Predicting Perceived Value in Mobile Banking: Are Awareness and Perceived Risk Important?

[1]Ahmed M. Mutahar, [1]Norzaidi Mohd Daud, [2]T. Ramayah, [1]Lennora Putit and [3]Osama Isaac
[1]Faculty of Business and Management, Universiti Teknologi MARA, Selangor, Malaysia
[2]School of Management, Universiti Sains Malaysia, Penang, Malaysia
[3]Graduate Business School, Universiti Teknologi MARA, Selangor, Malaysia

Abstract: Client's perception of value is a subjective concept in banking services and it varies among bank clients. Even though a number of elements have been suggested as significant antecedents to understand mobile banking services usage in literature, very little attention has been given to exactly what constitutes the value of using mobile banking services. The current study's purpose is to test the critical success factors that impact the perceived value of using mobile banking services via an extended model of Technology Acceptance Model (TAM). Evaluation of the proposed model was done through questionnaire survey data collected from 482 valid responses from individuals who are non-users of mobile banking services. Structural Equation Modelling (SEM) via AMOS Software was utilized to determine the importance levels of associations and interactions between the factors tested. The research proposed model, evidenced by the goodness of fit of the model to the data, explained 54% of the variance in perceived value of using mobile banking services. The findings of the multivariate analysis reveal that perceived usefulness, perceived ease of use and awareness are major predictors of the perceived value while perceived risk was found to reduce the perception of the value of the clients. The results of the current study might give further insights into mobile banking strategies.

Key words: Mobile banking, Technology Acceptance Model (TAM), perceived risk, self-efficacy, awareness, perceived value

INTRODUCTION

Through the past few years, the wireless and mobile market has been one of the fastest developing markets in the world and still developing remarkably quickly. Worldwide, mobile phones exceeded the number of PCs as the shipments of mobile gadgets are six times the shipments of personal computers (Anonymous, 2015). In the current days, mobile phones have shifted from being only a voice transmitting device to a device that carries data and money as well (Puschel and Mazzon, 2010) and therefore, the delivery of financial services has experienced major changes during the recent years. Technological advancement has reformed the business environment. In financial institutions, banks are one of the leading organisations in utilising the platform of mobile technology and applications on customer markets and therefore delivery of its service has undergone unprecedented changes in its history (Laukkanen, 2007). Known as mobile banking service (also identified as M-banking, SMS banking, m-banking, etc.), the evolution

of e-Banking services via different e-Channels has made it possible to provide new types of value for customers.

Understanding client's value perception is one of the essential requisites of service development. The growing spread of mobile phones, especially, devices that can utilise the internet has made the banking applications transforming to mobile devices a logical progress in e-Banking services (Pousttchi *et al.*, 2004). Certainly, the emergence of mobile banking is a wireless service delivery channel that is time and place free and increases the value provided for bank's clients. Nevertheless, regardless of its many advantages, mobile phones usage in banking transactions is still in its infancy (Cruz *et al.*, 2010; Laukkanen and Kiviniemi, 2010).

Information technology that researches up-to-date information has focused on innovation attributes and user characteristics rather than the value-driven of the customer and its relative importance to use e-Services (Zhou *et al.*, 2010). Perceived value is a subjective

Corresponding Author: Ahmed M. Mutahar, Faculty of Business and Management, Universiti Teknologi MARA, Selangor, Malaysia

concept that is different from a customer to another. Even though many factors have been suggested as important antecedents to understand mobile banking adoption, scarce attention has been given in the literature as to exactly what influence the perception of the value of mobile banking services is among bank's clients. Kim *et al.* (2007) and Zhou *et al.* (2010) have called for further studies on customer value perceptions to examine its importance in driving customer adoption intention in a mobile banking context. Therefore, this study suggests the need to study the factors that affect the value perceived by bank's customers toward the adoption of mobile banking services.

Although, there are many studies that had been done on the mobile banking field, particularly in developed countries, through the review of literature a gap of knowledge shows which is represented by the absence of a theoretical model that is interactive, comprehensive and multi-dimensional to assess factors constituting the perceived value of using mobile banking. Technology Acceptance Model (TAM) is a robust model for predicting user's intention and adoption behaviour of different technologies (Ignatius and Ramayah, 2005; Daud *et al.*, 2011; Ramayah *et al.*, 2005; Riquelme and Rios, 2010; Yang, 2005). Kim *et al.* (2007) reported that perceived usefulness significantly affects the perceived value. In addition, another main construct of TAM, perceived ease of use has a great impact on the perceived value. According to Daud *et al.* (2011), people who are reluctant to use the applications of mobile banking services are so because of the lack of awareness about the benefits and value of this up-to-date technology. This has been a hindrance in client's adoption of the system. Because people are less aware of the benefits when performing bill payments, fund transfers, access account information and many other related activities through their mobile devices, awareness could be an essential block that constitutes the perceived value. Moreover, Gupta and Kim (2010) and Kim *et al.* (2007) have reported the importance effect of the perceived risk on the PV. However, studies on the significance of self-efficacy in determining the intention of users to adopt different applications of technologies discover that ability and self-confidence would also play a major role in determining the value perceived by clients. Finally, research questions are stated as to be answered through this study.

The primary research question: what are the factors that impact the client's perceived value of using mobile banking services?

The secondary question: does perceived usefulness, perceived ease of use, self-efficacy, awareness and perceived risk influence the perceived value of using mobile banking services?

Literature review

Perceived ease of use and perceived usefulness: Perceived ease of use is one of the fundamental elements of the technology acceptance model. It is defined as "The degree to which a person believes that using a system would be free of effort" (Davis, 1989; Davis *et al.*, 1989). Ramayah *et al.* (2005), Ramayah and Suki (2006) and Tan *et al.* (2016) have studied the significant positive influence of perceived ease of use on the perceived usefulness and it was confirmed. Likewise, mobile banking user's perception of usefulness will be improved and positively affected by the perceived ease of use (Akturan and Tezcan, 2012). Similarly, in the study of Amin *et al.* (2008) about mobile banking adoption in Malaysia, it was reported that perceived ease of use is substantially correlated with perceived usefulness. In addition (Ramayah *et al.*, 2003) concluded that perceived ease of use has a significant impact on usefulness perception of internet banking. Consequently, the following hypothesis is proposed:

