

# Trust and initial acceptance of Mobile Banking in Pakistan

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**Abstract** This paper focuses on the risks influencing the initial adoption of mobile banking in Pakistan. Results of this study indicate that risk perception, derived from eight different facets, is a salient antecedent to innovative technology acceptance. A quantitative survey sheds more light on this research. The data was collected in Pakistan during March – April 2011 and includes 306 responses.

**Index Terms**—Mobile banking, Adoption of technology, Risk perception, Eight faceted risks, Trust, General Linear Modelling

## 1 INTRODUCTION

One of the most leading sectors in the world in the adoption of internet and mobile technology is the banking industry [2].

Today, the banking industry and sophisticated technology shares are common characteristics for

- Competitive Volatility
- Market Uncertainty
- Technology Uncertainty

Before the advent of mobile banking, the operations/transactions of banks were mostly accomplished electronically with successful experience in development systems such as ATMs and or by visiting banks. The emergence of the mobile banking is making a significant impact on the diffusion of electronic banking, which is seen as one of the most successful business-to-consumer applications in mobile-commerce. Mobile banking has changed the business of retail banks significantly in terms of increased convenience for the customers.

Innovative technology has played an essential role in causing rapid development of mobile banking services. The technological revolution has added more value to services coupled with their virtual bank accounts. Mobility and 24/7 service are just a few of the many advantages associated with mobile banking.

## 2 Literature review

Today, the mobile phones provide consumers immense facilities through which their lives have become so much easier. The combination of carrying out banking transactions from mobile phones is a great one because not only does it reduce the time spent on making transactions physically but it also reduced certain consumer's fears. These fears are turned into trust and security by the service providers through mobile banking. Now because the consumers have great leverage towards the latest technologies that is why mobile banking is more convenient to them [1]. Undeniably, m-commerce will keep flourishing in the future in order to fulfill the uncountable demands of the consumers [2]. The service providers have to make their products more accessible by toning the applications and features with the new business requirements. We can see that the size of mobile phones is reducing day by day but still working faster and better along with having bigger application storage capacity. Consumer behaviors have shown great interest in the adoptions of e-services and web applications that can be handled by them easily [4, 5].

The important variable considered is making WIG (wireless internet gateway) cell phones, is gender if you want to do to banking marketing. Banking can be advanced more by adopting WIG cell phones, keeping in mind the gender disparities that influence the mind-set regarding WIG mobile phone banking[6].

The m-commerce project will continue to grow more because of the international demand of the mobile technology that is advancing and congregating with the humans rapidly. The structure and the usage of m-commerce can be adopted in context with the Malaysian theory because there are still very less people in Malaysia that are using electronic marketing methods to market their products. Hence, this innovation can be exploited over there to a great extent because it is expected to attract more attention only if it is introduced through methods evolved by the developed nations [7].

The demands of banking and financial services

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have not only increased in the urban areas but also in the rural areas as well. These demands along with the problems faced by the rural people in receiving these main services are now solved through the mobile banking because the existing channels of delivering these main services had become inadequate and inconvenient. The main concern of the people living in rural areas is the financial cost and so without proper education about the new technologies and how it would help them among these people, they will never invest their money. The financial services that are offered by MFS should be in context with the demands of the target audience so that more rural population is inclined towards this fragment. These services should mainly focus on the factors like provided latest technologies that will help these people easily access the mobile banking services instead of discussing the inefficiency of previous banking services. When these people will become aware, socially influenced and experience this helpful innovation they will adopt the MFS services with ease [8].

The developing countries undergo more implications related to the m-banking or m-payment systems besides having the general view, like their emphasis lay in the prolific, domestic, transactional and social spheres. Each operation is done according to the informational networks in which people spend time. The role of mobiles in developing countries is not just about social operations but also the economical ones and they have to be operated side by side. With the time, the observers have indicated that in the developing world the mobile communication companies' main focus is on the text and voice messaging. This focus along with the focus on the mobile banking can prove to be very technologically advantageous for the users. The mobile device has its own importance and banking can make it more worthwhile [9].

The banking marketing strategies adopted in China are immensely imperative because they are according to the needs of the people today. The telecommunication companies along with the banks should concentrate on the factors that influence the consumer's adopting methods of mobile services. Moreover, they also have to focus mainly on the convenience and reliability of this service that should match the demands of the users [12].

