajzen, 1988, p.132)

H3: Perceived ease of use will have a positive effect on attitudes towards the use of mobile banking.

H4: Perceived ease of use will have a positive effect on perceived usefulness of mobile banking.

H5: Attitude will have a positive effect on behavioral intention of mobile banking.

Perceived Usefulness

Perceived usefulness had been confirmed that can be important in influencing intention and use by the extensive research in the past. There is also extensive empirical evidence that supports the significant effect of perceived usefulness on behavioral intention (e.g., Davis et al., 1989; Jackson et al., 1997; Venkatesh, 1999). Based on prior research, in this study hypothesized the following.

H6: perceived usefulness will have a positive effect on attitudes towards the use of mobile banking.

H7: perceived usefulness will have a positive effect on behavioral intention of mobile banking.

Perceived Risk

Peter and Ryan (1976) defined perceived risk as a kind of subjective expected loss, and Featherman and Pavlou (2003) also defined perceived risk as the possible loss when pursuing a desired result. Perceived risk theory has been used to explain consumers' behavior. Considerable research has examined the impact of risk on traditional consumer decision making (Lin, 2008). Six components or types of perceived risk have been identified: financial, performance, social, physical, security and time-loss (Jacoby and Kaplan, 1972; Roselius, 1971). However, the dimensions of perceived risk may vary according to the product (or service) class (Featherman and Pavlou, 2003).

H8: Perceived risks have a negative impact on attitudes towards the use of mobile banking.

H9: Perceived risks have a negative impact on behavioral intention of mobile banking

Methodology

Data were collected through an interview schedule administered to 165 bank customers belonging to Meli bank s in the city of Isfahan , Iran . Convenience sampling method was used in the selection of the sample respondents. A total of 165 questionnaires were distributed to the bank customers who use mobile banking services. Each questionnaire item was scored on a five-point Likert scale (1 =strongly disagree; 2 = disagree; 3 = neutral; 4 = agree; and 5 = strongly agree). Factor analysis was performed to assess the validity of the construct and regression analysis was employed to analyze the data. SPSS version16 and Amos was used has the analysis tool. In this research we used Structural Equation Model (SEM) for testing hypothesis. For analyzing data we used the two steps Structural Equation model that proposed by Anderson & Gerbing (1988). For analyzing relation between constructs, in step one, we used Confirmatory factor analysis (CFA), and in other step Path Analysis have used. For determine that to what extent, indexes are acceptable for measuring patterns, first we must analyzing all of the measuring patterns separately. For this base, first, seven measuring patterns related to variables are tested separately. General indexes of measuring patterns (CFA) have shown in table 1.

Table 1: general indexes of measuring patterns

Behavioral intention	Perceived risk	Behavioral control	Attitude	Perceived ease of use	Perceived usefulness	Subjective norms	INDEX
7.268	6.171	5.167	6.98	3.129	7.165	4.312	CMIN/DF
0.167	0.196	0.392	0.198	0.321	0.172	0.142	P
0.925	0.907	0.926	0.951	0.911	0.937	0.922	GFI
0.046	0.032	0.029	0.022	0.016	0.021	0.016	RMR
0.979	0.922	0.946	0.932	0.993	0.987	0.992	CFI
0.021	0.057	0.043	0.052	0.033	0.049	0.041	RMSEA
0.913	0.857	0.912	0.949	0.883	0.922	0.905	AGFI

Giving that for all of measuring patterns $p > 0.05$, could result that the ratio of (chi-square) is fit for measuring patterns. Goodness-of-fit index (GFI) for all measuring patterns is above 0.97 ($GFI > 0.97$), showed that data are fit to patterns. RMR for all measuring patterns is below 0.05 ($RMR < 0.05$), showed that minimum error in patterns and acceptable fitness of them. Comparative fit index (CFI) for all measuring patterns except actual use is above 0.96 can be concluded that data clearly support measuring patterns. RMSEA index for measuring patterns is below 0.05 ($RMSEA < 0.05$), showed that data are fit to patterns. And eventually, given the above contents can be concluded that measuring patterns have a good fitness and in the other words, general indexes confirmed that data clearly support measuring patterns. After review and confirm the patterns measured in Step one, we used Path analysis for testing hypothesis. Table 2 show general indexes that presented in path analysis.

Table 2: general indexes

Value	Index
7.562	(CMIN/DF)
0.065	P
0.981	(GFI)
0.026	(RMR)
0.978	(CFI)
0.052	(RMSEA)
0.974	(AGFI)

Hypotheses Testing

A structural equation modeling (SEM) approach was adopted in our data analysis (Bagozzi et al., 1991). Fig. 1 presents the results of the structural model. Intention to use mobile banking in this study was jointly predicted by perceived usefulness (Standardized path coefficient = 0.41, $p < 0.05$), attitude (Standardized path coefficient = 0.49, $p < 0.05$), perceived behavioral control (Standardized path coefficient = 0.58, $p < 0.05$), subjective norm (Standardized path coefficient = 0.52, $p < 0.05$), and perceived risk (Standardized path coefficient = -0.27, $p < 0.05$). As a result, Hypotheses 7, 5, 2, 1 and 9 were all supported. Perceived ease of use (Standardized path coefficient = 0.39, $p < 0.05$) significantly influenced perceived usefulness, Consequently, Hypothesis 4 was supported. Attitude was predicted by perceived usefulness (Standardized path coefficient = 0.56, $p < 0.05$), perceived ease of use (Standardized path coefficient = 0.63, $p < 0.05$), perceived risk (Standardized path coefficient = -0.31, $p < 0.05$). These findings validated Hypotheses 6, 8, 3 respectively.