- H_1: perceived ease of use has a positive effect on perceived usefulness

Perceived usefulness and perceived value: Perceived usefulness is a major factor of TAM. Perceived usefulness is defined as "The degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989; Davis *et al.*, 1989). Venkatesh *et al.* (2003) also redefined it as performance expectancy. Researchers have argued that perceived usefulness plays a major role in the context of technology (Rahman *et al.* 2016; Ramayah, 2006), especially, in mobile banking technology (Luarn and Lin, 2005). It suggests that when computers are used in the workplace, it improves job performance, increases user's productivity and enhances job usefulness and effectiveness. Former studies have revealed that there is a positive important relationship between usefulness perception and intention to use (Daud *et al.*, 2011; Norzaidi *et al.*, 2007; Sarrab *et al.* 2016), thus, productivity is highly associated with perceived usefulness. However, perceived usefulness has also been studied as a predictor of the perceived value. In Singapore, a research study was conducted by Kim *et al.* (2007) on 161 university students

who use mobile internet. The outcomes of multiple regression analysis point out that the perceived usefulness influences the perceived value and consequently increases the user's intention to use mobile internet services. Likewise, perceived usefulness could also improve the perception of value in the context of mobile banking. Consequently, the following hypothesis is proposed:

- H_2: perceived usefulness has a positive effect on perceived value

Perceived ease of use and perceived value: Earlier empirical studies by Kim *et al.* (2007) revealed that perceived usefulness and technicality as determined by user's perceptions regarding the ease of use are significant deciding elements in enhancing client's value in mobile internet service context. Furthermore, there is a research by Han and Yang (2010) that surveyed consumer's intentions behind switching to use mobile banking from using internet banking services based on the consumer perceived value perspective. Han and Yang (2010) stated that the relative advantage of mobile banking service and the improvement of satisfaction in internet banking positively affect perceived value. Consequently, the following hypothesis is proposed:

- H_3: perceived ease of use has a positive effect on perceived value

Self-efficacy and perceived value: Luarn and Lin (2005) and Wang *et al.* (2006) has defined self-efficacy as "the judgement of one's ability to use mobile banking". It is about how able and self-confident the client is to utilise the maximum value and benefits from using mobile banking services. Self-efficacy influences the intention to accept and use technology and is reported in many studies of a variety of applications and contexts as well. Hsu and Chiu (2004) reported the significant influence of self-efficacy on the intention to use e-Services. Similarly, Khalifa and Shen (2008) confirmed the importance of the self-efficacy on the intention to use mobile commerce in line with Wang *et al.* (2006), self-efficacy was found to significantly affect the intention to use mobile services in Taiwan. On the other hand, a study on mobile entertainment done by Leong *et al.* (2013) revealed that self-efficacy was not insignificant in influencing the intention to use mobile entertainment in Malaysia. Clients who are self-confident using mobile banking services will increase the perception of the value and benefits of such a technology application. Consequently, the following hypothesis is proposed:

- H_4: self-efficacy has a positive effect on perceived value

Awareness and perceived value: Al-Somali *et al.* (2009) have defined the mobile banking's awareness as "the awareness of the existence of a mobile banking system and its benefits". Pikkarainen *et al.* (2004) have stated that the information that clients have about internet banking and its benefits might have a critical impact on the internet banking adoption. Furthermore, a study by Sathye (1999) has reported that low awareness about internet banking is a crucial factor that hinders clients from using such service. Moreover, Howcroft *et al.* (2002) reported that lack of awareness of internet banking services and its benefits is perceived as a reason for client's reluctance to use this service. Consequently, the following hypothesis is proposed:

- H_5: awareness has a positive effect on perceived value

Perceived risk and perceived value: Featherman and Pavlou (2003) defined the perceived risk as "the potential for loss in the pursuit of a desired outcome of using an e-Service". Different facets of risk were identified: performance risk, psychological risk, financial risk, privacy risk, time risk, social risk, security risk and overall risk. Chen (2013), reported that perceived risk reduces the intention to use mobile banking services in Taiwan. Similarly, Martins *et al.* (2014) confirmed the perceived risk as a negative predictor of using mobile banking. In other words, clients perceive the risk as a deterrent to using mobile banking as they fear to lose money, time, comfort or information. On the hand, Hoffman *et al.* (1999) stated that an increase in the perceived level of risk of using online stores lowers transaction value and then total value. Perceived risk should therefore negatively influence the total value. Moreover, Xiong (2013) reported that perceived risk reduces the perception of the value of using mobile banking. Kim and Gupta (2009) found that the perception of risk negatively affects the perceived value among clients of online stores. Consequently, the following hypothesis is proposed:

- H_6: perceived risk has a negative effect on perceived value

MATERIALS AND METHODS

Overview of the proposed research model: The Technology Acceptance Model (TAM) by Davis (1989)
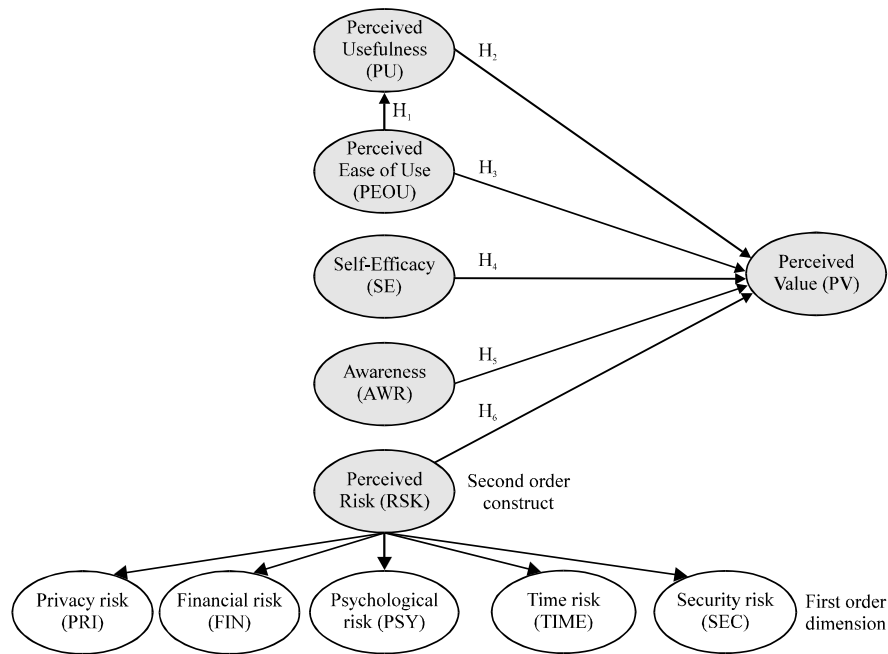
Fig. 1: The integrated research model

is the underpinning theory of the proposed model of this research to explain the perception of the value of using mobile banking services among bank's clients. The antecedents of the perceived value to be tested are perceived usefulness, perceived ease of use, self-efficacy, awareness and perceived risk. Figure 1 depicts the relationships between the independent variables and the dependent variable. As original TAM suggests, perceived usefulness will be increased, led by the ease of use perception (H_1). Moreover, both perceived usefulness and perceived ease of use will improve the value perception among clients (H_2) and (H_3). Consequently, when clients have high ability and confidence, this will lead to perceived value improvement (H_4). In addition, the higher the awareness about the benefits and value of using mobile banking services, the higher the intention and adoption behaviour will be therefore, raising the awareness will lead to increasing the value perception (H_5). Contrastingly when there is high perception of risk among clients, the client's perceived value of using mobile banking will be reduced and they will become resistant to using mobile banking which produces lower acceptance and adoption behaviour (H_6).

