

# “Adoption of Mobile Banking and Perceived Risk in GCC”

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# ADOPTION OF MOBILE BANKING AND PERCEIVED RISK IN GCC

## Abstract

The study deals with the adoption of mobile banking services by respondents in UAE and the perception of risk factors by them. A model was developed on the Customer Adoption Process of mobile banking. The model is validated based on the data collected using the questionnaire from a sample of 90 respondents in UAE. Factor analysis is used to evaluate and analyze the responses. Belief in technology and the value it creates are the major driving force for respondents to adopt mobile banking. Respondents perceive that mobile banking helps in proper financial planning due to continuous monitoring the transactions and time saving. Lack of privacy in the mobile banking transactions and not all banks offering mobile banking services in UAE are the major challenges perceived by the respondents for non-adoption of mobile banking. Respondents identify time risk, financial risk and performance risk as the most predominant risk factors compared to other risks in the adoption process.

## Keywords

mobile banking, risk, perception, adoption, attitude

## JEL Classification

G21, L96

## INTRODUCTION

Ease of transacting has become the key driver in the banking industry. Banks using better technology have a competitive edge over others in the industry. In this context banks are embracing mobile banking to capitalize on the benefits it provides in terms of better customer services. The telecom companies are increasingly tied up with financial services in the form of mobile banking to offer better services to their customers. There is an integration of banks, telecom companies and other financial institutions partnering and complementing each other to offer these services. Mobile banking enables customers using a smartphone to perform conventional and advanced financial transactions such as monitoring account balances, transferring funds between accounts, bill payments or locating an ATM. If banks intend to reach a large number of customers given the advancement of Internet technology, ensuring the level of reach without compromising the degree of richness is no longer something that is impossible (Coviello et al., 2001; Wiedmann et al., 2002).

Customers around the world are slowly embracing mobile banking (Kleijnen et al., 2004; Suoranta & Mattila, 2004), although there may be a geographical discrepancy in its acceptance level (Mallat et al., 2004). Mobile user's adoption rate in UAE is 52% ranked second after Saudi Arabia in the Middle East (Bandyopadhyay, 2010). Many banks in the United Arab Emirates (UAE) are investing in technology involved in banking (Aboelmaged & Gebba, 2013). However, UAE population have not yet changed their attitude and adopt mobile banking (Fernandes & Awamleh, 2005).

## 1. LITERATURE REVIEW

There is abundance of past research which explains technology adoption models (Carlsson et al., 2006) but researches regarding adoption of mobile banking in GCC are few. There are three models predominantly for technology adoption. They are the Theory of Reasoned Action (TRA), developed by Fishbein and Ajzen (1975) and Ajzen and Fishbein (1980) which consists of three variables: behavioral intention, attitude and subjective norm. The theory has been revised and extended by Ajzen himself into the Theory of Planned Behavior (TPB). Davis (1989) introduced Technology Acceptance Model (TAM), which is a further development to the previous models used for demonstrating user acceptance of information systems, which expanded the previous models and theories on technology adoption. Yang (2009) in his study analyzes the likelihood of a person to adopt mobile banking technology based on the ease or difficulty performing a particular task using Rasch model. Pallant and Tennant (2007) demonstrated that the adoption model assumes that respondent with lower ability is more likely to face difficulties with mobile banking than those with higher ability. Ali (2001) considered banks in Sweden to highlight how they changed the way of doing their business and adding value to their services after the advent of the Internet. There are abundance of studies trying to understand why customers use mobile banking. According to Delvi (1995), it is the change in lifestyles of respondents, by which they are unable to spend time on visiting the bank branches. The service quality attributes and convenience which mobile banking provides made customers to shift to mobile banking services as per their study. Liao and Cheung (2002) found that customers' expectations of speed, security and user friendly technology are the determining factors to adopt mobile banking. The study done by Mayri and Iannou (2006) has contradicted the previous studies and found that speed of transactions has little or no impact on the individual decision making processes. Daud et al. (2011) have tested the Technology Acceptance Model and revealed that the perceived usefulness, perceived credibility and awareness level of respondents about mobile banking do have an influence on the choice to adopt mobile bank-