The government and other reliable departments should have a positive approach towards the factors that the system accepts because the execution of electronic government services has shown successful results. The theories evolved in light of this can be used to determine the perceptions and behaviors of the consumers regarding the system and help in making the services better. Hence, encouragement to use will be provided with a lot of care to rumors [14]. It will help in espousing effective electronic government information measures that will avoid further insinuations [13] [15].

The perceived risk of the consumer regarding the mobile banking influences the adopting behavior of the consumer via trust, meaning that it has indirect relation.

However, the consumers' trust and their estimations have direct affect on the adopting behavior [16].

The studies on the security systems show that the concentration is on reducing the risks by making strong controls. Mobile banking can only be successful if the economic transactions are carried out in a convenient and vigorous system. Many users are unable to understand this system and technology because of the lack of awareness. They can only perceive the risks involved in this system. This perceiving can be reduced with the help of awareness provided by marketers through advertising and publications [17].

Many online sellers are now using online word of mouth (WOM) to gain consumers trust. The proportion of trust varies differently among the two genders. Women consider online WOM in a different way than men. Their online shopping strategies are different than man. Hence, the mobile banking companies should cautiously design their WOM online by keeping these factors in mind [18].

In the world of online operations, reliability and trust are the two other key factors that increase affirmative economic results. The affirmative economic results are in the shape of increased profits and they are only dependent on the level of users trust and credibility [19].

These two factors if carefully analyzed by the online sellers can help them create greater online transactions. They will be able to create a strong trust and sway the feelings and actions of the consumers. There are many ways through which the sellers can build this trustful bond and gain the positive attitudes, which will ultimately affect the online operations [20].

E-commerce is manipulated how much people have awareness and trust on the online operations. These factors manipulated their purchasing power. These two aspects are related to one another because if people have awareness then they will be able to trust the services provided to them and then get inclined towards them. Every industry flourishes on these norms, that is why it is very important concentrate on the consumer behaviors [22]. E-commerce is assessed with respect to the complex social system of the society [23, 24].

All the service providers are subject to provide complete security to the consumers by law. However, the consumers also have some responsibilities to protect themselves [25].

The perceived reputation and perceived store size vary the levels of trust of the consumers relying upon the kind of store. The expectations of consumers affect the perceived store size. For example, when a consumer is buying a book, the transaction involves lesser money and that is why the consumer will have little doubts whether he or she will get the exact book he or she ordered or not. If the transaction is bigger, like through air or sea travel that involves greater amount of money then the consumers will have more doubts whether he or she will get what he or she has orders. This transaction is expensive than the former one because it involves many costs like

shipping, routing, schedule, penalties etc. So if the seller does not behave according to the expectations of the consumer then the outcome will be unfavorable [26].

Previously, all researches have shown that online purchasing involves a great deal of risks. Hence trust is a very important factor that the internet sellers have to give to their customers so that they can make more transactions. However, there is still much research left on how the consumers perceived risks and their trusts operate or in combination operate and sway their intuitions [28, 29, 30, and 26, 31]. Which history plays a key role in determining the factors that lead to the success of gaining consumers trust, perceived dangers and perceived gains that have direct impact on the perceptions and then results? Trust has strong connections with the perceived risks that indirectly influence the purchasing intuitions. Trust of the consumer has both direct and indirect relations with the consumers' purchasing power. It gives a strong positive response on the purchasing intuition and strong negative response on the consumers' perceived risk [27].

The consumers' trusts on the online industry and on the banks influences the acceptance of online banking. If we analyze the responses of perceived risks and trust separately, we will be able to determine the levels of consumer behaviors [32].

The advancements in the technologies force the consumers to give up their existing habits and create new ones that provide them more ease. A typical consumer response is the resistance against these new advancements, which is normal. The greater the advancement asks for the change the greater will be the consumer resistance barriers. These resistance barriers are of different kinds like functional barriers are related to the level of benefits that the new service will provide, risks entailed with it and its usage. The physiological barriers are connected to the feelings regarding the new change and adopting them in their schedule. Other barriers are related to the thoughts of people like aging does not by any means affect the reliability and convenience of mobile banking. Older consumers have more resistance barriers than the younger ones as they take more time to adopt the changes in the system [33].

In mobile banking, the banks should take into account the consumers risk intuitions and pioneering traits involved in this kind of service. They should draw attention to both the merits and demerits that they want to provide the consumers and the ones that consumers have in mind and talk about them in their advertising campaigns [34].

