

# Determinants Affecting Customer's Intention to Adopt Mobile Banking in Saudi Arabia

Layla Alsheikh<sup>1</sup> and Jamil Bojei<sup>2</sup>

<sup>1</sup>Putra Business School, University Putra Malaysia, Malaysia

<sup>2</sup>Faculty of Economics and Management, University Putra Malaysia, Malaysia

**Abstract:** *Mobile technologies and services are envisioned as the possible driving force that will create a variety of business opportunities. The objective of the present study is to determine the major factors that contribute towards customer's intention to adopt mobile banking as electronic-financial services among commercial banks in Saudi Arabia. The research uses primary data and the unit of analysis is individuals who are non-users of mobile banking services. The study questionnaires were distributed to samples throughout Saudi Arabia concentrating on major cities. Four hundred and three valid responses were received and analyzed through multivariate analysis process using Structural Equation Modelling. The study shows that Mobile Phone Experience and Awareness of Service are critical in the comprehension of the technology and its related functionality and benefits while the lack of knowledge and information maximizes the perception of risk. The results also reveal that Performance Expectancy, Effort Expectancy and Perceived Risk are major predictors for adopting mobile banking services in the initial adoption stage. The principal conclusion is that mobile banking services should offer innovative services compared to existing competition services in a similar area, i.e. electronic-banking services. As demonstrated, differentiation can be attained by encompassing more benefit factors than sacrifice factors that create perceived value of adopting mobile banking services in the future.*

**Keywords:** *Mobile Banking Services, Saudi Arabia, Behavioural Intention, Structural Equation Modelling*

*Received June 12, 2013; Accepted August 23 2013*

## 1. Introduction

Businesses are hastening the pace of information revolution by restructuring operations to exploit online potential. The effects of Internet revolution are experienced in world markets such as Saudi Arabia's market that is considered one of the largest IT markets in the Middle East region [2]. According to Communication and Information Technology Commission (CITC) in Saudi Arabia, attributes such as reduced costs of internet access and purchase of smart devices, fiber optic networks availability, and e-government applications helped to increase the internet penetration, from one million in 2001 to approximately 15.8 million internet users by the end of 2012 [13].

Mobile technologies and services are envisioned as the possible driving force that will create a variety of business opportunities. Mobile technologies features have enabled mobile phone users to enjoy applications that had hitherto been a preserve of only those who owned personal computers. The internet is now available to mobile users, with all its versatile user application interfaces. Consequently, researchers have reinvented the concept of e-commerce to include the capacity of mobile phones which is almost at the same level of personal computers [8, 16, 23].

Countries like Japan, South Korea are showing increased usage in mobile services but Europe, North America and Asia-Pacific including Australia and New Zealand, show otherwise. In fact, these countries are lagging behind significantly in the usage of the latest mobile technology services [19]. A similar situation is found in Middle East and Africa countries including Saudi Arabia and South Africa [19]. Hence, it is necessary to identify what factors promote or hinder the adoption of mobile services. In this context it is important to consider the fact that ubiquity, personalization and location specificity of mobile services makes them a unique service distinct from other communication technology services. However there are differing diffusion rates of mobile devices in countries like Saudi Arabia as compared to Japan and South Korea, which needs to be examined to enhance the rate of usage of the mobile devices for various commercial applications including banking services. Generally, the keyword with such service is convenience, but the issues of awareness, lack of confidence about e-system, accessibility and affordability also tend to emerge in developing economies. This further provides the impetus for the current research especially among the Saudi populace and this is the basis of this enquiry.

Many researches on customers' adoption behaviour of mobile banking services have been carried out in developed economies, such as South Korea and Finland, where the collaboration between financial institutions and cellular carriers has been well established. So far, however, limited empirical research has been undertaken in developing countries, especially in Middle East [4]. In fact, many studies have restated calls for examining the factors that predict the intention adoption behaviour of cell phone banking [20, 26, 32]. Therefore, this study examines factors affecting behavioural intention to use mobile banking services.

## 2. Mobile Banking Services in Saudi Arabia Banks

A variety of methods have been introduced to provide mobile banking services such as SMS-banking, downloading application–mobile banking or WAP-banking. SMS-banking is accessed by sending short text-messages; downloading application–mobile banking is when the bank offers downloadable applications that can be accessed through a specific type of mobile device such as the iPhone whereas WAP-banking is a recent method of mobile Internet service accessed using GPRS.

Due to increase in the emergence of licensed foreign banks' branches in Saudi Arabia in the last few years, customers have more options to shop around for more competitive products and services offerings. For that matter, any bank in Saudi Arabia is facing fierce competition from more established Saudi banks, and also all other licensed foreign banks' branches. In order to ensure their growth, Saudi banks as a whole have to satisfy their customers and be concerned with mobile banking as the newest electronic delivery channel. This will help to maintain their existing customers and attract new ones.

For that, the Saudi banks' activities embracing mobile banking services should be marketed to customers to enable them to know about the benefits, which may lead to an increase in customers' adoption rate of the services. All Saudi banks providing mobile banking services using ICT base have powerful delivery services in SMS form. While mobile banking services via mobile internet WAP is in the initial stage of implementation in some Saudi banks in general, the current study covers both methods of mobile banking services in Saudi Arabia - SMS banking and WAP mobile banking with the exclusion of downloaded application– mobile banking form.

