Factors Influencing Customer Adoption of Mobile Banking Services With Special Reference To Ernakulam District

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Abstract: Mobile communication technologies provide immense additional scope for consumers' banking transactions due to their always-on functionality and the option to access bank's facilities anytime and anywhere. Mobile banking is a subset of electronic banking which underlies not only the determinants of the banking business but also the special conditions of mobile commerce. This study aims to analyse certain aspects of the customer adoption of mobile banking. A survey research was conducted among the 150 customers who are residing in Ernakulam District, by means of a questionnaire that was designed in a Likert scale format. Data analysis was carried out by use of regression and ANOVA to statistically produce the relationship between the independent and dependent variables. From the findings, the researcher concludes that the regression effect was statistically significant indicating a reliable prediction of the dependent variable. The study was significant to the banking sector since mobile banking is a phenomenon that has take off and can't be washed away.

Keywords:

Anytime and anywhere, Customer adoption, Mobile banking.

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I. Introduction

Banking is one of the most regulated industries in the world. The banks from both public and private sector, reached a remarkable position due to its high level of technology, core banking and aggressive marketing strategies. The latest technology had a major impact in banking service, that helped the customers to access their banks at anytime through Internet banking. However the biggest limitation of the internet banking is the requirement of a PC with an internet connection, not a big obstacle in developed countries, but definitely it is a barrier in a developing country like India. To overcome these limitations recent innovations in communications have enabled the launch of new access methods for banking services; one of these is mobile banking; whereby a customer interacts with bank via mobile device (Barnes & Corbitt, 2003). Mobile banking is a way for the customer to perform banking actions through mobile phone. It is a quite popular method of banking that fits in well with a busy, technologically oriented lifestyle.

The banking activities you can do in your cell phone depend on the banking institutions. Some banks offer the basic activities such as text alert, in which the customers will get a message alert in each of the activities like deposits, withdrawals using credit and ATM cards. The most involved type of mobile banking allows the users to log into his or her account from a cell phone, and they can do the activities like making payments, checking balances, transferring money between accounts, notifying the bank of a lost or stolen credit card, stopping payment on a check, receiving a new PIN, or viewing a monthly statement, among other transactions. This type of banking is meant to be more convenient for the consumer than having to physically go into a bank. The banks in India are racing to use this latest technology to reduce their operational cost and increase customer base (Peterson, 2009). In India the transactions have been increased after the launch of mobile banking. Round the clock availability and ease of transactions are the main attracting factors of mobile banking.

The current mobile adoption figures are good news for the economy as well as the banks. Experts believe improved applications by banks have helped Mobile banking gain acceptance among users. Reserve Bank of India guidelines for m-banking state that, "Information Security is critical to the business of mobile banking services and its underlying operations. Therefore, the technology used for mobile banking must be secure and should ensure confidentiality, integrity, authenticity, and non-reputability." These lines are the reflective of possible concerns of the customer that have critical influence on their adoption tendencies. Besides security, fear of network failures resulting in failed transactions poses a serious impact on customer adoption trends (Paul Leishman, 2009).

II. Literature Review

Literature review is instrumental to explore previous studies and research in the related areas of the subject because it helps to bridge the research gaps that already exists. The collection of reviews has been made from various studies undertaken by the academicians, practitioners, researchers from time to time. It also provides a theoretical base for the research and helps the researcher to conceptualize the problem and to choose the design of the present study.

During January 2008, ICICI bank started the first mobile service in India (Mr.V. Vaidyanathan) and SMS alerts started in 2005-06 (Alpesh Patel, 2013). According to Chugh (2014), The RBI operative guidelines indicate that only those banks which are licensed and supervised in India and have a physical presence in India will be permitted to offer Mobile banking services. The following section contains a list of studies conducted in the area of Mobile banking both Worldwide and in India. The reviews are presented in a chronological order.