There are various mobile financial applications present right now. Nevertheless, there is still development going on that will allow its expansion to a wider audience. These financial applications need further technologies like Java and GPRS service. When the service providers will figure out a way to 2.5G or 3G mobile networks to advance the services then we can expect a quick increase in the amount of consumers using this applica-

tion. The consumers' demands are to have to faster, convenient, easy to use m-banking system, that does involve high financial costs, fully technically equipped in order to solve their problems in a matter of seconds.

The mobile payment system is expected to expand its horizon and offer different payments strategies that involve lesser work. More solutions will be offered of different problems depending on the size (micro and macro) of these problems and its position. The benefits will not only be provided to the one sector of the buyers like banks but also the mobile companies, internet sellers and/or credit card companies. The applications will range from individuals perspective to providing services to different suites. Individual's payment solutions like small purchases of different items to big purchases of the masses, everything will be provided fully fledged. The application inventors will provide various services and it depends completely on the consumer, which application he or she wants to pick out and spend his or her money on it [35]

### 3 HYPOTHESES

In this section we derive and elaborate hypotheses.

#### H1:

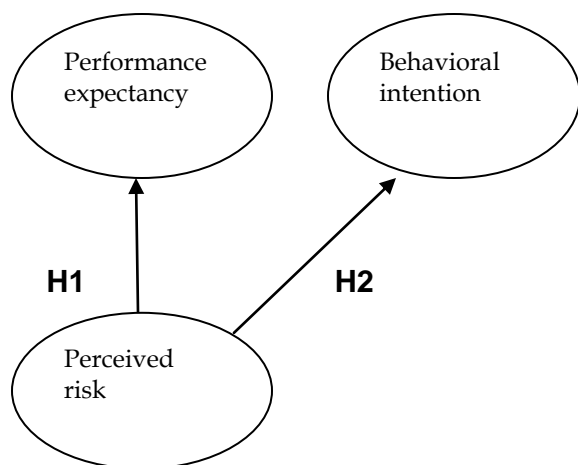
**Perceived risk is negatively associated with performance expectancy.**

Trust and belief have been found helpful in explaining how consumers can overcome perceived risk and engage in online transactions [26, 39]. Trust plays a critical role in eliminating perceived risks, especially for transactions involving uncertainty [26]. Because MB (Mobile Banking) is still in the initial adoption stage, consumers are not clear about the technical capability of their banks to provide MB (Mobile Banking) service and about the reliability and security of the Internet and wireless communication channels in delivering their financial data.

#### H2:

**Perceived risk toward mobile banking will have a negative effect on consumers' behavioral intention to adopt mobile banking.**

Since mobile banking is still unexplored in Pakistan on a large scale so people's intention to adopt it will be decreased if they will feel having risks in making transactions from their checking accounts through cell phones.



formative construct instead of being a reflective construct as in the study by Featherman et al [3]. Here, formative representation is preferred over reflective because the increase in one risk dimension such as perceived social risk does not necessarily cause an increase in other types of perceived risks

#### 4 RESEARCH METHODOLOGY

Undergraduate students at FAST University, NED University, Karachi University, SZABIST University, IoBM University and others as well were recruited as subjects for this study. All students have used mobile for more than one year. Also, undergraduate students often have convenient access to the Internet and the basic computer skills required for conducting various online activities. Therefore they have the basic computer skills to conduct mobile banking. In fact, from [36 and 37] we have found that adopters of mobile banking have some intermediate education and are generally younger, as younger customers tend to perceive lower risks in mobile banking than mature customers and are less resistant to changing their habits to perform financial transactions. This proves that students are potential subjects in adopters of mobile banking. A total of 306 usable responses were collected of which 187 were male and 119 were female. The age of the subjects ranged from 18 to 34 with an average of 21.

Most of the information were drawn from the previous research and reworded accordingly for our research for example Seven dimensions of perceived risk (performance risk, financial risk, time risk, psychological risk, social risk, privacy risk, and overall risk) were adapted from those by Featherman et al [3].

Covariates that might influence behavioral intention to adopt mobile banking services were included in this study as control variables for predicting intention to adopt such services. They are gender, age, Internet experience, and computer experience [38].