The KPMG survey [19] reveals that 27% of Middle East/Africa region (Saudi Arabia and South Africa) consumers conduct banking or payment through mobile devices. However, 50 % of respondents are not at all comfortable with using a mobile device for banking purpose. Moreover, 60% of Middle

East/Africa region respondents say they are aware that their banks offer banking via mobile devices compared to 25% say they are not aware of the service offering. This survey also revealed that consumers are concerned about cost, whereby 59% of global consumers report that mobile banking is important, but they do not want to pay for it. Respondents also stated two matters that could affect their decision of using mobile banking in the future; ease of use and security or privacy. The most significant factor for the Middle East/Africa respondents was overall user experience. Interestingly, 54% of respondents showed acceptance to mobile banking and that they were somewhat likely to conduct financial transaction banking using a mobile device within the next twelve months. In fact, the customers' decisions to adopt services are not only based on the costs and risks involved but on the benefits that are expected as well as the ease of usage. The objectives of the study are identified next.

## 3. Research Objective

The purpose of the present study is to determine the major factors that contribute towards customer's intention to adopt mobile banking as electronic-financial services among commercial banks in Saudi Arabia. The specific objectives of the study are shown in subsection 3.1 to subsection 3.4. The hypotheses are formulated and included at the end of every objective listed below.

### 3.1. To Examine the Relationship Between Mobile Phone Experience and Benefit Factors (Performance Expectancy and Effort Expectancy)

Experience of technology refers to the level of experience of using a similar type or class of technology. In this research prior experience means the individual's level of general mobile services' knowledge and usage experience [3, 9]. Recent researchers [27, 3] have studied the effect of prior experience of users as a control variable for predicting intention to adopt e- banking services and they considered prior experience as an antecedent of performance and effort expectancy. Moreover, Venkatesh et al [31] observe significant support for the influence of effort expectancy by experience. For that, prior experience is critical for comprehension of technology and the related benefits.

H1: Mobile Phone Experience has positive influence on benefit factors (Performance Expectancy and Effort Expectancy)

Specifically:

- H1a: Mobile Phone Experience has positive influence on Performance Expectancy.

- H1b: Mobile Phone Experience has positive influence on Effort Expectancy.

### **3.2. To Identify the Relationship Between Awareness of Mobile Banking Services with Performance Expectancy, Effort Expectancy and Perceived Risk**

Awareness of mobile banking services can be defined as the existence of a mobile banking system and its benefits [5]. Awareness implies knowledge about a technology, its benefits and risks that are key factors in the voluntary use of systems. Al-Somali et al.'s [5] study indicates the direct effects of awareness about Internet banking on perceived usefulness (PU) and perceived ease of use (PEOU). The obstacles of mobile banking adoption is also due to lack of awareness and understanding of the benefits provided by mobile banking services in Finland [21]. This is consistent with another study's evidence where non-mobile banking users complained about not getting enough information and guidance on how to actually use the services [22]. Belkhamza and Wafa [7] are of the opinion that reduction in level of perceived risk is likely to promote e-commerce applications. It is obvious that awareness about the use and benefits of technology is most likely to decrease the level of perceived risk. Awareness of mobile banking services in this study can be represented by the amount of information bank customers have about the services, ranging from its concepts to applications.

H2: Awareness of service has positive effect on benefit factors (Performance Expectancy and Effort Expectancy)

Specifically:

- H2a: Awareness of service has positive influence on Performance Expectancy.
- H2b: Awareness of service has positive influence on Effort Expectancy.

H3: Awareness of service has negative influence on Perceived Risk.

### **3.3. To examine the relationship between benefit factors (Performance Expectancy and Effort Expectancy) with Behavioural Intention**

Customers are very concerned about the benefits that a service would offer them once it is adopted. Based on Unified Theory of Acceptance and Use of Technology model [31], the current study measured performance expectancy and effort expectancy as benefits factors. Performance expectancy denotes the degree to which customer believes that using the system will likely improve his or her job performance [31]. Customers basically have high expectations whenever they

undertake a particular service to satisfy their needs. Effort expectancy denotes the degree of ease with which an individual is likely to grasp the use of a system [31]. Ease of use is enhanced by the use of simple technology and applications that are easy to operate; such that little technical knowledge is required when using the system. Many studies [25, 27, 29, 18, 32] have found the positive influence of performance expectancy and effort expectancy on customer's adoption intention of electronic banking service. In this study, performance expectancy is defined as the user perception of performance and productivity enhancement by using mobile banking such as transaction quality, service effectiveness, convenient payment and fast response while effort expectancy is defined as the degree of effort that a bank customer believes he or she needs to spend on using mobile banking services.

H4: Benefit factors have positive influence on Behavioural Intention.

Specifically:

- H4a: Performance Expectancy has positive influence on Behavioural Intention.
- H4b: Effort Expectancy has positive influence on Behavioural Intention.

