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DIFFUSION OF MOBILE BANKING IN PAKISTAN

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Abstract

Research on diffusion of mobile banking is still in the beginning stage and the purpose to describe the diffusion as well as understanding the consumer adoption of mobile banking, still demand urgent market research, in the context of mobile banking adoption. To understand this problem, this research examines the mobile banking by measuring the consumer adoption. This research employed the diffusion of innovation theory. Data were gathered from 328 mobile banking users of three cities, Bahawalpur, Multan and Muzaffargarh, in the Province of Punjab, Pakistan, by using self-administered, survey questionnaires. Data were statistically tested by using Structural Equation Model PLS (SEM). In the end, the results validated the notion of diffusion of mobile banking, in the context of low income people of Pakistan. The results also revealed that majority of the main factors like complexity, social influence, relative advantage and consumer innovativeness, did have significant influence on diffusion of mobile banking adoption. However, two factors, perceived risk, and self-efficacy were insignificant with diffusion of mobile banking adoption.

Keywords: *Mobile Banking, Innovativeness, Relative Advantage, Diffusion, Social Influence*

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1. Introduction

In this era of information technology, modern machines have changed lifestyles. The success of a bank like other sectors, depends on satisfied consumers and if they are not satisfied, then they will switch over to other banks, who might provide better and satisfactory services. Provision of satisfactory services persuades a customer to be loyal to a bank and this loyalty leads to long term customer relationship **(Ndubisi, 2003).** Banking sector has been greatly revolutionized due to the progression in the areas of information technology and telecommunications. Financial services, offered by the bank, have been experiencing many challenges in this very competitive environment to provide better services to their customers. To compete in this situation, banking institutions have been implementing the latest strategies, using the technology, to improve customer service, to minimize operation cost and survive in the market **(Sohail and Shanmugham, 2003).** In this regard, implications of mobile banking need to be thoroughly understood, by all the stakeholders including banks, customers and all other intermediary institutions.

Mobile banking services, while opening up opportunities for banks to broaden the market using mobile services, provide convenience and speediness to customers **(Lee and Kim, 2007)**. Indeed, mobile phones, as a part of daily life, have created an opportunity for the advancement of banking services to reach the unbanked populace **(Lee and Kim, 2007).**

2. Review of Literature

Diffusion of innovation can be defined as a development by which an innovation, new idea or new technology, is communicated or transferred into a social setup within a certain period of time **(Rogers, 2003).** Technology related studies have been widely using the theories related to diffusion concept for decades. The diffusion notion has been widely used in the studies related to communication, economics, marketing, education, sociology and technology **(Greenhalgh et al., 2004).** For instance, health care technologies related studies have been operationalized and measured, using dimensions like relative advantage, and social influence communication channels, homophilous groups, pace of innovation or reinvention, norms, roles and social networks, opinion leaders, compatibility and infrastructure **(Rogers, 2003)**.

Technology has been a very part of us today, and it can be found diffusing into almost every aspect of our lives. **Cain and Mittman (2002),** explored ten critical dynamics, mostly discussed by Rogers (1995) in his book of innovation diffusion, including; "relative advantage, trialability, observability, communication channels, homophilous groups, pace of innovation or reinvention, norms, roles and social networks, opinion leaders, compatibility and infrastructure", while studying diffusion of technologies in the field of health care.

Lin (2011) found out that "perceived relative advantage, complexity, significantly affects consumers approach and both the repeat customers and the potential customers were found behaving differently with regards to online banking. Study by **Lin (2011)** employs innovation diffusion theory and knowledge-based trust literature and develops a research model to examine the effect of innovation attributes (perceived relative advantage, complexity and perceived risk) and knowledge-based trust (perceived competence, benevolence and integrity) on attitude and behavioral intention about adopting (or continuing to use) mobile banking across potential and repeat customers.

Some researchers explored the influential factors in the electronic banking (e-banking), considering it as an innovation in the country, by developing theoretical framework based on diffusion of innovation, technology acceptance model and technology readiness index (TRI). The TRI framework helped the researchers to explore customers' technological confidence, while not showing their ability itself **(Rogers, 2003; Berger and Heath, 2007; Kim and Park, 2011).**

3. Statement of the Problem

Consumers' adoption of mobile banking has been widely understood as technological innovation. Theory of diffusion of innovation (DOI) thoroughly explores factors, which influence and motivate users, to adopt new idea or innovation or technology. Rogers identified numerous features of an innovation, which are major influences on adoption behavior of the consumers. According to Rogers, these features are relative advantage, complexity, social influence, and perceived risk. Many past researches have studied these attributes or features in adoption and diffusion of internet based advanced technologies and concluded that these features, predominantly those of relative advantage, ease of use and compatibility, were the most regularly prominent elements for adoption of mobile banking technologies (**Park and Chen, 2007).**

There is still a lack of clear evidence about the nature of the association between the major factors and mobile banking adoption. Due to inconsistent results and lack of clear evidence of the relationship, further exploration is necessary to better comprehend the relationship between the proposed factors like social influence, perceived risk, self-efficacy, relative advantage, consumer innovativeness and mobile baking adoption.