Roger's (1995) innovation diffusion model which has used attributes like compatibility, complexity, relative advantage has been used in their study. The findings indicate that compatibility, relative advantage, ease of use has a significant effect on attitude to adopt Mobile banking services. An important suggestion made by them is to reduce complexity to increase mobile adopters. The customers will have a positive belief about the relative advantage of Mobile banking only if they have a favourable attitude towards adopting Mobile banking services. Yang A. S (2009), in his empirical study investigated the factors associated with adopting and resisting Mobile banking technologies in Taiwan. The primary factors associated with resistance included concerns over system configuration security and basic fees for Mobile banking web connections. The research found out that security and cost connection to the internet was a hindrance to the adoption of Mobile banking facilities among students in Taiwan. Financial cost is an important attribute according to Singh, Srivastava and Srivastava (2010), as it has a negative effect on the intention to use Mobile banking. Kumar, Ravindran (2012), in their study have suggested that there is a strong linkage between perceived service quality, satisfaction and continuance intentions. The study also confirmed that after adoption of the technology, the customer finds satisfaction in the quality parameters of the service. Continuance intentions were found solely dependent on satisfaction in the m-banking context in Kerala. Customers are highly satisfied with mobile banking system due to several reasons. It has positive impact on behavioural intentions of customers' acceptance of mobile banking. According to Angamuthu (2012) the public sector banks have contributed to the overall growth of M-Banking in the banking sector of India better than the private and foreign sector banks. Perceived obstacles for nonacceptance of M-Banking consists of insufficient guidance, high risk, possibility of occurring errors, spend more time, small display size of mobile phone, unavailability of large number of benefits and preference of other financial information mediums. Samudra, Phadtare (2012), in their study used the UTUAT model to examine the adoption of Mobile banking services in Pune city and have suggested that Mobile banking services should be promoted to middle level managers whose salary are in the range of 1-6 lakh and the age group is 25-30. The reason suggested in their study is; this is the most active age groups of 3G mobile. They have used five factors of UTUAT model to study the adoption, among these factors facilitating conditions is the major factor that influence Mobile banking adoption in this study. Utharaja and Kumar (2014) highlighted OHCs positive attitude and intention to use mobile banking channel. It will also help the bankers in aligning or promoting mobile banking channel apart from understanding these needs of the special customers. The information sourced through this research will provide input into banking service design and process that will include special segment while also aiding policy decisions. Singh (2014) in his study says that the mobile banking is increasing rapidly but it has not become as popular as the use of ATM. Hence this is a challenge the Bank managers have to face while designing the different features of mobile banking and ensuring the reliability and safety/security of mobile banking transaction. Higher education level in National Capital Region Delhi provides the opportunity to the banks to create awareness and promote the use of mobile banking. Dash, Bhusan (2014), their study says that, innovation attributes i.e. trial ability and compatibility has significant impact on the attitude whereas the relative advantage is not significant in the Indian context as previous research carried out in different countries have revealed the significance of relative advantage toward the attitude. According to Mathew, Sulphey, and Prabhakaran (2014), usefulness exerted more influence in discriminating between a mobile banking user and non-user. Risk perception was found to be the major impediment to mobile phone banking adoption. Juwairiya and Binoosa (2014), mobile banking services are cheaper than traditional banking services. The awareness of local m-banking service is quite low and usage level is reasonable. A high percentage of respondents do not trust the security level of M -Banking services. According to Islam (2014), a key challenge with gaining user adoption of mobile banking and payments is the customer's lack of confidence in security of the services. Raju (2014), studied about influence of technology in banking. Among the MB-related problems, inconvenience of keyboard and small display of mobile phones, restricted amount of transaction and restricted delivery of services during off time are the major problems. Makongoro(2014), suggested that perceived risk, relative advantage and convenience are the determinant factors in influencing consumers' adoption decisions. It's been recommended that banks in Tanzania invest massively in mobile banking and other information technology innovations in

order to further promote efficient service delivery and increase adoption of mobile banking services. Malalakshmi, Kalaiyarasi (2016), studied on mobile phone banking adoption. The respondents were not bothered by the complexity of the technology, the mobile compatibility and mobile phone experience. Yadav (2016), shows that the influencing factors were significantly and positively related to the intention to use mobile banking services; financial risk was the only factor found insignificant. Bhatt A, Bhatt S (2016), m-banking customer in India is a young and literate male, belonging to the middle-income strata. The usage patterns of the customers suggest that as the frequency of transactions increases, people prefer the usage of ATMs. Security issues have deterred the customers from resorting to e-banking and m-banking options. Moreover, customers using m-banking find that the advantages lie in time-effectiveness, convenience, safety, operational simplicity and ease of navigation. These help in enriching their mobile-banking experience and have the potential to increase adoption of mobile banking. Agarwal, Mehrotra (2017), investigated the banking channel usage pattern of the Indian customers and it shows an increasing trend in the usage of mobile banking as a channel of banking, especially by the people in the age group of 46-60 years, with balance enquiry being the most common reason for using mobile banking. Accessibility is found to be the most important factor, whereas security is observed to be the least important in affecting customer's choice of a banking channel.

From the above reviews of both empirical and conceptual work, it is clear that different authors have approached various self-service technology-enabled financial information mediums including M-Banking in different ways in varying different levels of analysis. These different approaches helped in the emergence of more and more literature on the subject over the time. It gives an idea on extensive and diverse works on M-Banking.