### **3.4. To identify the relationship between sacrifice factors (Perceived Cost, Perceived Risk) with Behavioural Intention**

Sacrifice factors denote what the customer is expected to part with or forego, in exchange for obtaining the service. These may involve costs and risks related to use a particular service. Cost is one of the major factors that consumers include in their decisions to use and lower costs are likely to attract more customers as compared to higher costs. Luarn and Lin [26, p. 880] define perceived cost as the extent to which "a person believes that using M-Banking will cost money". Perceived risk is defined as the consumer's perceptions of the uncertainty and possible undesirable consequences associated with buying a product or service [24]. The inherent risks in mobile banking, especially issues related to security and privacy make the customers reluctant to join the growing m-commerce market without first developing confidence in the services and the services providers [26]. Research have found that perceived financial cost and perceived risk negatively influences the users' behavioural intention to adopt mobile banking technology [29, 26, 32]. Moreover, Cruz et al.'s study [14] found that performance risk and financial risk are the major concerns about electronic payments via mobile. In this study, perceived cost is defined as the possible expenses of using mobile banking, i.e., equipment costs, access cost, and transaction fees

while perceived risk is defined as a bank customer's expectation of potential loss in the pursuit of a desired outcome of using mobile banking.

H5: Sacrifice factors have negative influence on Behavioural Intention.

Specifically:

- H5a: Perceived Cost has negative influence on Behavioural Intention.
- H5b: Perceived Risk has negative influence on Behavioural Intention.

## 4. Methodology

### 4.1 Conceptual Framework and Research Variables

The conceptual framework of this research is based on Unified Theory of Acceptance and Use of Technology (UTAUT) [31] to explain behavioural intention as the key dependent variable in the context of mobile banking services in Saudi Arabia. The independent variables are Performance Expectancy, Effort Expectancy, Perceived Cost and Perceived Risk taking into consideration the effect of a few important control variables (e.g. Mobile Phone Experience and Awareness of Mobile Banking Services). Figure 1 depicts the research model and the relationships among the variables.

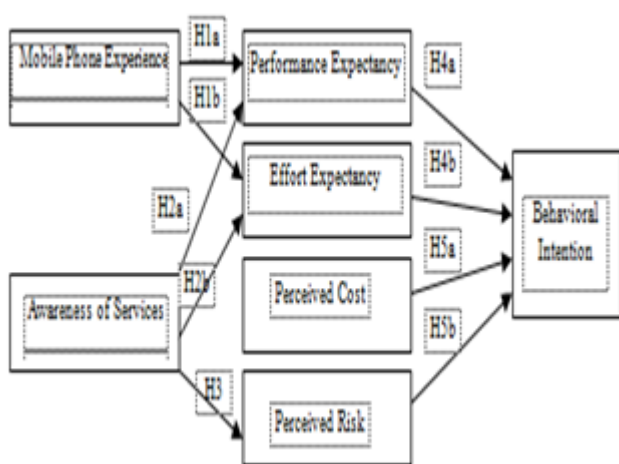


Figure.1. Research Conceptual Framework.

### 4.2. Research Instrument

Data is collected through questionnaires that are specially designed to measure all the core constructs of the conceptual model. The questionnaire comprised close-ended questions that were tested and translated into Arabic language and it is divided into two sections. The first section measures seven variables using seven-point Likert scale ranging from strongly disagree to strongly agree (see the survey items in Appendix 1) while second section contains the

demographic profile of the respondents and measured using nominal or ordinal scale.

### 4.3. Sampling and Statistical Technique

In this study, the respondents are individuals who are currently bank account holders of commercial Saudi bank, who have mobile phones, and non-users of mobile banking services. The actual data collection is guided by the clustering procedure where three major cities Al-Riyadh, Jeddah and Al-Dammam have been selected and the number of participating banks has been limited to six based on branches expanded criteria to select the biggest banks in Saudi Arabia. Four hundred and three valid responses were received and analyzed through multivariate analysis process using Structural Equation Modelling (SEM) via AMOS software.

## 5. Result and Discussion

### 5.1. Respondent Demographic Profile

Table 1 shows the frequency and percentage for demographic profile of respondents in the study. It shows that 311 (77.2%) respondents are male while the rest 92 or 22.8% are female participants, indicating that there are more male than female respondents and this ratio is set by the researcher to reflect the labour composition in Saudi Arabia [10]. Regarding age groups of the sample, 3.4 % of them are less than 20 years old, whilst 89.9 % of total respondents are in age group of 20 - 49 years and 6.7% of total respondents are 50 years and above.

In terms of education background, 30.5 % (n=123) of respondents have high school certificate and diploma. Respondents who have Bachelor Degree represent the majority of participants which is about 51%. Meanwhile, 17.9% of respondents finished their postgraduate studies. Majority of survey respondents are married which represents 60.8%, whilst 35.5% of respondents are still single and only 3.7% is from other categories (divorced and widower).

The distribution of respondents according to their occupation shows that 18.9% are students whilst government and private sector employees represent almost 80% and the rest from other categories. For income, based on gross household monthly income, 38% earns between SR4000 to SR8000, 30.8% between SR80001 to SR15000 and 19.9% with an income of less than SR4000.