Development of instrument: For this study, a questionnaire survey designed to measure the main factors of the study model is used to collect data. The questionnaire contains close-ended questions that were tested and translated into the Arabic language, since, the targeted respondents are from Yemen. The questionnaire

is divided into two parts. The first part measures six core factors using a seven-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree) while the second part covers the demographics profiles of the respondents and measured using the nominal or ordinal scale.

Data collection: In the current research, the respondents are individuals who currently have mobile phones, a bank account at any Yemeni bank that provides mobile banking services and who do not currently use mobile banking services. In this study, a non-probability sampling technique known as snowball sampling was adopted to reach potential subjects among Yemeni Bank's clients in the capital city Sana'a which is appropriate when the target population is difficult to reach (Al-Qeisi, 2009). The 482 valid usable responses were received and analysed. The first part was analysed via. multivariate analysis process using Structural Equation Modelling (SEM) using Analysis of Moment Structures (AMOS) Software V. 21.0 because of its simplicity and technically advanced nature (Miles, 2000). Additionally, it offers a more precise assessment of the discriminant validity of an instrument than exploratory analysis (Bagozzi and Phillips, 1982). However, the second part was analysed through Statistical Package for the Social Sciences (SPSS) V. 22.0.

RESULTS AND DISCUSSION

Respondents demographics profile: The demographic characteristics of 482 respondents of this study are

Table 1: Respondents demographics profile

Demographic item/Categories	Frequencies	Percentage
Gender		
Male	342	71.0
Female	140	29.0
Marital status		
Single	127	35.7
Married	300	62.2
Divorced	9	1.9
Widowed	0	0.0
Others	1	0.2
Age		
<20 years	13	2.7
2.20-29 years	184	38.2
3.30-39 years	167	34.6
4.40-49 years	98	20.3
5.50-59 years	18	3.7
6.60 years and above	2	0.4
Education/Background		
High school	69	14.3
Diploma	64	13.3
Bachelor degree	315	65.4
Master degree	24	5.0
Ph.D./DBA degree	8	1.7
Others	2	0.4
Occupation		
Student	114	23.7
Government employee	257	53.3
Private sector employee	73	15.1
Business owner	15	3.1
Unemployed	9	1.9
Others	14	2.9
Gross monthly/income		
<YER 20,000	74	15.4
YER 20,000-39,000	62	12.9
YER 40,000-59,000	87	18.0
YER 60,000-79,000	65	13.5
YER 80,000-99,000	95	19.7
YER 100,000 and above	99	20.5
When did you/open your first account?		
1 year	98	20.3
2 years	93	19.3
3-5 years	124	25.7
5-7 years	58	12.0
More than 7 years	109	22.6

analysed by seven categories: gender, marital status, age, education, occupation, income and banking experience which are presented in Table 1. The 71.0% of the respondent are male whereas 29.0% are female participants. About 300 of the respondents are married while 127 of respondents are still single. The 13 respondents are <20 years old, however, 449 are between 20-49 years of age and only 20 are 50 years old and above. In terms of education background, 133 of the respondents have a high school certificate/diploma. Meanwhile, 315 of participants have a Bachelor's degree. The 32 respondents finished their postgraduate studies. Respondents according to their professions show that 114 are students while government servants number 257. Private sector employees and business owners comprise 88 respondents while 9 are unemployed. Income profile also was analysed 15.4% receives <20,000 YER (Yemeni

Riyals) and 12.9% receives between 20,000-39,000 YER while most of the respondent's income (51.2%) is between YER 40,000-99,000. 20.5% (n = 99) has an income of 100,000 YER and above. For the banking experience, only 20.3% had used the banking services for a year while 57.0% had been bank clients for 2-7 years and 22.6% had been banking services users for more than 7 years.

Descriptive analysis and measurement model assessment: Mean and standard deviation of each core variable in this study are presented in Table 2. The results show that the perception level of ease of use is high among respondents in the current study. These results show that the respondents expect ease, flexibility and good usefulness to get the maximum value of using mobile banking services. The results also show that the level of self-efficacy and perceived risk are moderate among respondents. This indicates that the respondents have the ability to use mobile banking services as well as other technologies and services such as phones and internet banking. However, at the same time they are using other applications and technologies, they think that the mobile banking service is risky compared to other banking channels. Despite this, the perception of the value of using mobile banking services in the future is good 4.73 out of 7.

Absolute fit indices determine how well a priori model fits the sample data (Mcdonald and Ho, 2002). Based on the results of Confirmatory Factor Analyses (CFA), the Absolute fit indices show that the chi-square is not significant which is justifiable by the high sample size (Byrne, 2010); however, the model fit reported in RMSEA coefficient is 0.059, indicating good fit. Sharma *et al.* (2005) recommended that this GFI index should not be used because of the sensitivity of the index and it is indeed less popular in recent years. Meanwhile, Adjusted Goodness of Fit Index (AGFI) (0.848) is fit and incremental fit indices indicate that both tests are fit, since, the NFI and CFI obtained are 0.937 and 0.960, respectively. Finally, Parsimony fit indices also indicate fit, since, the PGFI is 0.718 and PNFI is 0.824, thus the model fits well. In addition, incremental fit indices indicate that both tests are fit, since, the CFI obtained are 0.960, thus, the model fits well (Byrne, 2010; Kline, 2011). The CFA Model in this study tested all variables simultaneously, not individually because the hypothesised model integrates a small number of items for each of the latent variables. Generally, the goodness-of-fit statistics (Table 3) support the integrity of the overall model. In the current study, the overall model fit reported in Table 3 shows

Table 2: Mean and standard deviation

Construct dimensions/Items	Loading (above 0.5)	M for variable	SD for variable	α (above 0.7)	CR (>0.7)	AVE (above 0.5)
PU						
PU1	0.95	4.72	1.80	0.963	0.963	0.867
PU2	0.95	-	-	-	-	-
PU3	0.90	-	-	-	-	-
PU4	0.92	-	-	-	-	-
PEOU						
PEOU1	0.85	4.94	1.76	0.876	0.886	0.723
PEOU2	0.87	-	-	-	-	-
PEOU3	0.78	-	-	-	-	-
SE						
SE1	0.83	4.32	1.55	0.900	0.901	0.752
SE2	0.90	-	-	-	-	-
SE3	0.86	-	-	-	-	-
AWR						
AW1	0.88	3.50	1.81	0.911	0.916	0.785
AW2	0.98	-	-	-	-	-
AW3	0.79	-	-	-	-	-
RSK (PRI)						
PRI1	0.88	4.01	1.98	0.966	0.967	0.853
PRI2	0.89	-	-	-	-	-
PRI3	0.92	-	-	-	-	-
FIN						
FIN1	0.89	4.06	1.85	-	-	-
FIN2	0.91	-	-	-	-	-
PSY						
PSY1	0.95	3.67	1.89	-	-	-
PSY2	0.95	-	-	-	-	-
TIME						
TIME1	0.79	3.63	1.53	-	-	-
TIME2	0.81	-	-	-	-	-
TIME3	0.84	-	-	-	-	-
SEC						
SEC1	0.90	3.98	1.80	-	-	-
SEC2	0.89	-	-	-	-	-
SEC3	0.89	-	-	-	-	-
PV						
PV1	0.93	4.73	1.73	0.938	0.940	0.841
PV2	0.95	-	-	-	-	-
PV3	0.82	-	-	-	-	-

