

## Adoption of E-Commerce amongst Pakistani Consumers A Case of Mobile Banking

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### Abstract

Since year 2000, Pakistan has been enjoying a tremendous growth in telecommunication sector. The Pakistan did not pay much attention towards mobile commerce as compared to the western countries. This study intended to examine Pakistani consumers' behavior towards mobile commerce. The m-commerce market in Pakistan is moving towards little growth. The study aimed to investigate diffusion and adoption of mobile banking among Pakistani university students and lecturers using Technology Acceptance Model. The study used stratified random sampling technique and self-administered questionnaire based on five point likert scale to collect data from university students and teachers having bank accounts (N=300). Regression analysis, reliability analysis and descriptive statistics were used to analyze the collected data. Findings revealed that perceived usefulness, perceived ease of use and self efficacy heightens the intention to use mobile banking. The perceived risk, perceived costs, perceived compatibility and usage frequency exerts negative influences on intention to use mobile banking. The implications for marketers and limitations were also included in study.

**Key Words:** E-commerce, Mobile banking, M-commerce, Technology, Adoption, Usefulness, Ease of use.

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## Introduction

The present business era is highly competitive due to technological innovations. The companies are trying to improve themselves by increasing the sales of their quality oriented products. A new opportunity is available for companies for selling the products through mobile commerce (m-commerce) (Wei et al. 2009). Before the development of the m-commerce, e-commerce was much costly to use for the business purposes due to requirements of the equipments such as computers and fixed-line networks. The accessibility of M-commerce has great advantages over the e-commerce (Chen, H.-R. & Huang, H.-L., 2010). Due to the popularity of the mobile devices such as laptops and personal digital assistant (PDA), the number of wireless internet users is rapidly increasing day by day. The m-commerce provides the huge advantages, but with the limited adoption by the people. There is a gap between the proportion of the people having the hand held devices, having the access to use the m-commerce and the people using the m-commerce (Horrigan, J., 2009).

Wireless devices facilitate the organizations to conduct the business in most efficient and effective ways and thus, offer the advantages of capturing the emerging markets; improving the services for the customers and empowering the sales force (Yen et al. 2010). The workers at the work place having no intentions to use the m-commerce; even have the mobile devices and internet access (wu et al. 2011). There are many reasons of having the low level of intentions to use m-commerce. The trust is a major obstacle to use m-commerce. The reasons have been found behind low intentions to use m-commerce and studies explored that the trust is a major issue in e-commerce and m-commerce (Siau, K. & Shen, Z., 2003; Lai, T.L., 2004). Customers do not feel secure to conduct the different transactions through m-commerce without the personal interaction, ability to feel, inspect and touch the products (Yeh, Y.S. & Li, Y.-M. 2009). Attaining the trust of customers to use the mobile for commerce relies on the satisfaction of customers.

The studies examined the factors affecting satisfaction in m-commerce and determinants having the impact of satisfaction on loyalty in m-commerce (wu et al. 2010; wang et al. 2006). To cover the gaps of the previous studies, this study aimed to find influence of factors of trust, cost, voluntariness, compatibility, risk, innovativeness, feelings, and usage frequency of internet on mobile devices on adoption of m-commerce. A little research has been found in Pakistan regarding adoption of m-commerce. The study is divided into the four sections. The extant research on m-commerce and technology acceptance theory has been reviewed in first section. This is followed by an explanation of the research methodology adopted in study. After that, the findings of the study are presented, followed by a discussion of the results. Finally, the conclusion of the research has been drawn.

## Theoretical Framework and Hypotheses Development

### M-Commerce

Mobile commerce refers to the activities of e-commerce conducted via mobile devices, such as personal digital assistants (PDAs) and mobile phones (Mennecke, B. & T. Strader, 2002). M-commerce is the extension in the e-commerce. M-commerce involves the sales of products, services and contents with the wireless devices without any limitations of space and time (Moshin et al. 2003). M-commerce is an exchange or selling and buying of commodities through the wireless hand held devices such as personal digital assistants and cellular phones (Abu-Bakar, F. & S. Osman, 2005). In m-commerce, the commercial transactions are conducted with the help of wireless telecommunication networks and wireless devices ((Gunsakaran, A. & E. Ngai, 2003; Coursaris, C. & K. Hassanein, 2002; Barnes, S.J., 2002). Wireless devices can be classified into two categories i.e. business-based and the consumer-based. Business-based m-commerce services explain the applications of devices in business environment to facilitate the productive capability within a company and in business transactions. Consumer-based activities are the activities that are conducted by the every wireless device user in everyday life (Shih, G. & S. Shim, 2002).