As for residential region of respondents, Makkah Al-Mukarramah represents 40%, Al-Riyadh Region 37.2% and 22.8% of respondents from Eastern Region. This ratio is set by the researcher to reflect the population density in Saudi Arabia by provinces [11] and also to reflect the highest number of Saudi bank branches by regions.

Table 1. Summary of Demographic Profile of Respondents.

Demographic Item	Categories	Frequency	Percentage
Gender	1. Male	311	77.2
	2. Female	92	22.8
Age Group	1. Less than 20 years	14	3.4
	2. 20 - 29 years	157	39.0
	3. 30 - 39 years	135	33.5
	4. 40 - 49 years	70	17.4
	5. 50 - 59 years	23	5.7
	6. 60 years and above	4	1.0
Nationality	1. Saudi	330	81.9
	2. Non-Saudi	73	18.1
Education Background	1. High School	71	17.6
	2. Diploma	52	12.9
	3. Bachelor Degree	205	50.9
	4. Master Degree	54	13.4
	5. PhD/DBA Degree	18	4.5
	6. Others	3	0.7
Marital Status	1. Single	143	35.5
	2. Married	245	60.8
	3. Divorced	14	3.5
	4. Others	1	0.2
Occupation	1. Student	76	18.9
	2. Government employee	160	39.7
	3. Private sector employee	146	36.2
	4. Business owner	6	1.5
	5. Unemployed	10	2.5
	6. Others	5	1.2
Gross Monthly Income	1. Less than SR4,000	80	19.9
	2. SR4,000 – SR6,000	89	22.1
	3. SR6,001 – SR8,000	64	15.9
	4. SR8,001 – SR10,000	49	12.2
	5. SR10,001 – SR15,000	75	18.6
	6. SR15,001 and above	46	11.4
Residential Region	1. Al-Riyadh	150	37.2
	2. Makkah Al-Mukarramah	161	40.0
	3. Eastern	92	22.8
	4. Other	0	0.0

To sum up, the respondents' profile indicates that non-user of mobile banking services in Saudi Arabia is Saudi male, age between 20 to 49 years, married, have bachelor's degrees, employed with an income ranging from SR4, 000 to SR10, 000.

## 5.2. Descriptive Statistics

Table 2 presents the mean and standard deviation of each variable studied. The findings indicate that the level of mobile phone experience, performance expectancy and effort expectancy among respondents in the current study are high. These results portray that the respondents have good knowledge and experience in using mobile phone and expect ease, flexibility and good performance when using mobile banking. The results also show that the level of awareness of mobile banking services, perceived cost and perceived risk among respondents are moderate. These indicate that the respondents have enough information about mobile banking services and perceive the cost as affordable while at the same time think that the mobile banking services is risky compared to other banking channel

options. Moreover, their intention for service subscription in the future is good (5.43 out of 7).

Table 2. Descriptive statistics.

Variable	Mean	Standard Deviation
Mobile Phone Experience	5.43	1.11
Awareness of Mobile Banking Services	4.36	1.54
Performance Expectancy	5.61	1.20
Effort Expectancy	5.40	1.12
Perceived Cost	4.29	1.36
Perceived Risk	4.59	1.46
Behavioural Intention	5.43	1.37

## 5.3. Structural Equation Modelling

In order to attain the research objectives, SEM with a two-step analysis approach was used.

### 5.3.1. Measurement Model

Based on the results of Confirmatory Factor Analyses (CFA), items that have low factor loadings (i.e. less than .50) for each latent variable are deleted [17]. All the reliability values of the retained variables are higher than the suggested value of 0.7[17]. In this study, CFA model used all variables together and they are tested simultaneously rather than individually because the hypothesised model integrates a small number of items for each of the latent variables. Generally, the goodness-of-fit statistics (see Table 3) support the integrity of the overall model.

Table 3. Goodness-of-Fit Indices.

Index	Threshold	Result	Fit
X <sup>2</sup>		1275.838	
DF		601	
X <sup>2</sup> /DF	1.00 - 5.00	2.12	Yes
RMSEA	<.80	.053	Yes
GFI	>.90	.847	No
IFI	>.90	.725	Yes
TLI	>.90	.925	Yes
CFI	>.90	.933	Yes
AGFI	>.80	.882	Yes

Note: X<sup>2</sup> = Chi Square, DF = Degree of freedom, RMSEA = Root Mean Square Error of Approximation, GFI = Goodness-of-fit, IFI = the increment fit index, TLI = Tucker-Lewis coefficient Index, CFI = Comparative-fit-index, AGFI=Adjusted Goodness of Fit Index

Before testing the hypothesis, convergent validity is tested on the CFA model. It is tested by complete evaluation of the loading factor, composite reliability, t-value and the AVE. In this study, factor loadings of all variables are higher than 0.5, composite reliability values are above 0.7 and AVE values more than 0.5, as shown in in Appendix 2. Finally, the t-value (critical ratio) of items above 1.96 suggests that the variables have convergent validity [17].

The conservative approach for establishing discriminant validity compares the AVE estimates determined for each of the factors with the squared inter-construct correlation associated with that factor. All AVE estimates in this study are more than the corresponding squared inter-constructs correlation estimates. The squared correlations between independent variables and other constructs obtained from SPSS range from 0.00 to 0.63 (see Appendix 2). This suggests that discriminant validity criteria are met.