M = Mean; SD = Standard Deviation; The measurement used is seven-point scale ranging from 1 (strongly disagree) to 7 (strongly agree); PU: Perceived Usefulness; PEOU: Percieved Ease of Use; SE: Self-Efficacy; AWR: Awareness; RSK: Perceived Risk; PRI: Privacy Risk; FIN: Financial risk; PSY: Psychological risk; Time: Time risk; SEC: Security risk; PV: Perceived Value

Table 3: Goodness-of-fit indices for the measurement model

Fit index	Cited	Admissibility	Results	Fit (Yes/No)
X^2	-	-	951.031	-
dF	-	-	357	-
p-values	-	>0.05	0.000	No
X^2/dF	Kline (2010)	1.00-5.00	2.664	Yes
RMSEA	Steiger (1990)	<0.08	0.059	Yes
GFI	Joreskog and Sorbom (1993)	>0.90	0.875	NO
AGFI	Joreskog and Sorbom (1993)	>0.80	0.848	Yes
NFI	Bentler and Bonnet (1980)	>0.80	0.937	Yes
PNFI	Bentler and Bonnet (1980)	>0.05	0.824	Yes
IFI	Bollen (1990)	>0.90	0.960	Yes
TLI	Tucker and Lewis (1973)	>0.90	0.954	Yes
CFI	Byrne (2010)	>0.90	0.960	Yes
PGFI	James et al. (1982)	>0.50	0.718	Yes

χ^2 = Chi square; dF = degree of Freedom; GFI = Goodness-of-Fit; NFI = Normed Fit Index; IFI = The Increment Fit Index; TLI = Tucker-Lewis coefficient Index; CFI = Comparative-Fit-Index; RMSEA = Root Mean Square Error of Approximation; PNFI = Parsimony Normed Fit Index; AGFI = Adjusted Goodness of Fit Index. The indexes in bold are recommended, since, they are frequently reported in literature (Awang, 2012)

that the overall fit indices for the CFA Model are acceptable (Byrne, 2010; Sarstedt *et al.*, 2014; Kline, 2011), since, incremental fit indices and parsimony fit indices are fulfilled.

Convergent validity was tested on the CFA model before hypothesis testing. The convergent validity of the measurement model was tested by examining the factor loading, composite reliability and Average Variance Extracted (AVE). High loadings (at least 0.50) on a factor indicate that the items converge on the same common point (Sarstedt *et al.*, 2014). The composite reliability is the same acceptable cut-off for the Cronbach's alpha (at least 0.70). High AVE values (>0.5) show that the latent variables have high convergent validity (Sarstedt *et al.*, 2010). Results in Table 2 of composite reliability demonstrate values >0.7 and AVE values more than 0.5; therefore, all variables have convergent validity (Hair *et al.*, 2010).

The Fornell-Larcker criterion is a more conservative approach to assessing discriminant validity. It compares the value of the AVE with the latent variable correlations. Precisely, AVE should exceed the correlation with any other construct (Sarstedt *et al.*, 2014). The Fornell-Larcker criterion for the current study shown in Table 4 shows that AVE exceeds the correlation with any other construct.

Structural model and hypothesis testing: All the hypothesis were examined using structural equation modelling using AMOS Software V. 21.0 as shown in Fig. 2 and 3. Table 5 shows the structural model fit which provides the indication of testing the hypothesis. The p-values associated with each standardised path estimate are used to determine significance at an alpha level of 0.05.

Table 4: Results of discriminant validity by Fornell-Larcker criterion

Factors	PU	PEOU	SE	AWR	RSK	PV
PU	0.931					
PEOU	0.709	0.850				
SE	0.774	0.651	0.867			
AWR	0.384	0.271	0.316	0.886		
RSK	-0.592	-0.516	-0.495	-0.333	0.923	
PV	0.730	0.676	0.631	0.426	-0.607	0.917

Diagonals represent the square root of the average variance extracted while the other entries represent the correlations. PU: Perceived Usefulness; PEOU: Percieved Ease of Use; SE: Self-Efficacy; AWR: Awareness; RSK: Perceived Risk; PV: Perceived Value

Table 5 and 6 shows the results of the six hypothesis built. The Structural Equation Modelling (SEM) analysis indicates that perceived ease of use is significantly predicting the perceived usefulness; hence, H_1 is accepted (p<0.001). Perceived usefulness as well, considerably predicts perceived value of using mobile banking; therefore, H_2 is supported (β = 0.307, p = 0.001). Likewise, H_3 is supported as perceived ease of use significantly predicts perceived value (β = 0.373, p = 0.001). In contrast, H_4 was not supported as the self-efficacy did not predict the perception of the value of using mobile banking services (β = 0.049, p = 0.05). On the other hand, H_5 was supported, since, the awareness notably influenced the perceived value (β = 0.167, p = 0.001). Similarly, perceived risk significantly predicts the perceived value of using mobile banking services (β = -0.234, p = 0.001); hence, H_6 is supported.

The coefficient of determination for the study shows that perceived ease of use explained 61% of the variance in perceived usefulness whereas perceived usefulness, perceived ease of use, self-efficacy, awareness and perceived risk explain 54% of the variance in perceived value of using mobile banking services. According to Chin (1998), the R^2 of the perceived value of using mobile banking services in the current study is considered substantial.