The consumers' activities includes finding the nearest gas station, receiving weather news, downloading pictures and music through PDAs, mobile phones or any other digital device (Wessels, L. & J. Drennan, 2010)

M-commerce is not in the competitive condition in Pakistan as compared to other countries. There is a scarcity of the providers of the facilities to use mobile phones to conduct various transactions through their mobile phones with more ease. The telecom industry of Pakistan is also at maturity stage. In Pakistan, the telecom sector has paid attention to provide the new value-added services e.g. international remittances, micro payments, and other transactions. Mobilink introduced its mobile payment solution by launching the new scheme for payment named inov8. It would help out the users to make their payments through mobile phones. Mobilink is also offering a scheme for the product with collaboration of TCS by which a user can send / post a product and the price would be deducted from the SIM credit of the user. Ufone and Mobilink also provide the facility for making the payments through credit cards. The users have to update information of their credit card through Short Messaging Service (SMS). United Bank Limited (UBL) is also offering a new method of payment through the mobile phones named as ORION. The ORION transaction is conducted through the secret PIN code to secure it from threats. By ORION card, the users can purchase from selected outlets. Citibank is going to provide the first mobile banking application through which the users can access their balances, transfer the money, and locate ATMs. Pakistan is also introducing the new concept Amanna that would help the users who do not have credit cards to purchase products/services. The amount of transaction fee would be deducted from balance available in users' SIM network.

#### **Technology Acceptance Model (TAM)**

TAM has received a strong response and enjoyed a marvelous reputation due to its robustness and explanatory powers. The fundamental roots of TAM were derived from the theory of reasoned reaction (TRA) that has been used to predict and explain the behavior of the people towards technology acceptance (Ajzen, I. & M. Fishbein, 1980). TAM describes that perceived usefulness (PU), perceived ease of use (PEOU) and attitude (AT) influences the behavioral intention (BI) of people to use technology that leads towards actual use (AU) of the technology (Davis, F.D., 1989). Research suggests that perceived usefulness is the most significant factor that influences the attitude (Wang et al. 2006). The basic model does not reflect the effect of working environment and it is extended by including the social influences (Venkatesh, V., 1999). The intentions may be affected due to the nature of the system (Van der Heijden, H., 2003). The model also describes that how innovation in the work related technology influences people to adopt that technology (Tornatzky, L.G. & K.J. Klein, 1982).

#### **Perceived Usefulness (PU) and Perceived Ease of Use (PEOU)**

The extent to which an individual thinks that conducting the transactions through internet would benefit himself is called perceived usefulness. Perceived usefulness affects the actual use of m-commerce through behavioral intention (Li, Y. & Y. Yeh, 2010; Wua, J. & S. Wang, 2005 ). TAM believes that perceived usefulness is the basis to find that the consumers are ready to accept the technology or not (Shin, D., 2009).). Intention of the consumer to use the m-commerce is predicted through its usefulness which lies in the mind of the consumers (Lo'pez-Nicola's et al. 2008; kim et al. 2010). Perceived usefulness is an important factor that contributes a lot towards the attitude of the consumer to use m-commerce (Yang, K.C.C., 2005). The reason to use the banking systems through mobile is that consumers find mobile very helpful (Luarn, P. & H.H. Lin, 2005). Perceived usefulness has a significant and positive influence on the attitude of the consumer (Kuo, Y. & S. Yen, 2009). The usefulness of the technology like mobile commerce is partially mediated by the attitude of the consumer which has a direct affect on intention of the consumer to use mobile banking and m-commerce (Wessels, L. & J. Drennan, 2010). Using internet through mobile phones is necessary to engage in m-commerce. The consumers develop high intentions to use m-commerce when they feel that their efficiency would be increased by using internet through mobile

phones (Cheong, J. H. & M.C., Park, 2005). Intention of consumer to use the mobile credit card is also influenced through the usefulness perceived by the consumers (kim et al. 2009). The ultimate reason people exploit m-commerce is that they find it useful.

The perceived ease of use is the degree to which users feel that engaging in online transactions is free of effort (Agarwal, R. & J. Prasad, 1999). There are many previous studies that prove that perceived ease of use contributes towards behavioral intention of consumer (Koenig-Lewis et al. 2010). Perceived ease of use effects directly towards the intention of the consumers to use the wireless technology (yen et al. 2010). The results of the previous research show that perceived ease of use has a significant impact on the perceived usefulness of the consumer to use the m-commerce, which in turn influences the intention of the consumers to use m-commerce (Yi, M. Y. & Y. Hwang, 2003). It has been proved that perceived ease of use also contributes to the behavioral intention of the consumer to use the mobile commerce (wei et al. 2009).

Perceived ease of use of credit cards through a mobile phone positively affects the intention of the consumer (Kim et al. 2009). Perceived ease of use has a critical impact on the behavioral intention to use internet via mobile devices, but it has less impact as compared to perceived usefulness (Cheong, J. H. & M.C., Park, 2005). Attitude of the consumer depends upon the perceived ease of use of the technology, ultimately motivates the consumers to use m-commerce (Püschel et al. 2010). Behavioral intention to use mobile banking is predicted through perceived ease of use which affects the perceived usefulness (Koenig-Lewis et al. 2010). Perceived ease of use has much direct impact on intention of consumer to use different services through mobile (Luarn, P. & H.H. Lin, 2005). The studies proved the strong relationship between perceived ease of use and behavioral intention the use the value added mobile services (Kuo, Y. & S. Yen, (2009). The literature provides the bases for development of following hypotheses;

**H1:** Perceived usefulness has a strong and positive effect on behavioral intention to use m-commerce, which has a positive effect on actual use of m-commerce.