### 5.3.2. Structural Model Fit and Hypothesis Testing

The overall fit for the model were adjusted again according to the data evaluation based on the goodness of fit measurement with more items deleted. The structural model designed is presented in Table 4 showing the result of hypotheses testing. The p-values derived and linked with the separate standardized path

estimates are utilized to determine the significance at the alpha level with value at 0.05.

Table 4. Structural Path Analysis Result.

DV <--- IV	Estimate B	S.E	C.R	p
PEX <--- MEX	.295	.076	4.990	***
EEX <--- MEX	.302	.063	5.405	***
PEX <--- AWA	.330	.048	5.811	***
EEX <--- AWA	.460	.042	8.118	***
PRI <--- AWA	-.121	.050	-2.205	*
BIN <--- PEX	.167	.071	2.687	**
BIN <--- EEX	.229	.080	3.703	***
BIN <--- PCO	.002	.043	.046	.963
BIN <--- PRI	-.106	.048	-2.331	*

Note: MEX=Mobile Phone Experience, AWA=Awareness of Mobile Banking Services, PEX=Performance Expectancy, EEX=Effort Expectancy, PCO=Perceived Cost, PRI=Perceived Risk, BIN=Behavioural Intention; DV= Dependent variable, IV= Independent variable \*\*\*p<.000; \*\*p<.01; \*p<.05 S.E = Standard Error C.R = Critical Ratio

The results show that there are positive significant effect of MEX on both PEX and EEX, thus supporting Hypothesis 1. The impact of customers' mobile experience on PEX is supported by previous studies [30, 12]. The result suggests that prior mobile experience of bank customers increase their perception that using mobile banking will help them perform banking tasks easily through the mobile channel. This study also found that MEX has positive influence on EEX to adopt mobile banking services. This finding is consistent with previous studies [1, 3] and is explained by the fact that when bank customers are familiar and have expertise with mobile services, they perceive ease associated with the use of mobile banking. From Table 4, it is evident that MEX has more influence on EEX ( $\beta = .302$ ) than on PEX ( $\beta = .295$ ). This result is expected for non-user of mobile banking services. Such similar prior experience offers greater clarity and certainly improves perceptions of ease use of mobile banking to the potential adopters more than their perception of related benefits.

The findings also show that both hypotheses H2 and H3 are supported. From Table 4, it is evident that AWA has a stronger positive effect on benefit factors (PEX ( $\beta = .330$ ) and EEX ( $\beta = .460$ )) than the negative effect on PRI ( $\beta = -.121$ ). Hence, it is likely that as the AWA increase, PEX and EEX towards mobile banking services increase but PRI decreases. These findings are in support of empirical evidence provided by Al-Somali et al. [5] and Pikkarainen et al. [28] whose findings suggest that awareness of online

banking and its benefits has significant effect on the perceived usefulness and perceived ease of use of online banking adoption. Similarly, another study [21] found that the guidance and information offered by banks on mobile banking services has the most significant effect in decreasing the usage barrier (Effort Expectancy), followed by the effect of decreasing the value barrier (closely corresponds to Performance Expectancy concept) and risk barrier; respectively. Therefore, the findings of this study support the idea that when bank customers get more information and guidance from the bank about the service, the more informative and clearer they become about how to use the service, i.e. mobile banking services, and the benefits it offers. Additionally, the results of the study confirm that high awareness of mobile banking services (sufficient and concrete information), lead to lowest customers perceived risk. Since this study focuses on potential adopters, the lack of knowledge and information about mobile banking services means benefits from the service is reduced and perceptions on risk maximized.

Both benefit factors (PEX and EEX) are found to have positive relationship with BIN, hence, supporting Hypothesis 4. Their respective  $\beta$  values are (0.167 and 0.229). This shows that among potential adopters, EEX has stronger influence on BIN than PEX. This finding is consistent with previous studies [6, 26] whose empirical evidence show that perceived usefulness and ease of use have positive direct effect on intention to adopt mobile banking. In a related study by Riquelme and Rios [29] finds that PEX has the most influence on behavioural intention to adopt mobile banking services among current users of internet banking. In this study, the bank customers want easy to use and tangible benefits of mobile banking in order for them to adopt the service. This finding indicates that EEX and PEX are perceived by bank customers in Saudi Arabia as the core determinants of intention to adopt technology that lends support to similar conclusions by previous technology adoption studies [15, 31].

Lastly, H5 posits that: sacrifice factors have negative effect on Behavioural Intention. From Table 4, it is evident that PRI is significantly related to BIN ( $\beta = -.106$ ) whereas PCO is not ( $\beta = .002$ ). Thus, H5 is partially supported. Based on the result, it appears that perceived cost of mobile banking services did not influence customer behavioural intention while perceived high risk will decrease behavioural intention towards adopting mobile banking. In support of related studies [18, 27, 32, 14, 9], PRI was found to have significant negative influence on BIN to take up mobile banking. The influence of PCO of mobile banking services on BIN has been mixed as evidence from previous research. In this study, the lack of a negative significant effect of PCO might be explained by the lower costs of transaction fee or bank charge when using electronic banking services compared with

other banking options. This implies that bank customers in Saudi Arabia perceived the use of mobile banking services as affordable. Another possible explanation might be in the measurement items of perceived cost. The current study questionnaire did not provide information about the actual cost of service and the cost of other competing banking options; therefore it is not very suitable for assessing responses on costs. Moreover, the findings demonstrate that bank customers' perception of the risk of cell phone banking is a principle antecedent of behavioural intention. This indicates that the higher the bank customers' belief regarding potential of suffering a risk due to adopt mobile phone for banking purpose, the lower the predictability that they will plan to use mobile banking services in the near future.