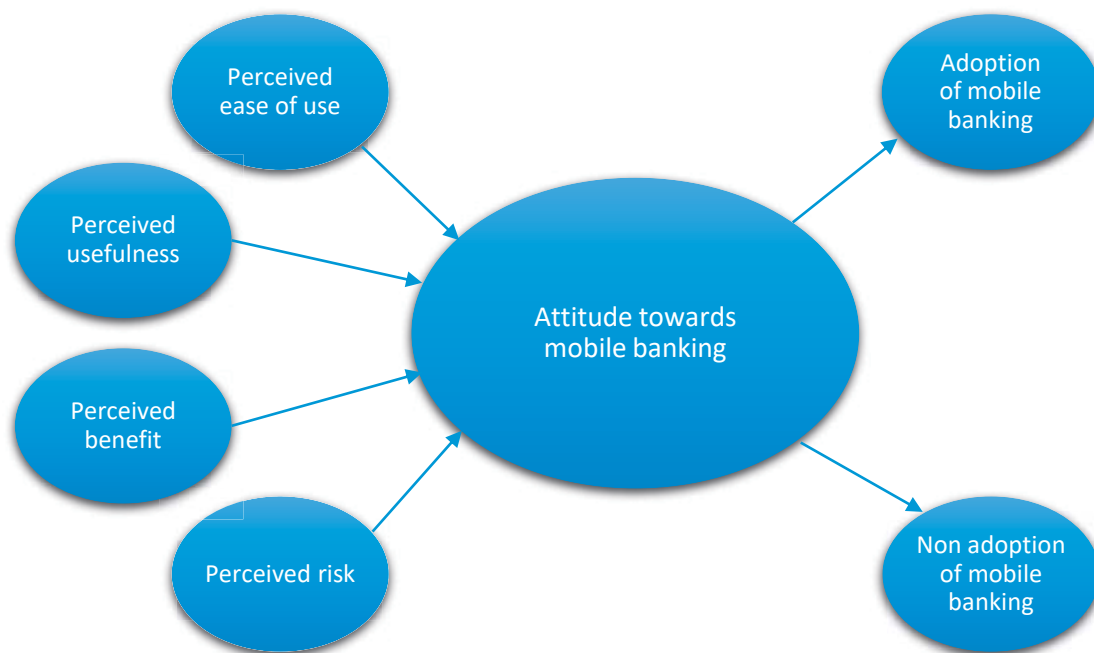
ing services. Ramayah et al.'s (2003) findings supported this study. Ramayah et al. (2003) analyzed technology acceptance of respondents in Malaysia and found that although the awareness level of respondents is high, it has not translated into actual use because only 23% have had some Internet banking experience. Security and privacy, availability of infrastructure and complexity of technology were main concerns reported by the respondents which hindered their adoption of mobile banking.

Hosseini et al. (2015) have conducted a study on factors affecting technology adoption, and their findings are quite contradicting with those by Daud et al. (2011). As per their study, it was surprisingly found that ease of use and need for interaction with banks were not important from respondents' perspective. Perceived cost and perceived risk also did not have any impact on the users' intention to use mobile banking. Munusamy et al. (2012) conducted a study in Malaysian banks and identified the perceptual differences between internet banking adopters and non-adopters. The findings indicated that there are significant differences in perception between respondents who have adopted internet banking and non-adopters in terms of ease of use, convenience, reliability and safety. Given these contradictions, the authors felt the need to look into the respondents' adoption of mobile banking services and perceived risk with special reference to UAE.

## 2. CONCEPTUAL MODEL

The objective of the study is to understand the adoption process of mobile banking and the factors which help and result in the adoption process of mobile banking in UAE. For this end, a conceptual model is developed, the relationship between the variables are defined, and relevant hypothesis is proposed. An attempt is made to understand the four antecedent variables or inducing factors like perceived ease of use, perceived usefulness, perceived benefit and perceived risk.

The model and hypothesis are validated based on the survey data collected from respondents using mobile banking services.



**Figure 1.** Conceptual model on mobile banking adoption

### 3. METHODOLOGY

Past research propounded many theories and models which explained the adoption of mobile banking. Technology Acceptance Model (TAM) is the most popular one (Davis, 1989). The model in Figure 1 proposes perceived ease of use and perceived usefulness as the main determinants towards new technology adoption. These two variables are selected as part of the model propounded. Perceived benefit and perceived risk are the other two variables which are taken. These four variables would impact the attitude towards mobile banking and in turn affect the adoption or non-adoption of mobile banking. The variables are validated by administering a questionnaire to 90 sample respondents in UAE to analyze the adoption process of mobile banking.