In summary, the general objective of this study was met, revealing the factors that determine the perceived
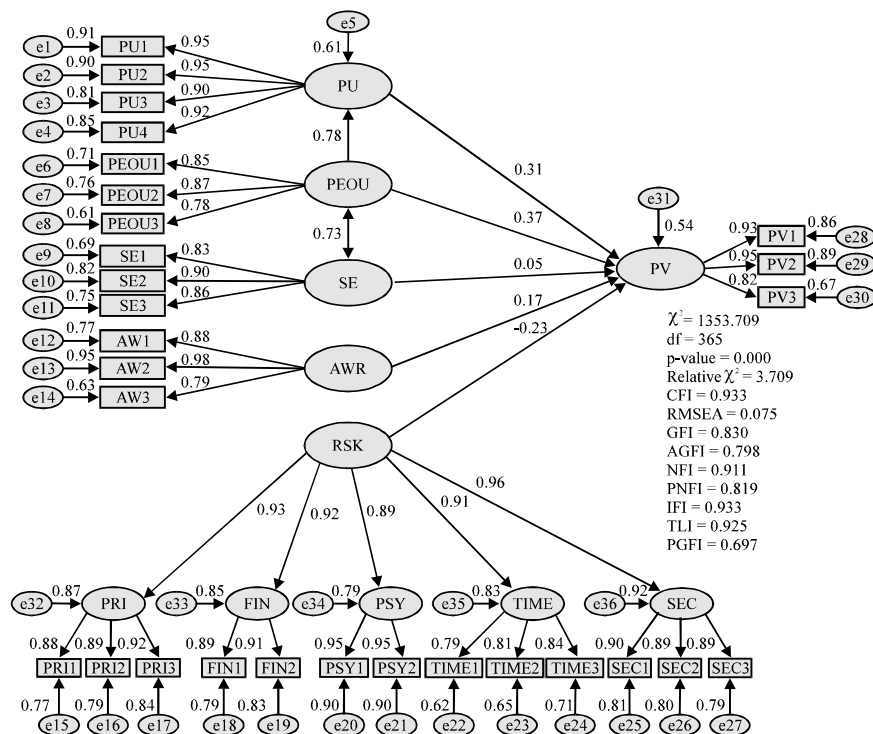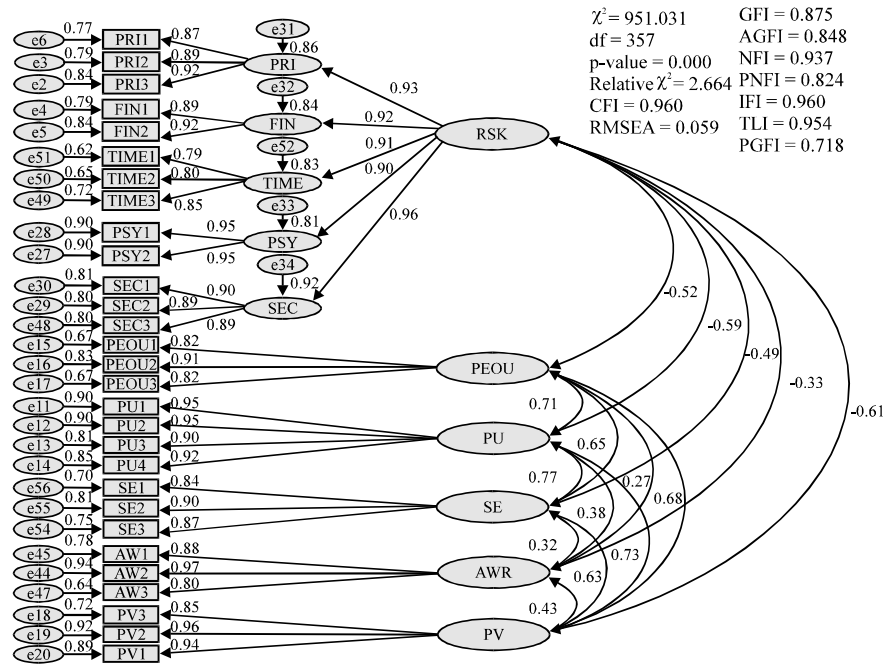

Fig. 2: Research structural model results

Fig. 3: Confirmatory Factor Analysis (CFA)

Table 5: Structural path analysis result

Hypothesis	Dependent variables	Independent variables	Path coefficients β values	SE	CR (t-values)	Findings
H_1	PU	PEOU	0.778	0.061	16.780***	Supported
H_2	PV	PU	0.307	0.057	4.974***	Supported
H_3	PV	PEOU	0.373	0.103	4.445***	Supported
H_4	PV	SE	0.049	0.070	0.853	Not supported
H_5	PV	AWR	0.167	0.034	4.821***	Supported
H_6	PV	RSK	-0.234	0.035	-6.599***	Supported

Survey: PU = Perceived Usefulness; PEOU = Perceived Ease of Use; SE = Self-Efficacy of mobile banking services; AWR: Awareness, RSK = Perceived Risk, PV: Perceived Value; ***$p<0.001$; **$p<0.01$; *$p<0.05$ SE = Standard Error; CR = Critical Ratio

Table 6: Instrument for construct

Constructs/Dimensions	Items	Sources
Perceived Usefulness (PU)	I think using mobile banking would enable me to accomplish more banking activities	Akturan and Tezcan (2012)
	I think mobile banking would enable me to improve the performance of utilizing banking services	Al-Somali *et al.* (2009)
	In general, i would find mobile banking useful	Akturan and Tezcan (2012)
	I think that using mobile banking services will enhance my effectiveness in conducting my banking tasks	Lee *et al.* (2012)
Perceived Ease of Use (PEOU)	I would find mobile banking easy to use	Yu (2012)
	Learning to use mobile phone banking would be easy	Hanafizadeh *et al.* (2014)
	I would find mobile banking services to be flexible to interact with	Liu *et al.* (2008)
Self-Efficacy (SE)	I could use mobile banking if i could call someone for help if i got stuck	Yu (2012)
	I could conduct my banking transactions using the mobile banking systems if i had just the built-in help facility for assistance	Luarn and Lin (2005)
	I could conduct my banking transactions using the mobile banking systems if someone showed me how to do it first	Luarn and Lin (2005)
Awareness (AWR)	I think that when needed, i will get enough guidance from the bank related to mobile banking services	Al-somali *et al.* (2009) and Laukkanen and Kiviniemi (2010)
	I have received enough information about the benefits of using mobile banking services	
	In general, i know about mobile banking services	
Perceived Risk (RSK)		
Privacy risk (PRI)	I think mobile banking endanger my privacy by using my personal information without my permission	Thakur and Srivastava (2013)
	When using mobile banking, my personal data can't be kept private	Chen (2013)
	When using mobile banking, personal information may be stolen by others	Chen (2013)