#### 5 Data analysis

In the technique of modeling, General linear modeling was used to test the hypotheses. The reason for using this technique is to easily analyze data with the covariates. In this study, perceived risk is treated as a second-order

Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	.000	.000 <sup>a</sup>	19.000	283.000	1.000
	Wilks' Lambda	1.000	.000 <sup>a</sup>	19.000	283.000	1.000
	Hotelling's Trace	.000	.000 <sup>a</sup>	19.000	283.000	1.000
	Roy's Largest Root	.000	.000 <sup>a</sup>	19.000	283.000	1.000
ZAge	Pillai's Trace	.062	.985 <sup>a</sup>	19.000	283.000	.478
	Wilks' Lambda	.938	.985 <sup>a</sup>	19.000	283.000	.478
	Hotelling's Trace	.066	.985 <sup>a</sup>	19.000	283.000	.478
	Roy's Largest Root	.066	.985 <sup>a</sup>	19.000	283.000	.478
ZGender	Pillai's Trace	.117	1.980 <sup>a</sup>	19.000	283.000	.010
	Wilks' Lambda	.883	1.980 <sup>a</sup>	19.000	283.000	.010
	Hotelling's Trace	.133	1.980 <sup>a</sup>	19.000	283.000	.010
	Roy's Largest Root	.133	1.980 <sup>a</sup>	19.000	283.000	.010
ZInternet_experience	Pillai's Trace	.092	1.514 <sup>a</sup>	19.000	283.000	.080
	Wilks' Lambda	.908	1.514 <sup>a</sup>	19.000	283.000	.080
	Hotelling's Trace	.102	1.514 <sup>a</sup>	19.000	283.000	.080
	Roy's Largest Root	.102	1.514 <sup>a</sup>	19.000	283.000	.080
ZCellphone_experience	Pillai's Trace	.086	1.408 <sup>a</sup>	19.000	283.000	.122
	Wilks' Lambda	.914	1.408 <sup>a</sup>	19.000	283.000	.122
	Hotelling's Trace	.095	1.408 <sup>a</sup>	19.000	283.000	.122
	Roy's Largest Root	.095	1.408 <sup>a</sup>	19.000	283.000	.122

a. Exact statistic

b. Design: Intercept + ZAge + ZGender + ZInternet\_experience + ZCellphone\_experience

**Tests of Between-Subjects Effects**

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
ZGender	Zscore: Using mobile banking service subjects your checking account to financial risk	3.680	1	3.680	3.701	.055
	Zscore: Mobile banking might not perform well and create problems with my credit	.766	1	.766	.774	.380

Zscore: The security systems built into Mobile banking are not strong enough to protect my checking account	2.358	1	2.358	2.461	.118
Zscore: Mobile banking servers may not perform well and process payments incorrectly	1.888	1	1.888	1.939	.165
Zscore: Using mobile banking to pay my bills would be risky	3.576	1	3.576	3.717	.055
Zscore: Mobile banking is dangerous to use	.644	1	.644	.648	.422
Zscore: Using mobile banking would add great uncertainty to my bill paying	1.265	1	1.265	1.256	.263
Zscore: Mobile banking will not fit with my self image or self concept	.002	1	.002	.002	.964
Zscore: Considering the expected level of service performance of the mobile banking, for you to sign up for and use it would be	.581	1	.581	.584	.445
Zscore: Considering the investment of your time involved to switch to (and set up) mobile banking makes them	2.560	1	2.560	2.562	.111
Zscore: The possible time loss from having to set-up and learn how to use mobile banking makes them	.443	1	.443	.442	.507
Zscore: My signing up for and using MB is financial loss for me	1.055	1	1.055	1.056	.305
Zscore: My signing up for and using mobile banking would lead to a loss of privacy for me because my personal information would be used without my knowledge	.468	1	.468	.464	.496



	Zscore: My signing up for and using mobile banking would lead to a pshychological loss for me because it will not fill with my self image or self concept	.381	1	.381	.383	.536
	Zscore: My signing up for and using mobile banking would lead to a loss of convenience of me because i will have to waste a lot of time fixinf payment errors	2.246	1	2.246	2.275	.133
	Zscore: What are the chances that you stand to lose money if you use MB	.253	1	.253	.252	.616
	Zscore: What are the chances that there will be something wrong with the performance of the mobile banking or that it will not work properly	3.026	1	3.026	3.035	.082
	Zscore: What are the chances that you will lose time due to having to switch to a different payment method, if you begin to use mobile banking	2.370	1	2.370	2.370	.125
	Zscore: What are the chances that using mobile banking will cause you to lose control over the privacy of your payment information	.547	1	.547	.548	.460
ZInternet_experience	Zscore: Using mobile banking service subjects your checking account to financial risk	.158	1	.158	.159	.691
	Zscore: Mobile banking might not perform well and create problems with my credit	.185	1	.185	.187	.666
	Zscore: The security systems built into Mobile banking are not strong enough to protect my checking account	11.820	1	11.820	12.338	.001