III. Objectives Of The Study

- To investigate the important aspects of adoption of mobile banking in the Indian context.
- To ascertain the factors that influence the decision to use mobile banking.

IV. Research Methodology

This study is based on both primary and secondary data sources. It is based on data collected through Questionnaire with Mobile banking User. The methodology adopted in the present study is given under the following headings.

4.1 Research Design

The data can be grouped into two main categories – primary and secondary data. The secondary data have been compiled from newspaper, journals, magazines, web links and research papers. The primary data have been collected through Questionnaire with users of mobile banking.

4.2 Population

According to Saunders (2007) Population refers to full set of groups from which a sample is taken. According to Mugenda and Mugenda (1999) target population is the unit of whatever nature that a researcher indends to study. The study targeted 150 mobile banking users in Ernakulam district.

4.3 Sampling Strategy

150 questionnaires were distributed. According to Struwig & Stead (2001) "If a sample process has been correctly followed then the sample size of 150-200 can be considered acceptable and reflect the whole population." This study used a non – probability sampling methods. Hair et al (2003) suggested that, convenience sampling can help the researcher to complete large tasks in a short amount of time and cost effectively but suffer from bias due to the differences that exist in the target population. The sampling technique used in this study was convenience sampling.

4.4 Data Collection Instruments

The researcher used a questionnaire to collect primary data from the respondents of the Mobile banking users in Ernakulam district. Closed ended questions were used for the study. The closed – ended questions were developed on a five point likert scale ranging from 5 (strongly agree) to 1 (strongly disagree). Secondary data was collected from both unpublished and published data such as, articles from journals and internet which were related to the variables. To ensure validity of the research instruments, the instrument was presented to the supervisors who are research experts. This aided in ensuring that the instrument was well refined for data collection and eventual analysis.

4.5 Data Processing and Analysis

The analysis of data was done with the help of the Statistical Package for Social Sciences (SPSS). Descriptive statistics such as frequency tables were used to assess the demographic profile of the respondents to make the analysis more meaningful, clear and easily interpretable. The findings were presented using percentages, frequency and statistically generated tables. Regression analysis was used to show the relationship between mobile banking and customer adoption.

V. Data Findings And Discussions

5.1 Respondents Profile

TABLE 1: Demographic Profile of Respondents

Sl. No.	Groups	Class	Frequency	Percentage	Cumulative Percentage
		Male	77	51.3	51.3
1	Gender	Female	73	48.7	100
		Total	150	51.3 48.7 100.0 35.3 48.0 10.7 4.7 1.3 100.0 1.3 50.7 48.0 100.0 15.3 4.0 50.7 27.3 2.7 100.0 16 18 35.3 16 14.7 100.0 16 31.3 18.7 13.3	
		Upto 25 years	53	35.3	35.3
		26-35 years	72	48.0	83.3
2	A	36-45 years	16	51.3 48.7 100.0 35.3 48.0 10.7 4.7 1.3 100.0 1.3 50.7 48.0 100.0 15.3 4.0 50.7 27.3 2.7 100.0 16 18 35.3 16 14.7 100.0 16 31.3 18.7	94
2	Age	46-55 years	7	4.7	98.7
		Above 55 years	2	1.3	100.0
		Total	150	51.3 48.7 100.0 35.3 48.0 10.7 4.7 1.3 100.0 1.3 50.7 48.0 100.0 15.3 4.0 50.7 27.3 2.7 100.0 16 18 35.3 16 14.7 100.0 16 31.3 18.7 13.3 20.7 100.0 12.7 29.3 26 22.7 9.3	
		Up to plus two/Diploma	2	1.3	1.3
	0 1:0: .:	Graduate	76	50.7	52.0
3	Qualification	PG/Professional	72	48.0	100
		Total	150	100.0	
		Student	23		15.3
		Business	6	4.0	19.3
4	Occupation	Employee	76	50.7	70.0
4		Professional	41	27.3	97.3
		Others	4	2.7	100.0
		Total	150	100.0	
		Up to 15000	24	16	16
		15001-30000	27	18	34
_ ا		30001-45000	53	35.3	69.3
5	Monthly Income	45001-60000	24	16	85.3
		Above 60000	22	14.7	100.0
		Total	150	100.0	
		Less than 1yr	24	16	16
		1-2 years	47	31.3	47.3
	_	2-3years	28	18.7	66
6	Long	3-4years	20	13.3	79.3
		Above 4yeras	31	20.7	100.0
		Total	150	100.0	
		Every time	19		12.7
		Usually	44	29.3	42
_	D	Frequently	39		68
7	Period	Occasionally	34		90.7
		Rarely	14		100.0
		Total	150		