## 6. Limitations and Future Studies

Certain limitations in the research findings should be considered. Firstly, there is no existing of the sampling frame for this study. The samples were chosen from just the six biggest commercial banks in Saudi Arabia which may affect the generalizable of the study results because these banks do not represent all bank customers in Saudi Arabia, i.e. government banks customers. The sample only covers the urbanites and ignores the rural population. In remote areas the response may not be favourable since there are limited bank branches. Further, the research measures mobile banking services in general and did not focus on a specific type of mobile banking. Different forms of mobile banking services could have differences in adoption processes.

The current study enhances the existing available knowledge on prior mobile experience, awareness of service, benefit factors, sacrifice factors, and behavioural intentions. By virtue of the fact that mobile banking in Saudi Arabia has made in-roads into the way bank account holders go about their banking transactions, prospective researches can look into other areas such as market orientation, and more detailed evaluations from different angles of relationship marketing that can promote more effective promotion of mobile banking itself.

Future research may need to focus on a specific type of mobile banking service. Thus, extending the conclusion of the study to a specific type of service must be considered a partial test of the working hypotheses. Furthermore, in the future, researchers might have the intention to repeat the study with other electronic services, if the significant factors and they may broaden their studies to other countries and cultures. This will show that that the findings of this study can be generalized.

## 7. Conclusion

The main objective of this study is to establish aspects influencing the behavioural intention to adopt mobile banking services among bank customers in Saudi Arabia. Despite a range of constraints on the study, the outcome has been encouraging, as it has managed to show some insight on new variables of behavioural intention. In brief it can be perceived as the starting point of mobile banking services adoption whereby bank customers are aware of the existence of the service beside their prior mobile phone experience that affect perceived usefulness and ease of use of mobile banking services. Meanwhile more knowledge and information about mobile banking services should reduce the risk of the mobile banking services. To the bank customer, mobile banking services have to present something innovative in comparison to existing competition services in a similar area which is electronic-banking services. As demonstrated, differentiation can be attained by encompassing more benefit factors than sacrifice factors. The study results clearly show that PEX, EEX and PRI are significant predictors of intention to use mobile banking at the initial stage of adoption.

## References

- [1] Agrawal, R., & Prasad, J, "Are Individual Differences Germane to the Acceptance of New Information Technologies?" *Decision Sciences*, vol. 30, no. 2, pp. 361-391, 1999.
- [2] Al-Ghaith, W., Sanzogni, L., & Sandhu, K., "Factor Influencing the Adoption and Usage of Online Services in Saudi Arabia." *The Electronic Journal of Information Systems in Developing Countries*, vol. 40, no. 1, pp. 1-32, 2010, Retrieved from: <http://www.ejisdc.org/ojs2/index.php/ejisdc/article/viewFile/620/303>
- [3] <http://www.ejisdc.org/ojs2/index.php/ejisdc/article/viewFile/620/303>
- [4] Al-Qeisi, K. I., *Analyzing the Use of UTAUT Model in Explaining an Online Behaviour: Internet Banking Adoption*. Brunel University, 2009.
- [5] Alsaab, S. A., *SMS Banking in Saudi Arabia*. University Utara Malaysia, Kedah, 2009.
- [6] Al-Somali, S. A., Gholami, R., & Clegg, B, "An Investigation into the Acceptance of Online Banking in Saudi Arabia." *Technovation*, vol. 29, pp. 130-141, 2009.
- [7] Amin, H., Hamid, M., Lada, S., & Anis, Z., "The Adoption of Mobile Banking in Malaysia : The Case of Bank Islam Malaysia Berhad." *International Journal of Business and Society*, vol. 9, no. 2, pp. 43-53, 2008.
- [8] Belkhamza, Z., & Wafa, S. A., "The Effect of Perceived Risk on the Intention to Use E-commerce: The Case of Algeria." *Journal of Internet Banking and Commerce*, vol. 14, no. 1, 2009.
- [9] Bouwman, H., Carlsson, C., Walden, P., & Molina-Castillo, F. J., "Trends in Mobile Services in Finland 2004-2006: From Ringtones to Mobile Internet." *The Journal of Policy, Regulation and Strategy for Telecommunications, Information and Media*, vol. 10, no. 2, pp. 75-93, 2008.
- [10] Brown , I., Cajee , Z., Davies , D., & Stroebel , S., "Cell Phone Banking: Predictors of Adoption in South Africa." *International Journal of Information Management*, vol. 23, pp. 381-394, 2003.
- [11] CDSI, Center Department of Statistic & Information, 2009, Available from <http://www.cdsi.gov.sa/>
- [12] CDSI, Center Department of Statistic & Information, 2010, Available from <http://www.cdsi.gov.sa/>
- [13] Chung, N., & Kwon, S. J., "The Effects of Customers' Mobile Experience and Technical Support on the Intention to Use Mobile Banking." *CyberPsychology & Behaviour*, vol. 12, no. 5, pp. 539-543, 2009.
- [14] CITC, Communication and Information Technology Commission: Annual Report, 2012, Retrieved from <http://www.citc.gov.sa>
- [15] Cruz , P., Neto, L., Muñoz-Gallego, P., & Laukkanen, T., "Mobile Banking Rollout in Emerging Markets: Evidence from Brazil." *The International Journal of Bank Marketing*, vol. 28, no. 5, pp. 342-371, 2010.
- [16] Davis, F., "Perceived Usefulness, Perceived Ease of Use, and Use Acceptance of Information Technology." *MIS Quarterly*, vol. 13, no. 3, pp. 319-340, 1989.
- [17] Donner, J., & Tellez, C. A, "Mobile Banking and Economic Development: Linking Adoption, Impact, and Use." *Asian Journal of Communication*, vol. 18, no.4, pp. 318-322, 2008.
- [18] Hair, J., Blake, W., Babin, B., & Anderson, R., *Multivariate Data Analysis* (7th ed.), Prentice-Hall, New Jersey, 2010.
- [19] Koenig-Lewis, N., Palmer, A., & Moll, A., "Predicting Young Consumers' Take up of Mobile Banking Services." *The International Journal of Bank Marketing*, vol. 28, no. 5, pp. 410- 432, 2010.
- [20] KPMG. (2009). "Consumers and Convergence III: Consumer Taking Charge, International survey report," pp. 1-36, 2009, Retrieved from [www.kpmg.com/Global/en/IssuesAndInsights/ArticlesPublications/Documents/Consumers-and-Convergence-III.pdf](http://www.kpmg.com/Global/en/IssuesAndInsights/ArticlesPublications/Documents/Consumers-and-Convergence-III.pdf)
- [21] Laforet, S., & Li, X, "Consumers' Attitudes towards Online and Mobile Banking in China."