### 4. DATA ANALYSIS AND INTERPRETATION

Factor analysis was conducted to understand the probable factors, which contribute to the usage of mobile banking services. The factors considered were based on past research and the respondents' opinions were taken on a 5-point Likert Scale.

**Table 1.** Factor analysis on services respondents predominantly use in mobile banking

Services respondents predominantly used in mobile banking	Component		
	1	2	3
Know more about products offered by banks	.937	.028	-.131
Apply for various products offered by banks	.925	.115	.149
Request check book	.883	.215	-.059
Check loan status	.826	.433	-.248
Bill payments	.193	.905	.092
Generate PIN	.235	.764	.321
Transfer of funds	.304	.697	.350
Online shopping	-.011	.571	-.054
E-deposits	-.344	.044	.842
Check recent transactions	.085	.216	.832

Note: Extraction method: principal component analysis.

Table 1 represents the services respondents in UAE predominantly use in mobile banking. Of the ten factors identified four factors significantly contribute to the use of mobile banking by respondents. The most popular reason why respondents used mobile banking was to know more about the products and services offered by the banks at their convenience updated time to time by not visiting the bank. The second most popular reason was to

apply for various banking products and services of their choice by not visiting the branch. The third popular reason is requesting for check book and checking loan status. Basically it revolves around convenience of banking which is the key factor in adopting to mobile banking.

**Table 2.** Factor analysis on perceived ease of use by respondents

Perceived ease of use by respondents	Component
	1
Mobile banking is easier to use	.927
Mobile banking is easy to accomplish all tasks	.906
Mobile banking does not need a lot of effort	.898
Payments are easy through mobile banking	.854
Learning to use mobile banking is easy	.825

Note: Extraction method: principal component analysis.

Factor analysis was conducted to understand the perceived ease of use of respondents, which contribute to the usage of mobile banking services (Table 2). Respondents perceive that mobile banking is easy to use, all tasks can be accomplished and it does not need a lot of effort. If the mobile banking technology is easy to use, it will enhance the usefulness. Perceived ease of use is positively related to perceived usefulness of technology.

**Table 3.** Factor analysis on perceived usefulness

Perceived usefulness	Component
	1
Mobile banking will improve my performance in banking activities	.927
Mobile banking services will be useful for me	.906
Mobile banking will be easier to use than other modes	.898
Mobile banking enables to conduct banking activities more quickly	.854
Mobile banking will increase my performance	.825

Note: Extraction method: principal component analysis.

In Table 3, factor analysis was conducted to understand the perceived usefulness of mobile banking services to respondents. Respondents felt that mobile banking will improve their overall performance in conducting banking activities. Respondents agree that the overall experience they get dealing with a bank increases by using mobile banking. Respondents fully agree to the fact that mobile banking is easier to use than the other modes of banking like physically visiting the bank.

**Table 4.** Factor analysis on perceived benefit

Perceived benefit	Component	
	1	2
Mobile banking helps in making proper financial planning	.957	-.183
Mobile banking saves transaction and handling fees	.932	-.087
Mobile banking offers wide range of banking products and services	.812	.055
Mobile banking gives updates on banking technology	.644	.201
Mobile banking saves time in performing banking services	.051	.928
Mobile banking gives updates on interest rates	-.216	.887
Mobile banking helps in eliminating penalties due to delayed payments	.523	.638

Note: Extraction method: principal component analysis.

The factors which affected the perceived benefit of mobile banking users are shown in Table 4. Respondents feel that mobile banking firstly helps in making proper financial planning as there is continuous monitoring of financial transactions. Secondly, it saves time because like conventional banking system the respondents need not visit the branch for regular transactions. Mobile banking offers a wide range of services for the respondent to choose from. All this boils down to the convenience and service aspect which makes the mobile banking user perceive mobile banking to be beneficial. Convenience is the main factor for mobile banking success (Herzberg, 2003).

Several studies provide empirical support for the negative impact of perceived risk on the attitude towards mobile banking. Yousafzai et al. (2009) found a negative influence towards perceived risk on internet banking users. Perceived risk is again classified into social risk, financial risk, privacy risk, time risk, security risk and performance risk.

**Table 5.** Factor analysis on the social risk of the respondents using mobile banking

Social risk of the respondents using mobile banking	Component
	1
Mobile banking would make others think that I am tech savvy	.975
Mobile banking allows me to express myself	.942
Using mobile banking gives me more status among family and friends	.915
Mobile banking causes concern because my friends may think I am showy	.341

Note: Extraction method: principal component analysis.