**H2:** Perceived ease of use has a positive effect on behavioral intention to use m-commerce that leads towards the actual use of m-commerce.

**H2a:** Perceived ease of use has an encouraging effect on perceived usefulness to use m-commerce that has a positive effect on actual use of m-commerce.

### **Perceived Risk (PR) and Perceived Costs (PCs)**

The subjective expectation of the user to have some uncertainty or loss while conducting the transactions through technology. The perceived risk that people have in the traditional system affects their voluntary acceptance of mobile commerce. The risk affects directly towards behavioral intention of the consumer to use mobile commerce (Wua, J. & S. Wang, (2005). The assurance about the e-system and structure used by the users contributes towards using mobile to use different services. The assurance is directly related to minimum risk and high trust (Gu et al. 2009). High perceived risk has a negative relationship with the intention of the users to conduct transactions through mobile phones (Wessels, L. & J. Drennan, 2010). The users' low level of trust leads to high risk and low credibility to use various mobile services. High risk reduces the behavioral intention and low risk establishes high credibility that influences the user to use mobile services (Luarn, P. & H.H. Lin, 2005; Kim et al. 2009; Koenig-Lewis et al. 2010).

Perceived costs referred to all the expenses bearded by the users to conduct the transactions through mobile including cost to access, conduct and fulfill the transactions (Chen et al. 2002) Financial cost considerations might influence the behavioral intentions to use mobile commerce (Wua, J. & S. Wang, 2005). The transaction costs, access costs influence the behavioral intention (Gu et al. 2009). Perceived financial costs have a significant influence on the intention of the user to use the mobile base transactions (Koenig-Lewis et al. 2010). The high price of the mobile commerce induces the consumers towards less usage of mobile commerce. It has been argued that high purchase price and high maintenance costs directly affect intent to use m-commerce (Wei et al. 2009).

**H3:** Perceived risk has a negative impact on behavioral intention to use m-commerce.

**H3a:** Perceived risk has a negative impact on trust to use m-commerce.

**H4:** Perceived costs will have a negative effect on behavioral intention to use mobile commerce.

**Perceived Compatibility (PC) and Self Efficacy (SE)**

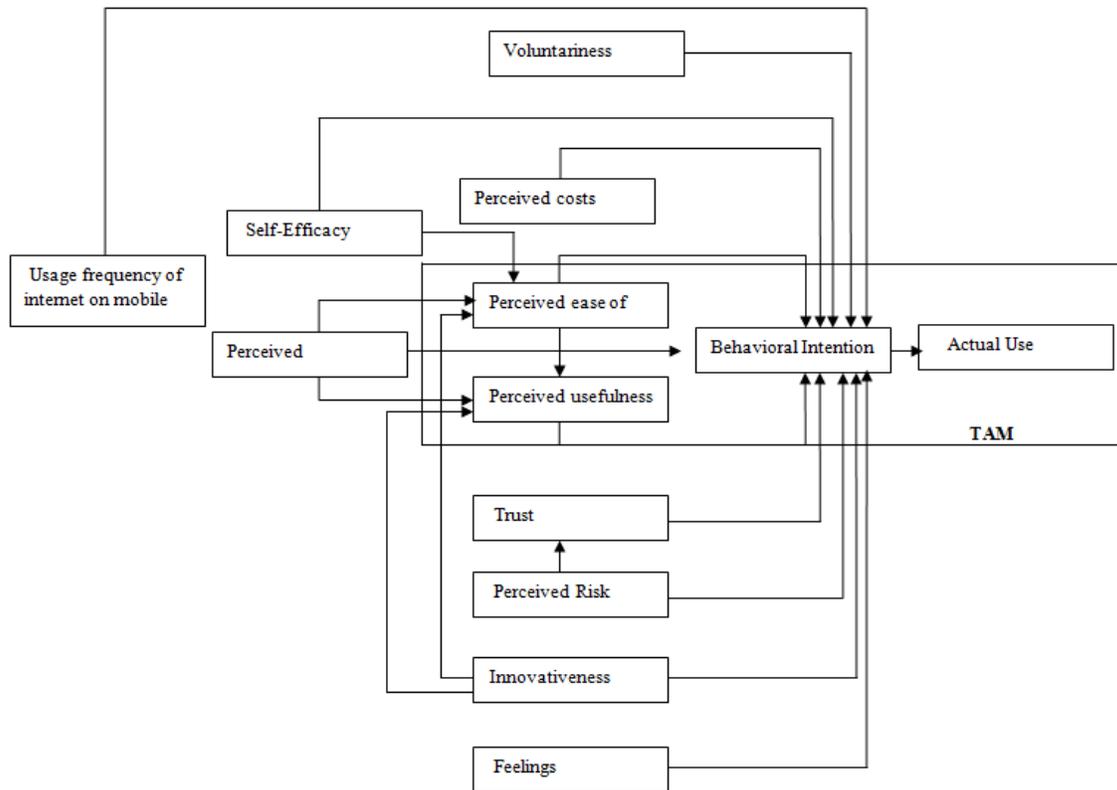
Perceived compatibility refers to consistency of the adopted technology with the users’ culture, values, traditions, norms, beliefs, needs and wants, and experiences (Wua, J. & S. Wang, 2005). The compatible nature of technology has a positive relationship with consumers’ life style and current needs and it would induce consumers to adopt technology (Kim et al. 2009). The fitness of innovative technology and service with individual social and technological structure leads towards high intention to adopt or use technology (Koenig-Lewis et al. 2010). The match between the technology and the actual task, which has to be performed by the user, would lead to high intention to use that technology (Yen et al. 2010). Perceived compatibility by the user, directs the user to adopt the technology intentionally without any factor having influence on the attitude of the user. Attitude of the user would intend him to carry the services through mobile (Püschel et al. 2010) Compatibility also proved to have much impact on the perceived ease of use. When users feel compatible to adopt, then it would be very easy for them to adopt that technology (Koenig-Lewis et al. 2010). Usefulness of technology is also predicted through the compatibility of the technology, directs towards high behavioral intention to use that technology (Wua, J. & S. Wang, 2005).