- The International Journal of Bank Marketing*, vol. 23, no. 5, pp. 362 – 380, 2005.
- [22] Laukkanen, T., & Kiviniemi, V., “The Role of Information in Mobile Banking Resistance.” *The International Journal of Bank Marketing*, vol. 28, no.5, pp. 372-388, 2010.
- [23] Lee, C.-P., Mattila, M., & Shim, J. P., “An Exploratory Study of Information Systems Resistance: The Case of Mobile Banking Systems in Korea and Finland.” in *Proceedings of Americas Conference on Information Systems (AMCIS)*, 2007.
- [24] Lee, Y.-K., Park, J.-H., & Chung, N., “An Exploratory Study on Factors Affecting Usage Intention toward Mobile Banking: A Unified Perspective Using Structural Equation Modeling.” in *Proceedings of the Society for Marketing Advances*, pp. 347-359, 2009.
- [25] Littler, D., & Melanthiou, D., “Consumer Perceptions of Risk and Uncertainty and the Implications for Behaviour Towards Innovative Retail Services: The Case of Internet Banking.” *Journal of Retailing and Consumer Services*, vol. 13, no. 6, pp. 431-443, 2006.
- [26] Liu, G., Huang, S.-P., & Zhu, X.-K., “User Acceptance of Internet Banking in an Uncertain and Risky Environment.” in *Proceedings of the 2008 International Conference on Risk Management & Engineering Management*, pp. 381-386, 2008.
- [27] Luarn, P., & Lin, H.-H., “Toward an Understanding of the Behavioural Intention to Use Mobile Banking.” *Computers in Human Behaviour*, vol. 21, no. 6, pp. 873-891, 2005.
- [28] Luo, X., Li, H., Zhang, J., & Shinm, J. P., “Multi-dimensional Trust and Multi-faceted Risk in Initial Acceptance of Emerging Technologies: An Empirical Study of Mobile Banking.” *Decision Support System*, vol. 49, pp. 222-234, 2010.
- [29] Pikkarainen, T., Pikkarainen, K., Karjaluoto, H., & Pahnla, S., “Consumer Acceptance of Online Banking: An Extension of the Technology Acceptance Model.” *Internet Research*, vol. 14, no. 3, pp. 224-235, 2004.
- [30] Riquelme, E. H., & Rios, E. R., “The Moderating Effect of Gender in the Adoption of Mobile Banking.” *The International Journal of Bank Marketing*, vol. 28, no. 5, pp. 328-341, 2010.
- [31] Taylor, S., & Todd, P., “Assessing IT Usage : The Role of Prior Experience.” *MIS Quarterly*, vol. 19, no. 2, pp. 561-570, 1995.
- [32] Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D., “User Acceptance of Information Technology : Toward a Unified View.” *MIS Quarterly*, vol. 27, no. 3, pp. 425-478, 2003.
- [33] Wessels, L., & Drennan, J., “An Investigation of Consumer Acceptance of M-banking.” *The International Journal of Bank Marketing*, vol. 28, no. 7, pp. 547-568, 2010.
- [34] Wu, J.-H., & Wang, S.-C., “What Drives Mobile Commerce?: An Empirical Evaluation of the Revised Technology Acceptance Model.” *Information & Management*, vol.42, pp. 719-729, 2005.
- [35] Zhou, T., Lu, Y., & Wang, B., “Integrating TTF and UTAUT to Explain Mobile Banking User Adoption.” *Computers in Human Behaviour*, vol.26, no.4, pp. 760-767, 2010.