Figure 1: Amos output

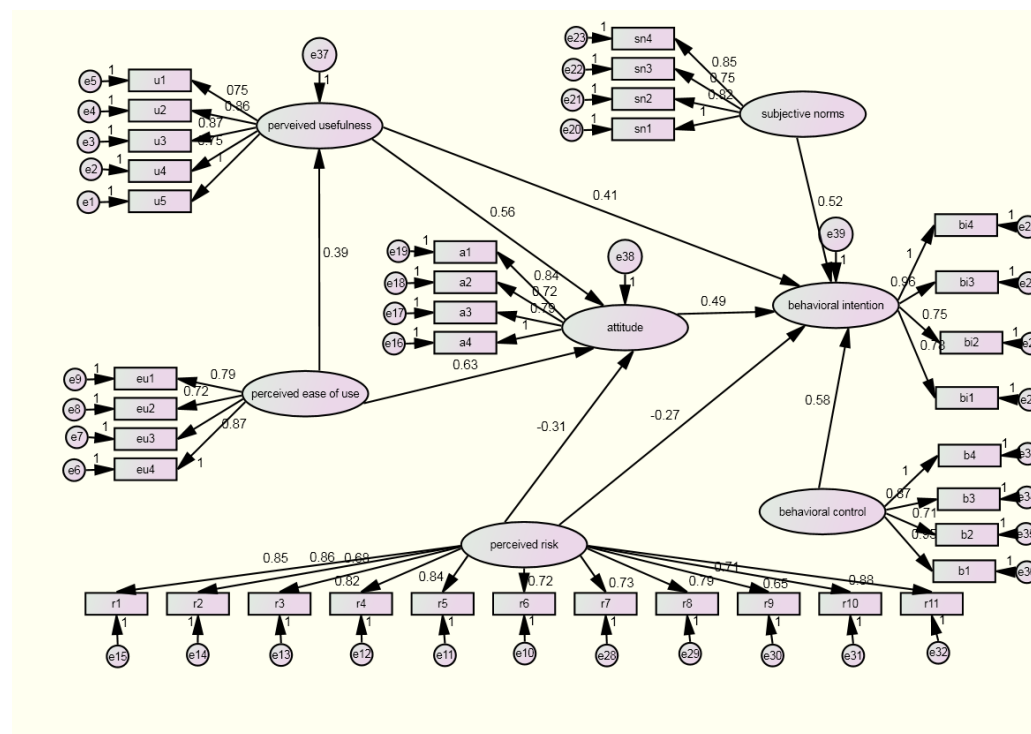


Table 3: hypotheses tests

Hypotheses	Description	λ	C.R.	P	Test result
Subjective norm → Behavioral intention		0.52	6.74	***	Supported
Behavioral control → Behavioral intention		0.58	7.12	***	Supported
Perceived ease of use → Attitude		0.63	7.52	***	Supported
Perceived ease of use → Perceived usefulness		0.39	4.54	0.043	Supported
Attitude → Behavioral intention		0.49	6.33	0.024	Supported
Perceived usefulness → Attitude		0.56	6.87	***	Supported
Perceived usefulness → Behavioral intention		0.41	6.02	***	Supported
Perceived risk → Attitude		-0.31	-3.76	0.046	Supported
Perceived risk → Behavioral intention		-0.27	-1.56	0.067	Not Supported

Conclusions

The results of this study provide support for the research model presented in Fig. 1 and for the hypotheses regarding the directional linkage among the model's variables. Several insightful results could be summarized from our research framework, and these are presented below in two categories: positive and negative predictors. Risk is emerged as negative factors in the intention to accept Mobile banking. Perceived risk has a significant negative effect on the intention to acceptance of mobile banking and was the most important inhibitor to the adoption of such services .At present, mobile banking transactions lack the assurance provided by staff assistance in traditional settings with the use of formal proceedings and receipts, and because of this, customers usually have difficulties in asking for compensation when transaction errors occur. Thus, this may explain why many customers resist accepting mobile banking.

On the other hand, compared with the perceived risk, the intention to use mobile banking is primarily And positively affected by perceived usefulness and less so by attitude perceived behavioral control and subjective and This implies that the perceived usefulness is the most important positive predictor of the intention to use mobile banking .Moreover, perceived

usefulness has an indirect influence, via attitude ,on behavioral intention to use online banking. This result is similar to the finding reported in Taylor and Todd (1995), which indicated that perceived usefulness has both direct and indirect influences on behavioral intentions toward system use .Attitude also has a significant impact and appears to be the second positive determinant of a consumer's intention to accept mobile banking

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