**H5:** Perceived compatibility has a strong and positive effect on behavioral intention to use m-commerce that has a positive effect on actual use of m-commerce.

**H5a:** Perceived compatibility has a positive influence on the perceived usefulness of the m-commerce.

**H5b:** Perceived compatibility has a positive effect on perceived ease of use to use m-commerce.

**Figure 1. Research Model**



Self-efficacy refers to the users' belief about his/her ability and experience to produce designated level of performance that exercise influences over certain events (Ajzen, I., 1991). The self-efficacy theory states that the behavioral intention of the user of technology is highly influenced by the self-efficacy and strength of the user to perform the desired operations through that technology (Agarwal, R. & J. Prasad, (1999); Harris et al. 2005). When a user has sufficient knowledge and information to use a mobile credit card and other services then, he/she will have high behavioral intention to use (Kim et al. 2009). Control over using the technology has a greater impact on intention of the user to use that technology (Gu et al. 2009). Full knowledge and confidence of users to pay the payments through mobile phone tends the users to use mobile services (Kim et al. 2010). Past experience of the users regarding use of various services through mobile has a high positive relationship with the perceived ease of use, which influences the behavioral intention to use and it leads the user towards actual use (Luarn, P. & H.H. Lin, 2005). The experience to use the internet on mobile has a positive relationship with the perceived ease of use, motivates towards actual use. Therefore, based on the speculative and experimental support from the literature, following hypotheses developed:

**H6:** Perceived self-efficacy has a positive effect on behavioral intention to use of m-commerce.

**H6a:** Perceived self-efficacy has a direct and high positive effect on the perceived ease of use of m-commerce.

#### **Voluntariness (V) and Innovativeness (IN)**

Technology acceptance model believes that voluntaries people are more motivated to use technology. This model states that the voluntariness shows a high positive influence towards the behavioral intention to use technology (Ajzen, I. & M. Fishbein, 1980). Another study has also proved that the acceptance of technology is associated with voluntariness (Davis, F.D., 1989; Venkatesh, V., 1999).

Innovativeness is the major contributing factor that affects the behavior of consumers to use the technology (Lin, H.H. 7 & S. Wang, 2006). Individual having the highest degree of innovative behavior would willingly adopt the advance technology (Lu et al. 2005). The adoption of wide range of technology is influenced by the innovative tendency of the consumers to adopt that particular technology (Kim et al. 2010). Innovativeness was categorized into two types i.e. general innovativeness and specific innovativeness. The intellectual characteristics of the consumers that predict the behavioral intentions to be used are called as specific innovativeness and it has a greater influence on adoption. The consumer's willingness to obtain the information about the innovative product refers to the domain specific innovativeness and it affects behavioral intention and attitudes of users. Studies proved that personal innovativeness affects the perceived ease of use, which ultimately affect the behavioral intention (Yi et al. 2006). The innovativeness of individuals has a vital impact on perceived usefulness of advanced technology (Sabir et al. 2013). The precedent literature builds following hypotheses:

**H7:** Voluntariness has a positive effect on behavioral intention to use m-commerce.

**H8:** Innovativeness will have an optimistic effect on the perceived usefulness in m-commerce.

**H8a:** Innovativeness will have an optimistic effect on the perceived ease of use in m-commerce.

**H8b:** Innovativeness will have a positive effect on the behavioral intention to use m-commerce.

#### **Trust (T), Usage Frequency of Internet on Mobile (UF) and Feelings (F)**

Trust is defined as "buyer-seller relationships as the perception by a prospective buyer of credibility and kindness in the target of trust" (Wu et al. 2010). The customers would be nervous about their personal information and money transferred to third party (Lin, H.H. 7 & S. Wang, 2006). Trust has a positive effect on individual's behavior and it is also relative to perceived risk (Min, Q., & J. Shaobo. 2008). It has been found that trust (perceived credibility) has a stronger effect on consumer behavioral intention in mobile banking (Lin, H.H. 7 & S. Wang, 2006). Behavioral intention is influenced by trust (Wang et al. 2006). On

the bases on previous literature discussed in study, it is apparent that the tendency of people to use the internet through mobile has been increased. It has been verified that behavioral intention is influenced by self-efficacy, perceived ease of use and perceived usefulness (Min, Q., & J. Shaobo. 2008). The precedent researches illustrate that when the people feel comfortable to use the internet through mobile phones habitually, then it affects their intention to use mobile banking. The literature supports the hypothesis that behavioral intention is affected by all above determinants and it ultimately affects the actual use of technology. Thus, the study weathered the following hypotheses:

**H9:** Trust has a constructive effect on behavioral intention to use m-commerce.

**H10:** Usage frequency of internet on mobile has a constructive effect on the behavioral intention to use m-commerce.

**H11:** Feelings has a positive effect on the behavioral intention to use m-commerce.

**H12:** Behavioral intention (BI) has a high optimistic impact on Actual use of MC by people.

## Research Methodology

The study was quantitative in nature and used deductive approach. Self-administered pre-tested questionnaire and convenience sampling technique was used to collect data from respondents. The questionnaire was based on 5-point (strongly agree=5, strongly disagree=1) likert scale, consisted of elements of constructs and demographic information of respondents such as gender, education level, age groups, and bank accounts.

The instruments comprised of thirty six questions to measure adoption of mobile banking. Perceived usefulness and perceived ease of use was measured using four and three items respectively. Perceived risk and perceived costs was constituted by three items each. The perceived comparability hold two items and self-efficacy were determined through four questions. The seventh construct was usage frequency of internet on mobile which included six questions. The voluntariness had two items and innovativeness had three items. The tenth construct which study took is trust, contained three items. The construct of feelings took questions of personal perception and feedbacks. The last construct behavioral intention contained three items. Three hundred respondents having bank accounts responded willingly.

The data for this study was collected from four cities of Pakistan Lahore, Multan, Sahiwal, and Okara.. One hundred respondents including students and teachers were approached for the purpose of data collection from University of Education Okara and COMSATS Institute of Information Technology Sahiwal. The remaining respondents were from Lahore and Multan cities. Descriptive statistics, reliability analysis and regression were conducted to analyze the data.

## Analyses of Data and Results

### Descriptive Statistics

Table 3.1 illustrates the demographics of respondents. Among 300 respondents, male respondents were dominant 186 (62%) on female 114 (38%). There were four age groups of respondents i.e. nineteen respondents (6.3%) were of less than or equal to 20 years group. A great proportion of 153 (51%) respondents lies from 21-30 year segment and 98 (32.7%) respondents were of between 31-40 years and 30 (10%) respondents were of above 40 years of age. There were 71 (23.7%) respondents who held a master degree. The bachelor degree holders were 73 (24.3%), intermediate 143 (47.7%), matriculation 13(4.3%) represent the total sample. Forty respondents (13.3%) public banks accounts and remaining 260 (86.7%) were the customers of private commercial banks. The sample comprised of young people. Most of respondents have higher secondary education. Private bank account holders prevailed in study over public banks account holders.

Table 1. Demographics of respondents

Particulars	Frequency	Percent (%)	Cumulative
<b>Gender</b>			
Male	186	62.0	62.0
Female	114	38.0	100.0
<b>Age</b>			
<=20	19	6.3	6.3
21-30	153	51.0	57.3
31-40	98	32.7	90.0
Above 40	30	10.0	100.0
<b>Education</b>			
Secondary	13	4.3	4.3
Intermediate	143	47.7	52.0
Bachelors	73	24.3	76.3
Post graduate	71	23.7	100.0
<b>Bank</b>			
Public	40	13.3	13.3
Private	260	86.7	100.0

### Reliability Analysis

The reliability of the instrument was checked before data analysis. The cronbach's alpha was used to check the consistency of data. Table 3.2 represents the values of cronbach's alpha ( $\alpha$ ) for all constructs. The alpha value ranges from 0.202 to 0.868. Perceived usefulness and perceived ease of use has a values of 0.682 and .680 respectively. Perceived risk, self-efficacy and trust proved to be more reliable constructs with values of 0.844, 0.868 and 0.815 respectively. Perceived costs and perceived compatibility had value of 0.752 and 0.477 respectively. Usage frequency of internet on mobile was not confirmed as reliable construct ( $\alpha=0.378$ ). Voluntariness expressed the bad results and was least reliable having cronbach's alpha value of 0.062. The 0.785 value supports the reliability of innovativeness. The construct of "feelings" had a least cronbach's alpha value of 0.202. The value of the "intention" shows that it was much reliable in the contribution of actual use of the mobile commerce. All constructs had less values and least reliable as compared to previous studies.