Table 5 relates to social risk in the adoption of mobile banking. The users of mobile banking would make others perceive that they are technology savvy, it allows to express their personalities and the respondents perceive that use of mobile banking provides them with a sense of status in the eyes of family and friends. These are the major reasons why respondents adopt mobile banking.

**Table 6.** Factor analysis on the financial risk of the respondents using mobile banking

Financial risk of the respondents using mobile banking	Component
	1
Mobile banking is financially risky	.928
Mobile banking may cause financial loss due to careless mistakes	.847
Mobile banking may cause financial loss because of hacking of account information	.847
Financial transactions using mobile banking would create problems	.661
Anyone can misuse my phone which could result in financial loss	.484

Note: Extraction method: principal component analysis.

The financial risk factors (Table 6) which respondents perceive are: mobile banking is financially risky especially while transferring funds using mobile banking; the second factor is it might cause financial loss due to careless mistakes; third factor is financial loss because of hacking of account information, and finally, respondents feel financial transactions using mobile banking can create problems.

**Table 7.** Factor analysis on the privacy risk of the respondents using mobile banking

Privacy risk of the respondents using mobile banking	Component
	1
Mobile banking is robust	.960
I trust the technology used in mobile banking	.942
Mobile banking is as secure as normal banking	.923
Password protection is reliable in mobile banking	.870

Note: Extraction method: principal component analysis.

Table 7 represents factors affecting privacy risk. The respondents sense no privacy risk using mobile banking. The respondents feel that mobile banking is robust, they trust the technology used by banks, perceive that it is as secure as normal banking and password protection is reliable enough for the security.

**Table 8.** Factor analysis on the time risk of the respondents using mobile banking

Time risk of the respondents using mobile banking	Component	
	1	2
Some transactions get cancelled because of disturbance in network and result in loss of time	.926	.298
Login by excessive users in peak time leads to loss of time	.844	-.155
Mobile banking would not run fast and causes time loss	.778	.537
Mobile banking updates take too much time to learn	.774	.492
Mobile banking leads to waste of time in fixing payment errors	.332	.868
Learning of mobile banking is time-consuming	.001	.847

Note: Extraction method: principal component analysis.

Table 8 represents respondents perception of time risk. The first and the foremost one is that some transactions get cancelled because of disturbance in network resulting in loss of time. The second most important factor being login by excessive users at once during the peak time will slow down the process. The third most hindering risk factor is that the process would not run fast and takes time followed by updates taking too much of time to learn. The banks need to take a cue from this and strengthen their processes to avoid these errors which hinder respondents to adopt mobile banking.

**Table 9.** Factor analysis on the security risk of the respondents using mobile banking

Security risk of the respondents using mobile banking	Component	
	1	2
Matters of security have no influence on using mobile banking	.945	-.068
Mobile banking prevents loss of physical money transactions as all payments and receipts are done through mobile	.767	.445
Security transactions applicable for bank transactions are also applicable for mobile banking	.654	.480
Mobile banking does not have security problems	.468	.440
Law protects from payment problems in mobile banking	-.022	.880

Note: Extraction method: principal component analysis.

It is a positive thing to notice from Table 9 that respondents do not perceive any security concerns or risk with mobile banking. This is a positive move for the banks in UAE.

**Table 10.** Factor analysis on the performance risk of the respondents using mobile banking

Performance risk of the respondents using mobile banking	Component	
	1	2
Mobile banking will perform well	.927	.219
Problems with server will affect mobile banking experience	.922	.206
Slow internet connectivity will disturb performance	.918	-.214
Mobile banking will not provide me the level of benefits that I expect	.127	-.849
Performance of mobile banking will result on the mobile instrument	.288	.721

Note: Extraction method: principal component analysis.

Respondents are asked to give their opinion on their perceived performance risk (Table 10). Three factors which respondents are worried are regarding the performance of mobile banking, problems with server will affect the mobile banking experience and slow internet connectivity will disturb performance. The banks should take a cue and focus on avoiding these fears of customers to increase their customer base.

**Table 11.** Attitude of respondents towards mobile banking usage

Attitude of respondents towards mobile banking usage	Component
	1
Mobile banking is desirable to use than other modes of banking	.924
I am more likely to use mobile banking	.893
Mobile banking for financial transactions is a wise idea	.890
Idea of mobile banking is good	.888
I intend to use more of mobile banking	.851
Mobile banking is pleasant to use	.771

Note: Extraction method: principal component analysis.