4. Need of the Study

Brown et al., (2003) applied innovation diffusion theory, to identify the determinants, influencing mobile banking adoption in South Africa and concluded that in consumer banking, relative advantage and perceived risk exercised significant negative effect on mobile banking. Similarly, **Suoranta and Mattila (2004)** conducted a study in Finland and concluded that relative advantage, complexity, triability and compatibility exercised an effect on the adoption of mobile banking while fear of perceived risk was a major factor against mobile banking adoption. **Laforet and Li (2005)** conducted a study in China and concluded that consumers were reluctant to use mobile banking because of their security reasons in China. **Luran and Lin (2005)** conducted research in Taiwan and stated that perceived self-efficacy, cost and ease of use were the major factors, influencing mobile banking adoption in Taiwan. **Laukkanen and Pasanen (2008)** conducted a study on the mobile banking adoption in Finland and stated that education, occupation, household income and household size did not have any effect on mobile banking adoption. **Dasgupta et al., (2011)** used TAM model on the university students in India and suggested that self-efficacy, ease of use, image, perceived usefulness were significant factors in the adoption of mobile banking.

Due to inconsistent results and lack of clear evidence of the relationship, more research is necessary to better understand the relationship between the proposed factors like social influence, perceived risk, self-efficacy, relative advantage, consumer innovativeness and mobile baking adoption. This actually motivated Researchers to examine these variables in this study.

5. Objective of the Study

Primary objective of this study was to investigate factors, which are expected to promote mobile banking services, among low-income population of Pakistan.

6. Hypotheses of the Study

NH-1: There is no association between self-efficacy and mobile banking adoption.

NH-2: There is no association between social influence and mobile banking adoption.

NH-3: There is no association between complexity and mobile banking adoption.

NH-4: There is no association between relative advantage and mobile banking adoption.

NH-5: There is no association between perceived risk and mobile banking adoption.

NH-6: There is no association between consumer innovativeness and mobile banking adoption.

7. Research Methodology

7.1. Sample Selection

Sample was selected from a wide range of population, comprising university students, who were big mobile banking users in Pakistan. 328 Mobile banking users were selected as sample for the study.

7.2. Sources of Data

Structured questionnaire was used to collect primary data, from the 328 mobile banking users of three cities Bahawalpur, Multan and Muzaffargarh in Pakistan.

7.3. Period of the Study

This research was conducted during the period, February 2018 to July 2018

7.4. Tool Used for the Study

The Structural Equation Model PLS (SEM) was used in the study.

8. Analysis of Data

According to **Table-1**, the composite reliability values of corresponding variables like consumer innovativeness, complexity, mobile banking adoption, perceived risk, self-efficacy and social influence, were 0.758, 0.793, 0.794, 0.795, 0.821, 0.896 and 0.831 respectively. Average Variance Extracted ((AVE) should be 0.50. As shown in the **Table-2**, all the constructs recorded high reliability and the average variance extracted was greater than cut off point of 0.50. The value of Cronbach Alpha was greater than 0.5 and hence acceptable. The Cronbach Alpha values of the corresponding variables like consumer innovativeness, complexity, mobile banking adoption, perceived risk, self-efficacy and social influence were, 0.837, 0.8646, 0.914, 0.858, 0.875, 0.864 and 0.880 respectively **(Table-1).**

According to **Table-3,** consumer innovativeness significantly and positively influenced the mobile banking adoption. The statistical results of this study revealed that consumer innovativeness was significant, with t-value ($T= 3.43$, $p< 0.05$) and positive relationship with consumer resistance to innovation. This finding was verified with the previous studies. Hence the null hypothesis **NH-1** (There is no association between self-efficacy and mobile banking adoption) was rejected. It was found that consumers always wanted to learn about novelty and excitement from novel product adoption **(Agarwal and Prasad, 1998; Rijnsoever and castaldi, 2011).**

The relationship between complexity and mobile banking adoption was discussed. The statistical results of this study revealed that complexity was significant with t-value ($T= 5.457$, $p< 0.05$) and positive relationship with consumer resistance to innovation. This study hypothesized that complexity significantly and positively did affect mobile banking adoption.