Table 2. Reliability Statistics

Proposed Constructs	Original Cronbach's $\alpha$ (previous literature)	Cronbach's $\alpha$ coefficient
Perceived usefulness(PU)	0.94	0.682
Perceived ease of use(PEOU)	0.91	0.680
Perceived risk(PR)	0.82	0.844
Perceived costs(PCS)	0.88	0.752
Perceived compatibility(PC)	0.95	0.447
Self efficacy(SE)	0.84	0.868
Usage frequency of internet on mobile(UF)	---	0.378
Voluntariness(V)	0.75	0.062
Innovativeness(IN)	0.92	0.785
Trust(T)	0.83	0.815
Feelings(F)	---	0.202
Behavioral Intention(BI)	0.96	0.722

## Discussion

The H1 is supported because perceived usefulness has a major impact on the behavioral intention to use m-commerce ( $\beta=0.142$ ,  $p=0.011$ ). This indicates a strong relationship between perceived usefulness and behavioral intention. The hypothesis of perceived ease of use and behavioral intention did not supported ( $\beta=0.050$ ,  $p=0.462$ ). This shows that perceived ease of use is not much effective as compared to perceived usefulness regarding behavioral intention. The hypothesis of perceived risk and behavioral intention is also supported ( $\beta= -0.124$ ,  $p=0.002$ ). This shows the negative relationship between perceived risk and behavioral intention. The users do not use m-commerce when they feel it much risky. The hypothesis of perceived cost and behavioral intention is also not supported because of high p-value ( $\beta= .062$ ,  $p=0.286$ ). This indicates the importance users give to costs of using m-commerce. There is a positive relationship between self-efficacy and behavioral intention which provides basis for acceptance of H6 ( $\beta= 0.138$ ,  $p=0.005$ ). The usage frequency and voluntariness has no relationship with behavioral intention (( $\beta= -.179$ ,  $p=.011$  &  $\beta=.007$ ,  $p=0.834$ )). Nevertheless, results indicate the positive association between trust and intention to use m-commerce ( $\beta= 0.124$ ,  $p=0.023$ ). Likewise, perceived ease of use and perceived usefulness are highly correlated with each other ( $\beta= 0.568$ ,  $p=0.000$ ). Whereas, the feelings did not exhibit any link with behavioral intentions ( $\beta= 0.025$ ,  $p=0.672$ ). The risk has a high positive influence on trust and hypothesis of perceived risk and trust is also supported ( $\beta= -1.58$ ,  $p=0.001$ ). There is no relationship observed between perceived costs and perceived usefulness ( $\beta= -0.092$ ,  $p=.182$ ). The hypothesis of perceived cost and perceived ease of use has a strong support from results ( $\beta= 0.146$ ,  $p=0.008$ ). The hypothesized relationship between self-efficacy and perceived ease of use is also not supported ( $\beta= -.029$ ,  $p=0.468$ ). This shows that self-efficacy do not influence perceived ease of use. The link of innovation with perceived usefulness and perceived ease of use did not prove, shows that innovation has no impact on perceived usefulness ( $\beta= -0.18$ ,  $p=0.751$ ) and perceived ease of use ( $\beta= 0.036$ ,  $p=0.426$ ).

Table 3. Result of Hypothesis

Attributes	Estimate( $\beta$ )	S.E	p	Hypothesis status
PU-BI*	.142	.056	.011	H1: Supported
PEOU-BI*	.050	.069	.462	H2: Not Supported
PR-BI*	-.124	.040	.002	H3: Supported
PCs-BI*	-.090	.049	.071	H4: Not Supported
PC-BI*	.062	.058	.286	H5: Not Supported
SE-BI*	.138	.049	.005	H6: Supported
UF-BI*	-.179	.070	.011	H10: Supported
V-BI*	.007	.033	.834	H7: Not Supported
IN-BI*	.064	.060	.281	H8b: Not Supported
T-BI*	.124	.054	.023	H9: Supported
F-BI*	.025	.059	.672	H11: Not Supported
PEOU-PU*	.568	.064	.000	H2a: Supported
PR-T*	-.158	.045	.001	H3a: Supported
PC-PU*	-.092	.069	.182	H5: Not Supported
PC-PEOU*	.146	.055	.008	H5a: Supported
SE-PEOU*	-.029	.039	.468	H6a: Not Supported
IN-PU*	-.18	.056	.751	H8: Not Supported
IN-PEOU*	.036	.045	.426	H8a: Not Supported