Table 11 shows attitude of respondents towards mobile banking usage. Most of the technology models are derived from Theory of Reasoned Action (Ajzen & Fishbein, 1980). According to this theory, adoption results from attitude towards the behavior on perceived subjective norms. Attitude refers to individuals or respondents favorable or unfavorable about adoption of mobile banking. Table 11 shows that there is a positive attitude of respondents towards usage of mobile banking among the sample respondents of UAE.

**Table 12.** Possible reasons for respondents to adopt mobile banking

Possible reasons for respondents to adopt mobile banking	Component		
	1	2	3
Believe in online	.859	-.072	.333
Familiarity with the bank	.745	.249	.144
Quick response	.719	.218	-.344
Ease of use	.702	.584	.188
Reputation and size of the bank	.664	.471	.172
24/7 service	.038	.886	.071
Convenience	.238	.853	.195
User friendly	.540	.767	.059
Low charges	.034	.143	.952
Hazzle free	.205	.156	.861

Note: Extraction method: principal component analysis.

Table 12 shows possible reasons for respondent's adoption of mobile banking. There are ten factors identified in the study which probably drive the respondents towards adopting mobile banking. Ankar and Dincau (2002) in their study have reported that people are enthusiastic to embrace mobile banking. Factor analysis was conducted and the major driving force for respondents who adopted mobile banking is basically their belief in technology or online systems and the value it creates or generates. Secondly, it is the familiarity with the bank. Familiarity brings in trust in services the banks provide. Trust is a psychological expectation that the trusted party (i.e., bank) will not behave opportunistically (Bunduchi, 2005). Trust is based on prolonged and cumulative experience that gives the clients a sense of familiarity (Coleman, 1990). The other drivers are the response rate, ease of use, reputation and size of the bank. The banks should take a cue from this that securing customer trust is critical for successful adoption of mobile banking (Lee & Turban, 2001).

**Table 13.** Possible reasons for respondents as to non-adoption of mobile banking

Possible reasons for respondents as to non-adoption of mobile banking	Component		
	1	2	3
Mobile banking services not offered by all banks	.925	.147	.045
Lack of privacy	.868	-.329	.016
High cost	.865	-.103	-.012
Poor experience of using	-.249	.816	-.137
Lack of awareness	.197	.761	.078
Lack of security	.530	-.722	.033
Comfortable with traditional banking	-.144	-.226	.919
Problem of internet connectivity	.168	.158	.912

Note: Extraction method: principal component analysis.

Factor analysis was done to understand the challenges involved in non-adoption of mobile banking by respondents (Table 13). Lee et al. (2003) identified the social and psychological risks of mobile banking. The first and the foremost concern which the respondents expressed is that mobile banking services are not offered by all banks in UAE or though it is offered all the services are not available to customers. The second factor is

lack of privacy in mobile banking transactions. Lee and Benbast (2003) in their research paper have identified few guidelines to improve mobile banking experience. The third most important factor is high cost involved by banks in providing these services. Some factors that are likely to inhibit the uptake of mobile banking technology include operation costs and initial set-up costs (Carlsson & Waiden, 2006).

## DISCUSSION AND CONCLUSION

This study deals with the mobile banking adoption and perceived risk among the respondents of UAE. A model is developed and presented in this paper, which will be helpful for the banks to understand the key drivers in adoption and non-adoption of users towards mobile banking. The major reasons why respondents in UAE use mobile banking are the convenience it gives and value it creates. The respondents in UAE perceive that mobile banking is easy to use and will improve the overall banking experience. Respondents perceive lots of benefits like proper financial planning because of continuous monitoring of financial transactions, saving time and offering wide range of services to choose from without visiting the branch. Of the risks identified respondents perceive financial risk, time risk and performance risk compared to the other risks like social risk, privacy risk and security risk. It is understood that respondents are enthusiastic to adopt to mobile banking. The major drivers are their belief in technology and familiarity with a particular bank. Trust in a bank may affect the adoption and non-adoption of mobile banking (Jarvenpaa et al., 2000). The hindering factor for non-adoption of mobile banking is that respondents perceive that all banks in UAE do not offer mobile banking services.

This study enhances the limited body of knowledge on mobile banking in UAE scenario. The banks can focus on the key drivers and increase the number of customers adopting mobile banking in UAE.

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