Table 6: Continue

Constructs/Dimensions	Items	Sources
Financial risk (FIN)	When using mobile banking, i may lose money because	Akturan and Tezcan (2012)
	When using mobile banking services, financial risk exists my account information is hacked	(Chen, 2013)
Time risk (TIME)	I think i would spend too much time learning how to use mobile banking	Akturan and Tezcan (2012)
	I think that mobile banking would not run fast and cause time loss because of some problems in the operating system	Chen (2013)
	I think using mobile banking service would lead to a loss of convenience for me because i would have to waste a lot of time fixing payments errors	Lee (2009)
Psychological risk (PSY)	Using mobile banking system makes me feel anxiety	Chen (2013)
	Using mobile banking system makes me feel nervous	Chen (2013)
Security risk (SEC)	I would not feel totally safe providing personal privacy information over the mobile banking	Lee (2009)
	I am worried to use mobile banking because other people may be able to access my account	Luo *et al.* (2010)
	I would not find mobile banking secure in conducting my transactions	Koenig-Lewis *et al.* (2010)
Perceived Value (PV)	Compared to the effort that i need to put in the use of mobile banking is beneficial to me	Kim *et al.* (2007)
	Compared to the time that i need to spend, the use of mobile banking is is worthwhile to me	Kim *et al.* (2007)
	Overall the use of mobile banking services gives me good value	Kim *et al.* (2007)

value of using mobile banking services. The specific objective is to examine the influence of perceived ease of use, perceived usefulness, self-efficacy, awareness and perceived risk on perceived value through testing hypothesis H_1-H_6. PU, PEOU and AWR (Perceived Usefulness, Perceived Ease of Use and Awareness) are found to have positive significant relationships with perceived value. With respect to β values, PEOU has the highest influence on perceived value (β = 0.373) while awareness had the least β = 0.167 and PU (β = 0.307). Therefore, it is likely that as the perception of usefulness and ease of use increase among as well as the awareness of mobile banking service's value and benefits, perceived value will therefore, also increases. The finding is in line with earlier findings revealed by Ho and Ko (2008) who revealed in their findings that perceived ease of use and perceived usefulness of internet banking are positively related to customer value. Moreover, this finding is consistent with another study by Kim *et al.* (2007) in which usefulness and ease of use of mobile internet services are found to have a positive relationship with perceived value, especially in the early stages of adoption.

Potential users are worried about the time and effort required to learn and use mobile banking. If mobile banking usage is complex to utilize has a slow response is difficult to understand and learn, then it will have a very weak advantage. Accordingly, bank's clients would take into account the technical knowledge required in using the mobile banking services when forming opinions of its value. The results of this research refer back to TAM which found that ease of use construct is more notable in the early stages of adoption when obstacles are presented by process issues and need to be overcome.

Like previous empirical studies on the adoption of technology, perceived usefulness is the highest concern for potential mobile banking users when determining the value of the service. One of the possible explanations for this finding could be that bank's clients are certain of the benefits and convenience of mobile banking over other e-Banking channels, it satisfies their needs. So, bank customers would already have a perception that the service is useful; thus, they have higher perceived value of using the service.

In addition, when bank clients get more guidance and information from the bank about the service, the more informative and clearer they become about how to use the service and the benefits it offers, this idea is supported by the findings of this research. Furthermore, the study findings confirm that the higher awareness of mobile banking service's benefits and values (sufficient and concrete information), the higher the perception of the value of the customers. As this study focuses on potential users, the lack of mobile banking service's information and knowledge means there is reduced benefits from the service.

Furthermore, hypothesis four posits that self-efficacy has a positive influence on the perceived value was not supported by the findings of the study. The reason behind this might be that a potential user of a new technology who has the ability and confidence that he/she got from prior experience and training to use similar technology would know how to utilize such a technology, this would not affect the value perceived by customers. The higher ability and confidence of clients using a new technology will affect directly the behavioural intention without intervening in other factors such as perceived value.

On the other hand, through the results revealed in the present study, perceived risk is found to have a significant negative influence on the perceived value with β value of (-0.234). This finding is consistent with the findings by Gupta and Kim (2010), Kleijnen *et al.* (2007), Sweeney *et al.* (1999) and Xiong (2013) that there is a negative influence of perceived risk on perceived value. In other words, the higher the perception of risk in the mobile banking context, the lower the perception of the value by customers. That's why bank's decision makers and developers should bear in mind that they need to make the services more secure and lower the risk to increase the usage of mobile banking services.

In summary, these results are justified as has been suggested by the previous studies in the literature on technology usage: perceived risk, perceived ease of use, perceived usefulness and awareness are critical for the comprehension of the perceived value.

CONCLUSION

The main objective of this study is to determine factors affecting the perceived value of using mobile banking services among bank's clients. Regardless of various limitations of the study, the findings have managed to shed some light on new variables of perceived value of using mobile banking services which are encouraging results. In short, risk perception can reduce the perceived value of using mobile banking, since, it negatively influences perceived value. Perceived ease of use and perceived usefulness have a great impact on the perception of the value. In addition, awareness of the benefits and value of using mobile banking services is essential to drive clients toward accepting and adopting mobile banking services, especially, in the early stages. Mobile banking services have to present something new to the banks' clients among services that compete in the same category (e-Banking services). As demonstrated by this study, after the bank's clients evaluate the mobile banking services based on their perceptions of its ease of use, usefulness, awareness and associated perceived risk, they start to make a decision toward intention to use mobile banking services or not. The study results clearly show that PU, PEOU, AWR and RSK are significant predictors of perceived value of using mobile banking services.

LIMITATIONS

Any study's contribution must be evaluated in light of its limitations and this study is no exception. First, we employed perceived value as the dependent variable and did not examine the influence of value perception by clients toward the intentional behavioural and actual usage of a technology. It is suggested that to further this study, researchers should include the aforementioned dependent variables. Second, this study was embedded in the context of mobile banking and no other electronic banking services. So, it is suggested to include other e-Banking services to measure the perception of their value among clients. Third, not a lot of literature was researched and revealed on the value perception, it is recommended that more studies be used while including more factors that would play a major role in affecting the perceived value.

IMPLICATIONS

The findings of the current research will have remarkable implications that will be very helpful for the banking sector and also beneficial for the governmental-related authorities, since, they should have awareness of the relatively important elements that should be borne in mind to formulate suitable strategies to promote mobile banking. Therefore, benefits from mobile banking will be obtained.

The underpinning theory in this current research is the Technology Acceptance Model (TAM). Based on TAM, the conceptual model demonstrates the role of perceived ease of use, perceived usefulness, self-efficacy, awareness and perceived risk to drive the perceived value. Furthermore, the present study has taken the perceived value construct into the electronic context which was previously unexplored territory. The results of the current research can be added to the body of literature for researchers on mobile banking and perceived value. Previous studies may have missed including a significant source of influence in pre-adoption behaviour by ignoring the role of awareness and perceived value in IS.

One of the most important implications of mobile banking is the necessity to realize that management of the perceived value can be deal with if the objectives are making the application easy to use with a useful system. Another major aspect is how valuable the awareness of mobile banking is to each segment of the targeted market among existing banking clients. Consequently, banks should promote their services and keep marketing the benefits and value to draw more clients to accept and adopt mobile banking services. Banks should take this step ahead to raise awareness of the value of mobile banking and the perception of the benefits through advertisement and promotion. Moreover, the interest of clients in using mobile banking can be improved through

advertising and promotional activities as long as banks use the right messaging and branding. Major issues to be covered include easiness, usefulness, low cost, availability and how secure the mobile banking system is. This will let existing bank's clients who have not yet adopted mobile banking services, sense the significance and the value of the services offered when using mobile banking applications.