**Layla AlSheikh** was born in Jeddah, Saudi Arabia. She graduated from the King Abdul Aziz University, Jeddah, Saudi Arabia in 2001 when she was awarded with the bachelor degree in computer science. In 2007, she was awarded with the master degree in public administration from the King Abdul Aziz University, Jeddah, Saudi Arabia. She has experienced working as a Computer Science Lecturer at Yanbu College, Taibah University, Yanbu, Saudi Arabia. Alsheikh is currently a PhD marketing candidate at the Graduate School of Management, Universiti Putra Malaysia.



**Jamil Bojei** joined University Putra Malaysia (UPM) as a Marketing Lecturer. Dr. Bojei obtained his BS (Marketing) from Southern Illinois University at Carbondale and MBA (Marketing) from University of New Haven, Connecticut, USA; and PhD (Marketing) from University of Strathclyde, Glasgow, UK. He has held several portfolios at various levels including Head of MBA program; Deputy Dean, Graduate School of Management; Deputy Director, Halal Products Research Institute (HPRI), and currently Deputy Dean (Academic & International) at the Faculty of Economics & Management, University Putra Malaysia. In addition to marketing of technological products, Dr. Bojei research interest also includes that of customer relationship marketing (CRM) and related areas, marketing strategy and services marketing. And of late, he has also embarked research in halal related issues in business particularly that of marketing and management. He has published papers in the areas of marketing (advertising, R&D-Marketing Interface), customer relationship marketing, and “halal business”.

## Appendix 1: Survey Items

Variable	Question items	Sources
Mobile Phone Experience	I have been using the mobile phone for a long time. I am using the mobile phone frequently. The intensity of my mobile phone usage is extreme. The diversity of my mobile phone usage is broad. I am using the mobile phone throughout the day. My general knowledge in mobile phone is excellent. I am very skilled at using the mobile phone.	[3]
Awareness of Mobile Banking Services	I know about mobile banking services. I have received enough information about the benefits of using mobile banking services. I have received enough information of how to use mobile banking services. I have received information about the security system of mobile banking services from the bank. I feel that I will get enough guidance from the bank relating to mobile banking services when needed. In general, I receive enough information about mobile banking services	[5][14][21]
Performance Expectancy	I will find mobile banking services useful. Using mobile banking services will enable me to accomplish banking task more quickly. Using mobile banking services will increase my productivity in handling my banking tasks. Using mobile banking services will enhance my bank transaction quality. Using mobile banking services will increase my efficiency in conducting my banking tasks. Mobile banking services will improve my payment convenience.	[25][34]
Effort Expectancy	My interaction with mobile banking services will be understandable. It will be easy for me to become skillful at using mobile banking services. I would find mobile banking services easy to use. Learning how to use the mobile banking services will be easy for me. I will find it easy to get the mobile banking system to do what I want it to do. I will find mobile banking services to be flexible to interact with.	[3][25][31]
Perceived Cost	I think bank charge (e.g. send SMS alerts) is expensive when using mobile banking services. I think mobile operator charge (e.g. accessing the internet, SMS charges) is expensive when using mobile banking services. I think the equipment cost (e.g. buy a new mobile phone) of using mobile banking services is expensive. I think the transaction fee of using mobile banking services is expensive. It would cost a lot to use mobile banking services. I think mobile banking services are more expensive than other banking options.	[26][33]
Perceived Risk	I think using mobile banking services for monetary transactions will have potential risk. I think that privacy is not guaranteed when using mobile banking services. I have serious doubts that the banking transactions performed on a mobile phone will work satisfactorily. I believe it can rather easily happen that money can be stolen if mobile banking services are used. Conducting banking transactions on mobile phones is risky because one can easily lose or misplace the mobile phone. I think mobile banking services are more risky than other banking options.	[29][33]
Behavioural Intention	I intend to use mobile banking services in the future. I predict that I would use mobile banking services in the future. I plan to use mobile banking services in the future. I will use mobile banking services for various types of banking transactions. I believe it is worthwhile for me to adopt mobile banking services. My general intention to use mobile banking services is high.	[31]

## Appendix 2: Measurement Properties of Total Model

No.	Factors	CR	AVE	r <sup>2</sup>							
				1	2	3	4	5	6	7	
1	Mex	.825	.544	1							
2	Awa	.905	.657	0.16	1						
3	Pex	.915	.683	0.11	0.17	1					
4	Eex	.882	.653	0.21	0.30	0.63	1				
5	Pco	.878	.595	0.000	0.002	0.009	0.006	1			
6	Pri	.883	.605	0.000	0.009	0.000	0.001	0.29	1		
7	Bin	.934	.781	0.09	0.18	0.39	0.41	0.000	0.008	1	

Note: CR = Composite Reliability; AVE = Average Variance Extracted