Zscore: Mobile banking servers may not perform well and process payments incorrectly	2.782	1	2.782	2.857	.092
Zscore: Using mobile banking to pay my bills would be risky	10.552	1	10.552	10.969	.001
Zscore: Mobile banking is dangerous to use	2.099	1	2.099	2.109	.147
Zscore: Using mobile banking would add great uncertainty to my bill paying	.192	1	.192	.191	.662
Zscore: Mobile banking will not fit with my self image or self concept	.090	1	.090	.090	.765
Zscore: Considering the expected level of service performance of the mobile banking, for you to sign up for and use it would be	2.105	1	2.105	2.115	.147
Zscore: Considering the investment of your time involved to switch to (and set up) mobile banking makes them	.657	1	.657	.658	.418
Zscore: The possible time loss from having to set-up and learn how to use mobile banking makes them	2.099	1	2.099	2.093	.149
Zscore: My signing up for and using MB is financial loss for me	.650	1	.650	.650	.421
Zscore: My signing up for and using mobile banking would lead to a loss of privacy for me because my personal information would be used without my knowledge	.015	1	.015	.015	.901
Zscore: My signing up for and using mobile banking would lead to a pshychological loss for me because it will not fill with my self image or self concept	.400	1	.400	.401	.527



	Zscore: My signing up for and using mobile banking would lead to a loss of convenience of me because i will have to waste a lot of time fixinf payment errors	.142	1	.142	.143	.705
	Zscore: What are the chances that you stand to lose money if you use MB	1.534	1	1.534	1.527	.218
	Zscore: What are the chances that there will be something wrong with the performance of the mobile banking or that it will not work properly	.620	1	.620	.622	.431
	Zscore: What are the chances that you will lose time due to having to switch to a different payment method, if you begin to use mobile banking	.000	1	.000	.000	.989
	Zscore: What are the chances that using mobile banking will cause you to lose control over the privacy of your payment information	.294	1	.294	.294	.588
ZCellphone_experience	Zscore: Using mobile banking service subjects your checking account to financial risk	.597	1	.597	.600	.439
	Zscore: Mobile banking might not perform well and create problems with my credit	5.397	1	5.397	5.458	.020
	Zscore: The security systems built into Mobile banking are not strong enough to protect my checking account	1.880	1	1.880	1.963	.162
	Zscore: Mobile banking servers may not perform well and process payments incorrectly	3.925	1	3.925	4.030	.046
	Zscore: Using mobile banking to pay my bills would be risky	.001	1	.001	.001	.978

Zscore: Mobile banking is dangerous to use	1.262	1	1.262	1.268	.261
Zscore: Using mobile banking would add great uncertainty to my bill paying	.355	1	.355	.353	.553
Zscore: Mobile banking will not fit with my self image or self concept	2.713	1	2.713	2.719	.100
Zscore: Considering the expected level of service performance of the mobile banking, for you to sign up for and use it would be	.217	1	.217	.218	.641
Zscore: Considering the investment of your time involved to switch to (and set up) mobile banking makes them	.483	1	.483	.483	.487
Zscore: The possible time loss from having to set-up and learn how to use mobile banking makes them	.077	1	.077	.076	.782
Zscore: My signing up for and using MB is financial loss for me	.647	1	.647	.647	.422
Zscore: My signing up for and using mobile banking would lead to a loss of privacy for me because my personal information would be used without my knowledge	1.113	1	1.113	1.105	.294
Zscore: My signing up for and using mobile banking would lead to a pshychological loss for me because it will not fill with my self image or self concept	.208	1	.208	.209	.648

Zscore: My signing up for and using mobile banking would lead to a loss of convenience of me because i will have to waste a lot of time fixinf payment errors	4.264	1	4.264	4.320	.039
Zscore: What are the chances that you stand to lose money if you use MB	.126	1	.126	.125	.724
Zscore: What are the chances that there will be something wrong with the performance of the mobile banking or that it will not work properly	.273	1	.273	.274	.601
Zscore: What are the chances that you will lose time due to having to switch to a different payment method, if you begin to use mobile banking	.001	1	.001	.001	.979
Zscore: What are the chances that using mobile banking will cause you to lose control over the privacy of your payment information	2.565	1	2.565	2.573	.110