Finally, perceived risk is analysed based on privacy, financial security, time, psychological and overall security risk of mobile banking services. The higher the perception of privacy, financial security, time, psychological and overall security risk breaches, the lower the perceived value of mobile banking service. Clients are less expected to perceive the real value and benefits of a service that they do not trust to protect their privacy, money and interests also, they are less likely to use a service if they lose their comfort and time. It is suggested that high-security features must be established to protect personal information such as personal identification or bank account information. The frameworks design and operational design of the mobile banking services platform should have high-security features to protect customer information. To ensure a higher level of uptake of the service among the bank's clients, practical use of the mobile banking depends on the higher perception of value and the ability of that service to operate with a similar level of trust and efficiency as other channels of banking.

REFERENCES

Akturan, U. and N. Tezcan, 2012. Mobile banking adoption of the youth market: Perceptions and intentions. Market. Intell. Plann., 30: 444-459.

Al-Qeisi, K.I., 2009. Analyzing the use of UTAUT model in explaining an online behaviour: Internet banking adoption. Ph.D Thesis, Brunel Business School, Brunel University London, London, England, UK.

Al-Somali, S.A., R. Gholami and B. Clegg, 2009. An investigation into the acceptance of online banking in Saudi Arabia. Technovation, 29: 130-141.

Amin, H., M.R.A. Hamid, S. Lada and Z. Anis, 2008. The adoption of mobile banking in Malaysia: The case of Bank Islam Malaysia Berhad (BIMB). Int. J. Bus. Soc., 9: 45-53.

Anonymous, 2015. Worldwide device shipments by segment, 2014-2016. Gartner, Stamford, Connecticut, USA.

Awang, Z., 2012. Structural Equation Modeling using AMOS Graphic. Universiti Teknologi MARA, Shah Alam, Malaysia, ISBN:9789673634187, Pages: 167.

Bagozzi, R.P. and L.W. Phillips, 1982. Representing and testing organizational theories: A holistic construal. Administrative Sci. Q., 27: 459-489.

Bentler, P.M. and D.G. Bonett, 1980. Significance tests and goodness of fit in the analysis of covariance structures. Psychol. Bull., 88: 588-606.

Bollen, K.A., 1990. Overall fit in covariance structure models: Two types of sample size effects. Psychol. Bull., 107: 256-259.

Byrne, B.M., 2010. Structural Equation Modeling with AMOS: Basic Concepts, Applications and Programming. 2nd Edn., Routledge, New York, USA., ISBN-13: 9780805863734, Pages: 396.

Chen, C., 2013. Perceived risk, usage frequency of mobile banking services. Managing Serv. Qual. Intl. J., 23: 410-436.

Chin, W.W., 1998. Commentary: Issues and opinion on structural equation modeling. MIS Q., 22: 7-16.

Cruz, P., L.B.F. Neto, P. Munoz-Gallego and T. Laukkanen, 2010. Mobile banking rollout in emerging markets: Evidence from Brazil. Int. J. Bank Market., 28: 342-371.

Daud, N.M., N.E.M. Kassim, W.S.R.W.M. Said and M.M.M. Noor, 2011. Determining critical success factors of mobile banking adoption in Malaysia. Aust. J. Basic Applied Sci., 5: 252-265.

Davis, F.D., 1989. Perceived usefulness, perceived ease of use and user acceptance of information technology. MIS Quart., 13: 319-340.

Davis, F.D., R.P. Bagozzi and P.R. Warshaw, 1989. User acceptance of computer technology: A comparison of two theoretical models. Manage. Sci., 35: 982-1003.

Featherman, M.S. and P.A. Pavlou, 2003. Predicting e-services adoption: A perceived risk facets perspective. Int. J. Hum. Comput. Stud., 59: 451-474.

Gupta, S. and H.W. Kim, 2010. Value-driven internet shopping: The mental accounting theory perspective. Psychol. Market., 27: 13-35.

Hair, J.F., W.C. Black, B.J. Babin and R.E. Anderson, 2010. Multivariate Data Analysis: A Global Perspective. 7th Edn., Pearson Education Inc., Upper Saddle River, NJ., USA., ISBN-13: 9780135153093, Pages: 800.

Han, C. and S. Yang, 2010. Value-based adoption of mobile banking service: A multi-channel perspective. Proceedings of the 2010 International Conference on Information Networking and Automation (ICINA) Vol. 2, October 18-19, 2010, IEEE, Kunming, China, pp: 506-510.

Hanafizadeh, P., M. Behboudi, A.A. Koshksaray and M.J.S. Tabar, 2014. Mobile-banking adoption by Iranian bank clients. Telematics Inf., 31: 62-78.

Ho, S.H. and Y.Y. Ko, 2008. Effects of self-service technology on customer value and customer readiness: The case of Internet banking. Internet Res., 18: 427-446.

Hoffman, D.L., T.P. Novak and M. Peralta, 1999. Building consumer trust online. Commun. ACM, 42: 80-85.

Howcroft, B., R. Hamilton and P. Hewer, 2002. Consumer attitude and the usage and adoption of Home-based banking in the United Kingdom. Int. J. Bank Market., 20: 111-121.

Hsu, M. and C. Chiu, 2004. Internet self-efficacy and electronic service acceptance. Decision Support Syst., 38: 369-381.

Ignatius, J. and T. Ramayah, 2005. An empirical investigation of the Course Website Acceptance Model (CWAM). Int. J. Bus. Soc., 6: 69-82.

James, L.R., S.A. Muliak and J.M. Brett, 1982. Causal Analysis: Models, Assumptions and Data. Sage, Beverly Hills, California,.

Joreskog, K. and D. Sorbom, 1993. LISREL 8: Structural Equation Modeling with the SIMPLIS Command Language. Scientific Software International, Inc., Chicago, Illinois, USA., Pages: 227.

Khalifa, M. and K.N. Shen, 2008. Explaining the adoption of transactional B2C mobile commerce. J. Enterprise Inf. Manage., 21: 110-124.

Kim, H.W. and S. Gupta, 2009. A comparison of purchase decision calculus between potential and repeat customers of an online store. Decis. Support Syst., 47: 477-487.

Kim, H.W., H.C. Chan and S. Gupta, 2007. Value-based adoption of mobile internet: An empirical investigation. Decis. Support Syst., 43: 111-126.

Kleijnen, M., K. de Ruyter and M. Wetzels, 2007. An assessment of value creation in mobile service delivery and the moderating role of time consciousness. J. Retailing, 83: 33-46.

Kline, R.B., 2010. Principles and Practice of Structural Equation Modeling. 3rd Edn., Guilford Press, New York, USA., ISBN:9781606238783, Pages: 427.

Kline, R.B., 2011. Principles and Practice of Structural Equation Modelling. 3rd Edn., The Guilford Press, New York, USA.,.

Koenig-Lewis, N., A. Palmer and A. Moll, 2010. Predicting young consumers' take up of mobile banking services. Intl. J. Bank Marketing, 28: 410-432.