$p=0.05$ \*\*

## Conclusion

The people of Pakistan always consider the usefulness of products before purchase and consume. The utility of mobile technology and opportunity costs are very much important to them. The consumers of banks feel boredom due to traditional methods of banking system and other services. The changing trends

are proliferating in Pakistan, which urged people to use m-commerce for quick transactions. Surprisingly, the people do not give importance to electronic systems of being easy to use, even in presence of their literacy. There is need to introduce more contemporary methods and tools through which operations and transactions could be executed easily. It has been concluded that Pakistanis are risk averted showing reluctance to use mobile technologies in their banking transactions i.e. money transfer. People do not show confidence on technology usage in their confidential matters. Majority of bank customers are not sure about virtual existence of such type of business activities. This poses a greater challenge for researches to conduct research on resistance of technology adoption among Pakistanis. The costs associated with the services of m-commerce cause the people to stop themselves from using such services. The low purchasing power and economic situation might be the reasons behind the refusal of people for facilities of m-commerce. The low expertise in using mobile technology demonstrates the unfamiliarity of customers with it. People adopt mobile banking services, if they have enough skills and proficiency in utilizing these services. The attitudes of people towards m-commerce are dependent on time spent in using mobile banking. According to results, Pakistanis are not innovators because of costs and risks associated with innovations and technologies. Instead, results concluded that Pakistanis could be the laggards in adopting innovations. The aesthetics and feelings of being superior hold the secondary importance among Pakistanis.

### Future Research and Limitations

The m-commerce is an emerging area and it needs a sound research. The future studies could focus on determinants of trust and perceived risk, which need an in-depth analysis regarding rejection of technological innovations by people. Researches can also use interview method for better understanding the dilemma of technology adoption. Small sample size and confined area entail the constraints on applicability of research. The Northern and Southern Punjab has been totally neglected in this study and future researcher can target these neglected areas for the more generalization of the results.

### References

- Abu-Bakar, F. & S. Osman, (2005). Towards the future of mobile commerce (m-commerce) in Malaysia. Proceedings of IADIS: *IADIS International Conference on Web based Communities, Algarve, Portugal*.
- Agarwal, R. & J. Prasad, (1999). Are individual differences germane to the acceptance of new information technologies? *Decision Science* 30(2): 361-391.
- Ajzen, I., (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes* 50(2): 179-211.
- Ajzen, I. & M. Fishbein, (1980). Understanding Attitudes and Predicting Social Behavior. *NJ: Prentice-Hall. Englewood Cliffs*.
- Barnes, S.J., (2002). The mobile commerce value chain: Analysis and future developments. *International Journal of Information Management* 22(2): 91-108.
- Chen, H.-R. & Huang, H.-L., (2010). User Acceptance of Mobile Knowledge Management Learning System: Design and Analysis. *Educational Technology & Society*, 13(3), 70-77.
- Chen, Y., Lou, H. & W. Luo, (2002). Distance Learning Technology Adoption: A Motivation Perspective. *The Journal of Computer Information Systems* 42(2): 38-43.
- Cheong, J. H. & M.C., Park, (2005). Mobile internet acceptance in Korea. *Internet Research* 15(2): 125-140.
- Coursaris, C. & K. Hassanein, (2002). *Understanding m-commerce: A consumer centric model*. *Quarterly Journal of Electronic Commerce*, 3(3): 247-271.
- Davis, F.D., 1989. Perceived Usefulness, Perceived Ease of Use and User Acceptance of Information Technology. *MIS Quarterly* 13: 319-340.
- Gu, J., Lee, S. & Y. Suh, (2009). Determinants of behavioral intention to mobile banking. *Expert Systems with Applications* 36:11605-11616.