Hence **NH-2** (There is no association between social influence and mobile banking adoption) was rejected, and the significant result was consistent with the results from past studies **(Tan and Teo, 2000; Luarn and Lin, 2005).**

This study hypothesized that perceived risk insignificantly influenced the mobile banking adoption. Hence the **NH-3** (There is no association between complexity and mobile banking adoption), was accepted as the statistical results of this study revealed that perceived risk was insignificant with t-value (T= 0.378, p> 0.05) and there was positive relationship with consumer resistance to innovation. This is consistent with the results in the previous studies (**Cheng, Lee, & Lee, 2014; Luarn & Lin 2005).**

The statistical results of this study revealed that relative advantage was significant with t-value (T= 1.7836, p< 0.05) and there was positive relationship with consumer resistance to innovation. Hence **NH-4** (There is no association between relative advantage and mobile banking adoption), was rejected, as the statistical results revealed that relative advantage was significant and it exercised positive relationship with mobile banking adoption. Previous literatures indicate that the relative advantage did have positive impact on mobile banking adoption and the significant result is consistent with the results from past studies **(Nor and Pearson, 2007; Luarn and Lin 2005).**

This study hypothesized that self-efficacy insignificantly and negatively influenced the mobile banking adoption. Hence the **NH-5** (There is no association between perceived risk and mobile banking adoption), was accepted as the statistical results of this study revealed that self-efficacy was significant with t-value (T= 0.226, p>0.05) and there was positive relationship with consumer resistance to innovation.

This study hypothesized that social influence significantly and positively influenced the mobile banking adoption, as the statistical results of this study revealed that social influence was significant with t-value (T= 3.14, p< 0.05) and there was positive relationship with consumer resistance to innovation. Hence **NH-6** (There is no association between consumer innovativeness and mobile banking adoption) was rejected. The significant result is consistent with the results from past studies **(Gerber, et al., 2008; Berger and Heath, 2007; Kim and Park, 2011).**

Furthermore, this research commenced discriminant validity, to guarantee the external consistency of the model, based on the comparison between the latent variables. According to the **Table-2**, the AVE of the variables were: Consumer innovativeness (CI) = 0.7133; Complexity (COM) =0.7847, Mobile banking adoption (MBA) = 0.7846; Perceived risk (PR) = 0.74087; Relative advantage (RA) = 0.7649; Self-efficacy (SE) = 0.7855 and Social influence (SI) = 0.7725**.**

9. Findings of the Study

The findings of this study suggest a significant contribution to the methodological point of view. In the context of mobile banking, previous studies demonstrate that there was lack of measurement for diffusion of mobile banking. Previous studies on diffusion of mobile banking, used many different methodical practices but they were limited to the good knowledge of the Researchers, by the use of Smart PLS 2.0 M3 **(Ringle et al., 2005).**

Figure-1 displays the proposed research framework for mobile banking adoption. This study empirically verified that the influence of consumer innovativeness and consumer innovativeness was a predictor of mobile banking adoption. Meanwhile, consumer innovativeness

was significant to the mobile banking adoption, and similarly, self-efficacy was also vital to the mobile banking adoption. Social influence was also more important to the mobile banking adoption.

10. Suggestions

Managers of banks should focus on these elements while introducing mobile banking in banking industry. Managers can deliver good banking services, with outstanding features, to valorise consumers in the context of innovativeness of consumers, social influence and self-efficacy. All in all, these useful implications were based on study outcomes.

11. Limitation of the Study

This research was quantitative and cross sectional in nature. The data of this research were gathered via self-administered questionnaire. But qualitative or mixed method would be a good approach for future studies, in different contexts of mobile banking in Pakistan.

12. Conclusion

This research was conducted in the context of use of mobile banking, by low income population of Pakistan. The results of this research could not be generalized in the context of consumers from other culture and countries. There is need to conduct another research to confirm and validate the results, to be considered consistent with other countries. From a theoretical point of view, this study has contributed to the current body of knowledge. It helps enriching the understanding the relationship between social influence, perceived risk, relative advantage, self-efficacy, complexity and consumer innovativeness and adoption of any new technology. This study has taken new variable, which is social influence, into the model. The result of the social influence significantly and positively influenced the mobile banking adoption.

13. Scope for Further Research

As this study was cross sectional, other future studies can be longitudinal because longitudinal research provides better results to validate the results, attained from the cross sectional study.