Laukkanen, T. and V. Kiviniemi, 2010. The role of information in mobile banking resistance. Int. J. Bank Market., 28: 372-388.

Laukkanen, T., 2007. Internet vs mobile banking: Comparing customer value perceptions. Bus. Proc. Manage. J., 13: 788-797.

Lee, M.C., 2009. Factors influencing the adoption of internet banking: An integration of TAM and TPB with perceived risk and perceived benefits. Electron. Commerce Res. Applic., 8: 130-141.

Lee, Y.K., J.H. Park, N. Chung and A. Blakeney, 2012. A unified perspective on the factors influencing usage intention toward mobile financial services. J. Bus. Res., 65: 1590-1599.

Leong, L.Y., K.B. Ooi, A.Y.L. Chong and B. Lin, 2013. Modeling the stimulators of the behavioral intention to use mobile entertainment: Does gender really matter?. Comput. Hum. Behav., 29: 2109-2121.

Liu, G., S.P. Huang and X.K. Zhu, 2008. User acceptance of internet banking in an uncertain and risky environment. Proceedings of the 2008 International Conference on Risk Management and Engineering Management, November 4-6, 2008, IEEE, China, Beijing, ISBN:978-0-7695-3402-2, pp: 381-386.

Luarn, P. and H.H. Lin, 2005. Toward an understanding of the behavioral intention to use mobile banking. Comput. Hum. Behav., 21: 873-891.

Luo, X., H. Li, J. Zhang and J.P. Shim, 2010. Examining multi-dimensional trust and multi-faceted risk in initial acceptance of emerging technologies: An empirical study of mobile banking services. Decis. Support Syst., 49: 222-234.

Martins, C., T. Oliveira and A. Popovic, 2014. Understanding the internet banking adoption: A unified theory of acceptance and use of technology and perceived risk application. Int. J. Inf. Manage., 34: 1-13.

Mcdonald, R.P. and M.H. Ho, 2002. Principles and practice in reporting structural equation analysis. Psychol. Methods, 7: 64-82.

Miles, J.N., 2000. Statistical software for microcomputer: MLwiN and mplus. Br. J. Math. Stat. Psychol., 54: 383-387.

Norzaidi, D.M., C.S. Choy, R. Murali and S.M. Intan, 2007. Intranet usage and manager's performance in the port industry. Ind. Manage. Data Syst., 107: 1227-1250.

Pikkarainen, T., K. Pikkarainen, H. Karjaluoto and S. Pahnila, 2004. Consumer acceptance of online banking: An extension of the technology acceptance model. Internet Res., 14: 224-235.

Pousttchi, K. and M. Schurig Pousttchi, K. and M. Schurig, 2004. Assessment of today's mobile banking applications from the view of customer requirements. Proceedings of the 37th Annual Hawaii International Conference on System Sciences, Jan. 5-8, Big Island, Hawaii, pp: 70184-70184.

Puschel, J. and J.A. Mazzon, 2010. Mobile banking: Proposition of an integrated adoption intention framework. Int. J. Bank Market., 28: 389-409.

Rahman, M.A., X. Qi and M.T. Islam, 2016. Banking access for the poor: Adoption and strategies in rural areas of Bangladesh. J. Econ. Financial Stud., 4: 1-10.

Ramayah, T. and N.M. Suki, 2006. Intention to use mobile PC among MBA students: Implications for technology integration in the learning curriculum. Unitar E. J., 1: 30-39.

Ramayah, T., 2006. Course website usage does prior experience matter?. Wseas Trans. Inf. Sci. Appl., 3: 299-306.

Ramayah, T., J. Ignatius and B. Aafaqi, 2005. PC usage among students in a private institution of higher learning: The moderating role of prior experience. Educators Educ. J., 20: 131-152.

Ramayah, T., M. Jantan, M.N.M. Noor and K.P. Ling, 2003. Receptiveness of internet banking by Malaysian consumers: The case of Penang. Asian Acad. Manage. J., 8: 1-29.

Riquelme, H.E. and R.E. Rios, 2010. The moderating effect of gender in the adoption of mobile banking. Int. J. Bank Marketing, 28: 328-341.

Sarrab, M., I. Al Shibli and N. Badursha, 2016. An empirical study of factors driving the adoption of mobile learning in Omani higher education. Int. Rev. Res. Open Distrib. Learn., 17: 331-349.

Sarstedt, M., C.M. Ringle, D. Smith, R. Reams and J.F. Hair, 2014. Partial least squares structural equation modeling (PLS-SEM): A useful tool for family business researchers. J. Family Bus. Strategy, 5: 105-115.

Sathye, M., 1999. Adoption of internet banking by Australian consumers: An empirical investigation. Int. J. Bank. Market., 17: 324-334.

Sharma, S., S. Mukherjee, A. Kumar and W.R. Dillon, 2005. A simulation study to investigate the use of cutoff values for assessing model fit in covariance structure models. J. Bus. Res., 58: 935-943.

Steiger, J.H., 1990. Structural model evaluation and modification: An interval estimation approach. Multivariate Behav. Res., 25: 173-180.

Sweeney, J.C., G.N. Soutar and L.W. Johnson, 1999. The role of perceived risk in the quality-value relationship: A study in a retail environment. J. Retail., 75: 77-105.

Tan, E., E. Tan, L.J. Leby and L.J. Leby, 2016. Behavioural intention to adopt mobile banking among the millennial generation. Young Consumers, 17: 18-31.

Thakur, R. and M. Srivastava, 2013. Customer usage intention of mobile commerce in India: An empirical study. J. Indian Bus. Res., 5: 52-72.

Tucker, L.R. and C. Lewis, 1973. A reliability coefficient for maximum likelihood factor analysis. Psychometrika, 38: 1-10.

Venkatesh, V., M.G. Morris, G.B. Davis and F.D. Davis, 2003. User acceptance of information technology: Toward a unified view. MIS Quart., 27: 425-478.

Wang, Y.S., H.H. Lin and P. Luarn, 2006. Predicting consumer intention to use mobile service. Inform. Syst. J., 16: 157-179.

Xiong, S., 2013. Adoption of mobile banking model based on perceived value and trust. Proceedings of the 2013 6th International Conference on Information Management, Innovation Management and Industrial Engineering (ICIII), Vol. 1, November 23-24, 2013, IEEE, Wuhan, China, ISBN:978-1-4799-3985-5, pp: 632-635.

Yang, K.C.C., 2005. Exploring factors affecting the adoption of mobile commerce in Singapore. Telemat. Inform., 22: 257-277.

Yu, C.S., 2012. Factors affecting individuals to adopt mobile banking: Empirical evidence from the UTAUT model. J. Electron Commerce Res., 13: 104-121.

Zhou, T., Y. Lu and B. Wang, 2010. Integrating TTF and UTAUT to explain mobile banking user adoption. Comput. Hum. Behav., 26: 760-767.