- a. R Squared = .019 (Adjusted R Squared = .006)
- b. R Squared = .024 (Adjusted R Squared = .011)
- c. R Squared = .055 (Adjusted R Squared = .042)
- d. R Squared = .039 (Adjusted R Squared = .026)
- e. R Squared = .051 (Adjusted R Squared = .038)
- f. R Squared = .018 (Adjusted R Squared = .005)
- g. R Squared = .006 (Adjusted R Squared = -.008)
- h. R Squared = .015 (Adjusted R Squared = .002)
- i. R Squared = .018 (Adjusted R Squared = .004)
- j. R Squared = .014 (Adjusted R Squared = .001)
- k. R Squared = .010 (Adjusted R Squared = -.003)
- l. R Squared = .013 (Adjusted R Squared = .000)
- m. R Squared = .006 (Adjusted R Squared = -.008)
- n. R Squared = .017 (Adjusted R Squared = .004)
- o. R Squared = .026 (Adjusted R Squared = .013)
- p. R Squared = .009 (Adjusted R Squared = -.004)

q. R Squared = .016 (Adjusted R Squared = .003)

r. R Squared = .013 (Adjusted R Squared = .000)

s. R Squared = .016 (Adjusted R Squared = .003)

This test is done on a confidence interval of 95 % which is 0.05 significance test.

From values above we found that:

- 81 % of the sample size disagrees with financial risk in mobile banking.
- 61 % of the sample size disagrees mobile banking servers may not perform well and process payments incorrectly
- 49 % of the sample size disagrees that using mobile banking to pay bills would be risky.
- 82 % of the sample size disagrees mobile banking will be dangerous to use.
- 94 % of the sample size disagrees that using mo-

mobile banking would add great uncertainty to bill paying of consumer's

- 90% of the sample size agrees that expected level of service performance of the mobile banking, for consumers to sign up for and use it would not be risky
- 85 % of the sample size agrees that the investment of time involved to switch to mobile banking makes them not risky at all.
- 82 % of the sample size agrees that the possible time loss from having to set-up and learn how to use mobile banking makes them not risky at all.
- 86 % of the sample size agrees that mobile banking would not lead to a financial loss
- 90 % of the sample size agrees that mobile banking would lead to a loss of privacy for me because my personal information would be used without knowledge.
- 87 % of the sample size agrees that mobile banking will not be psychological loss for me because it would not fit in well with self-image or self-concept.
- 83 % of the sample size agrees that mobile banking will a loss of convenience because consumers would have to waste a lot of time fixing payments errors.
- 74 % of the sample size disagrees that consumers will lose money if they use mobile banking
- 91 % of the sample size disagrees that there will be something wrong with the performance of the mobile banking or that it will not work properly
- 84 % of the sample size agrees about low that mobile banking will not fit in well with self-image or self-concept.
- 87 % of the sample size disagrees that consumers will lose time due to having to switch to a different payment method, if they had begun to use mobile banking.
- 84 % of the sample size agrees that using mobile

banking will cause consumers to lose control over the privacy of their payment information.

## 6 DISCUSSION

The main objective was to identify the role of perceived risk versus performance expectancy in the adoption of mobile banking. An empirical study was conducted to test the theoretical model. The results and findings indicate that perceived risk is the most significant determining factor for MB services acceptance. The analysis indicates that perceived risk has six significant facets: financial, performance, privacy, time, psychological, and overall risks. Two facets, social and physical risks, are insignificant. These results prove that those who believe mobile banking service are useful and have less risk towards making transactions and privacy will tend to adopt this innovative technology.

## 7 Conclusion

Based on the above discussed findings of the survey and the reviewed literature, a model influencing adoption of mobile banking services was formed. The objective of the study was to test empirically how perceived risk and performance expectancy influence the initial adoption of mobile banking in Pakistan. Our research model successfully incorporates with the distinguishing features such as perceived risk and performance expectancy, driving the early adoption of mobile banking. The result supports the proposed model.

## 8 Future research

Despite prior research that has supported students as good subjects to mirror consumers, there might be a threat to the external validity of the study because these students may not fully represent the whole population of all potential MB service users. Future research using non-student subjects is encouraged for greater external validity. Secondly the empirical evidence was collected from subjects living in Pakistan which is different from other mobile advancing technologies such as USA, China, Japan and Russia. Thus we suspect that advancement in mobile technologies could affect adoption in MB service.

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