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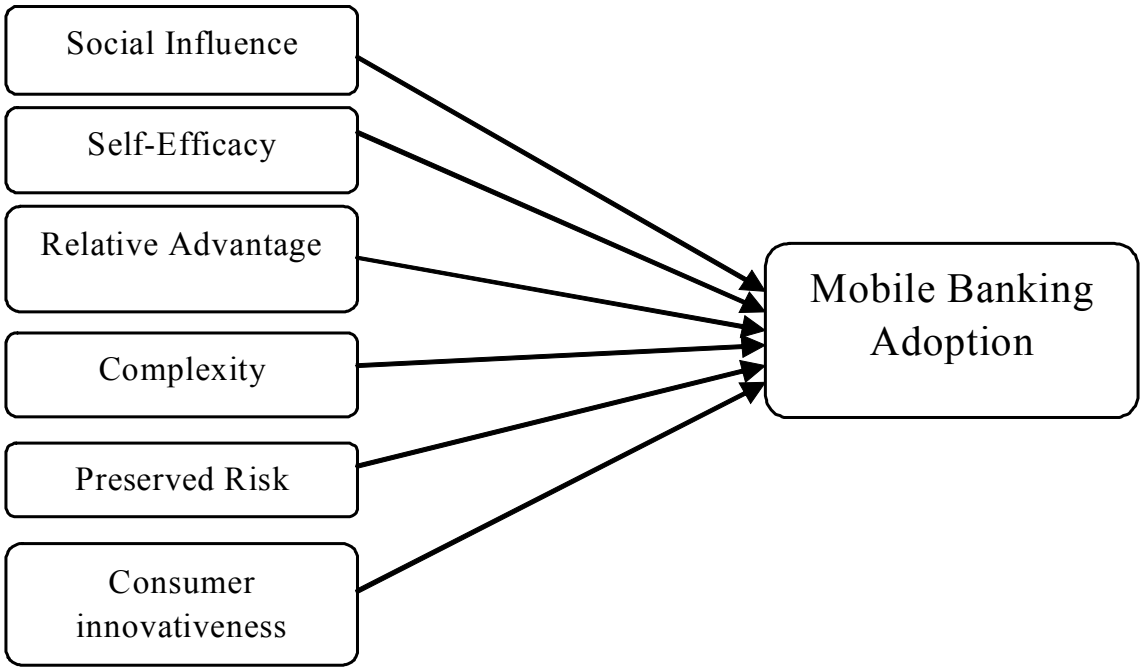
Figure-1: Proposed Research Framework



Source: Proposed Research Framework (2018) from Existing Literature

Table-1: Convergent Validity

Construct	Item	Loadings	Cronbach's Alpha	Composite Reliability	Average Variance Extracted
Consumer Innovativeness	CI1	0.7061	0.7582	0.8379	0.5088
	CI3	0.7248			
	CI4	0.7606			
	CI6	0.6623			
	CI7	0.7094			
Complexity	COM1	0.74	0.7937	0.8646	0.6158
	COM2	0.8215			
	COM3	0.8386			
	COM4	0.7331			
Mobile Banking Adoption	MBA1	0.9226	0.7957	0.9143	0.6156
	MBA10	0.9018			
	MBA11	0.9018			
	MBA2	0.5421			
	MBA3	0.6422			
	MBA7	0.5235			
	MBA8	0.9226			
Perceived Risk	PR2	0.6832	0.7946	0.8583	0.5489
	PR3	0.8084			
	PR4	0.7793			
	PR5	0.7447			
	PR6	0.6801			
Relative Advantage	RA1	0.744	0.8216	0.8754	0.5852
	RA2	0.8286			
	RA3	0.8154			
	RA4	0.7218			
	RA5	0.707			
Self-Efficacy	SE1	0.8654	0.7967	0.8641	0.6171
	SE2	0.7883			
	SE3	0.8413			
	SE4	0.6248			
	SI1	0.7207	0.8311	0.8803	0.5969
Social Influence	SI2	0.7721			
	SI3	0.8681			
	SI4	0.8012			
	SI5	0.6879			

Source: Primary Data (2018) using smart PLS (Version 2.0)

Table-2: Discriminant Validity Matrix

	CI	COM	MBA	PR	RA	SE	SI
CI	0.713302						
COM	0.1646	0.784729					
MBA	0.4769	0.367	0.784602				
PR	0.2316	0.2168	0.23	0.740878			
RA	0.5904	0.1918	0.4081	0.2175	0.764984		
SE	0.6161	0.0858	0.328	0.1671	0.6385	0.785557	
SI	0.5265	0.1538	0.4309	0.3351	0.4203	0.3903	0.772593

Source: Primary Data (2018) using smart PLS (Version 2.0)

Table:-3: Direct Hypothesis Testing

S. No	Hypothesized Paths	Path Coefficient	Standard Error	t-Statistics	Decision
1	CI -> MBA	0.2582	0.0725	3.4356	Supportive
2	COM -> MBA	0.2665	0.0488	5.4572	supportive
3	PR -> MBA	0.0206	0.0543	0.3786	Not Supportive
4	RA -> MBA	0.1261	0.0711	1.7836	Supportive
5	SE -> MBA	-0.0162	0.0717	0.2267	Not Supportive
6	SI -> MBA	0.2004	0.0694	3.1467	Supportive

Source: Primary Data (2018) using smart PLS (Version 2.0); ***p<0.001; **P<0.01;* P<0.05