- Gunsaekaran, A. & E. Ngai, (2003). Special issue on mobile commerce: strategies, technologies and applications. *Decision Support Systems* 1(35):187-188.
- Harris, P., Rettie, R. & C.C. Kwan, (2005). Adoption and usage of mcommerce: A cross-cultural comparison of Hong Kong and the United Kingdom. *Journal of Electronic Commerce Research* 6(3): 210-224.
- Horrigan, J., (2009). Wireless Internet use, Pew Internet & American Life Project, web available at: <http://pewinternet.org/Reports/2009/12-Wireless-Internet-Use.aspx>.
- Kim, C., Mirusmonov, M. & I. Lee, (2010). An empirical examination of factors influencing the intention to use mobile payment. *Computers in Human Behavior* 24(6):2830-2847
- Kim, J., Ma, Y.J. & J. Park, (2009) Are US consumers ready to adopt mobile technology for fashion goods?: An integrated theoretical approach. *Journal of Fashion Marketing and Management* 13(2): 215-230.
- Koenig-Lewis, N., Palmer, A. & A. Moll, (2010). Predicting young consumers' take up of mobile banking services. *International Journal of Bank Marketing* 28(5): 410 - 432
- Kuo, Y. & S. Yen, (2009). Towards an understanding of the behavioral intention to use 3G mobile value-added services. *Computers in Human Behavior* 25: 103-110.
- Lai, T.L., (2004). Service Quality and Perceived Value's Impact on Satisfaction, Intention and Usage of Short Message Service (SMS). *Information Systems Frontiers*, 6(4), 353-368.
- Li, Y. & Y. Yeh, (2010). Increasing trust in mobile commerce through design aesthetics. *Computers in Human Behavior* 26(4):673-684.
- Lin, H.H. & S. Wang, (2006). An examination of the determinants of customer loyalty in mobile commerce contexts. *Information & Management* 43: 271–282.
- Lo'pez-Nicola's, C., Molina-Castillo, F.J. & H. Bouwman, (2008). An assessment of advanced mobile services acceptance: Contributions from TAM and diffusion theory models. *Information & Management* 45:359–364.
- Lu, J., Yao, J. E. & C.S. Yu, (2005). Personal innovativeness, social influences and adoption of wireless Internet services via mobile technology. *Journal of Strategic Information Systems* 14(3): 245-268
- Luarn, P. & H.H. Lin, (2005). Toward an understanding of the behavioral intention to use mobile banking. *Computers in Human Behavior* 21: 873-891.
- Mennecke, B. & T. Strader, (2002). Mobile Commerce: Technology, Theory and Applications. *Idea-Group Publishing, Hershey: PA*.
- Min, Q., J. Shaobo. (2008). Mobile Commerce User Acceptance Study in China: A Revised UTAUT Model. *Tsinghua Science And Technology* .13.
- Moshin, M., Muhtadir, R. & A.F.M. Ishaq, (2003). Mobile commerce – the emerging frontier: exploring the prospects, application and barriers to adoption in Pakistan. Paper presented at *International Workshop on Frontiers of IT, Islamabad*.
- Püschel, J., Mazzon, J.A. & J.M.C. Hernandez, (2010). Mobile banking: proposition of an integrated adoption intention framework. *International Journal of Bank Marketing* 07/2010; 28(5):389-409.
- Sabir, R.I., W. Ahmad, N. Noor & A. Rehman, (2013). Adoption of Social Networking Sites among Pakistani University Students: A Case of Face-Book. *Journal of Asian Business Strategy*, 3(6): 125-139.
- Shih, G. & S. Shim, (2002). Service management framework for m-commerce applications. *Mobile Networks and Applications* 7(3): 225-234.
- Shin, D., (2009). Towards an understanding of the consumer acceptance of mobile wallet. *Computers in Human Behavior* 25(6): 1343-1354.
- Siau, K. & Shen, Z., (2003). Building customer trust in mobile commerce. *Communications of the ACM - Digital rights management*, 46(4), 91-94.
- Tornatzky, L.G. & K.J. Klein, (1982). Innovation characteristics and innovation adoption implementation: a meta analysis of findings. *IEEE Transactions on Engineering Management* 29(1): 28-45.
- Van der Heijden, H., (2003). Factors Influencing the Usage of Websites: The Case of a Generic Portal in The Netherlands. *Information & Management*, 40: 541-549.

- Venkatesh, V., (1999). Creation of Favorable User Perceptions: Exploring the Role of Intrinsic Motivation. *MIS Quarterly* 23(2): 239-260.
- Wang, Y.S., H.H. Lin & P. Luarn, (2006). Predicting consumer intention to use mobile service. *Information Systems Journal*, 16(2): 157-179.
- Wei, T.T., Marthandan, G., Chong, A.Y.L., Ooi, K.B. & Arumugam, S., (2009). What drives Malaysian m-commerce adoption? An empirical analysis. *Industrial Management & Data Systems*, 109(3), 370-388.
- Wessels, L. & J. Drennan, (2010). An investigation of consumer acceptance of M-banking. *International Journal of Bank Marketing* 28(7): 547 – 568.
- Wessels, L. and J. Drennan, 2010. An investigation of consumer acceptance of M-banking. *Emerald* 28
- Wu, C.S., Cheng, F.F., Yen, D.C. & Huang, Y.W., (2011). User acceptance of wireless technology in organizations: A comparison of alternative models. *Computer Standards & Interfaces*, 33(1), 50-58.
- Wu, X., Q. Chen, W. Zhou, J. Gou, (2010). A review of Mobile Commerce consumers' behaviour research: consumer acceptance, loyalty and continuance (2000-2009). *International Journal of Mobile Communications*, 8(5): 528-560.
- Wua, J. & S. Wang, (2005). What drives mobile commerce? An empirical evaluation of the revised technology acceptance model. *Information & Management* 42: 719-729.
- Yang, K.C.C., (2005). Exploring factors affecting the adoption of mobile commerce in Singapore. *Telematics and Informatics* 22(3): 257 – 277.
- Yeh, Y.S. & Li, Y.-M., (2009). Building trust in m-commerce: contributions from quality and satisfaction. *Online Information Review*, 33(6), 1066-1086.
- Yen, D.C., Wu, C.-S., Cheng, F.-F. & Huang, Y.-W., (2010). Determinants of users' intention to adopt wireless technology: An empirical study by integrating TTF with TAM. *Computers in Human Behavior*, 26(5), 906-915.
- Yi, M. Y. & Y. Hwang, (2003). Predicting the use of web-based information systems: self-efficacy, enjoyment, learning goal orientation, and the technology acceptance model. *International Journal of Human Computer Studies* 59: 431-449.
- Yi, M. Y., Jackson, J. D., Park, J. S., & Probst, J. C. (2006). Understanding information technology acceptance by individual professionals: toward an integrative view. *Information & Management*, 43(3).