Table 1 shows the profile of respondents. The sample shows that the number of male (51.3%) respondents is higher than the number of female (48.7%) respondents. If we look at the age group, the majority of the respondents falls in the age group of 26-35 years (48%) followed by the upto 25 years (35.3%). If we combine these two age group, 83.3% respondents will fall under this category. The majority of the respondents were either graduate (50.7%) or post graduate (48%). This is clearly indicate the education lays an important and significant role in adoption of the mobile banking. On the basis of the income maximum respondents fall in the 30001-45000 category (35.3%) followed by 15001-30000 (18%). On the basis of period of use maximum respondents fall in the group of 1-2 years (31.3%) followed by the 2-3 years (18.7%). If we look at the periodicity of use, the majority of respondents are usually using mobile banking (29.3%) followed by frequently using (26%).

The profile of the respondents indicates they are young, educated and decently employed, which also the new generation who are tech savvy and wants the service at the click of the button. This generation has adopted the technology application as their way of life, which represent a significant opportunity to the banking sector to enhance their service by use of mobile, internet or other technological application.

5.2 Cronbach's Alpha Reliability Analysis

Table 2 shows the results of reliability analysis. To ensure the reliability of the measurement scales, Cronbach's alpha was used in the calculation. Where by a higher value of above 0.6 indicated that the variables were reliable while the values above 0.9 are regarded as most reliable but anything below 0.6 was regarded inconsistent with the reliability scales as according to George & Mallery,(2003) who suggested that in order for a scale to be reliable, the Cronbach's alpha value should be above 0.6. Thus the construct measures are deemed reliable.

TABLE 2: Reliability Analysis Results

Constructs	Cronbach's Alpha	N of Items
PU	.742	7
PEOU	.751	3
PS	.702	2
RT	.815	6
EFF	.765	4

5.3 Correlation Analysis

Pearson correlation coefficient was adopted to study the significant relationship between the constructs. The results shows the correlations are low, in which the values are not higher than 0.8 as proposed by Bagozzi (1994). This indicates that the constructs are distinct from one another and deemed as an acceptable level of discrimination. Table 5 shows the correlation analysis between variables.

TABLE 3: Pearson's Correlation coefficient between Research Variables

		pu	peou	ps	rt	eff	adop
	Pearson Correlation	1	.619**	.511**	.448**	.470**	.585**
Pu	Sig. (2-tailed)		.000	.000	.000	.000	.000
	N	150	150	150	150	150	150
	Pearson Correlation	.619**	1	.506**	.495**	.447**	.638**
peou	Sig. (2-tailed)	.000		.000	.000	.000	.000
	N	150	150	150	150	150	150
	Pearson Correlation	.511**	.506**	1	.410**	.470**	.435**
Ps	Sig. (2-tailed)	.000	.000		.000	.000	.000
	N	150	150	150	150	150	150
	Pearson Correlation	.448**	.495**	.410**	1	.708**	.456**
Rt	Sig. (2-tailed)	.000	.000	.000		.000	.000
	N	150	150	150	150	150	150
	Pearson Correlation	.470**	.447**	.470**	.708**	1	.452**
Eff	Sig. (2-tailed)	.000	.000	.000	.000		.000
	N	150	150	150	150	150	150
	Pearson Correlation	.585**	.638**	.435**	.456**	.452**	1
adop	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	150	150	150	150	150	150

^{**.} Correlation is significant at the 0.01 level (2-tailed).

5.4 Regression Analysis

The regression analysis is conducted to reveal how different factors affect the adoption of mobile banking. The main objective of regression analysis is to explain the variation in one variable (called dependent variable) based on the variation in one or more other variables (called independent variables). If multiple independent variables are used to explain the variation in a dependent variable, it is called multiple regression model. The output of the multiple regression analysis is used to test the hypotheses.

TABLE 4: Model Summary of Regression Analysis - Adoption of Mobile Banking

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.638a	.407	.403	.47429	
2	.682b	.466	.458	.45177	
3	.694°	.481	.470	.44672	1.782

a. Predictors: (Constant), peou

b. Predictors: (Constant), peou, pu

c. Predictors: (Constant), peou, pu, eff

d. Dependent Variable: adop

Table 5 shows that 40.3 per cent of variation (model 1) in adoption of mobile banking is explained by PEOU alone, 45.8 per cent of variation (model 2) is explained by PEOU and PU, and 47 per cent of the variation (model 3) is explained by PEOU, PU, and EFF.

The Durbin – Watson statistic test for autocorrelation. As a rule of Thumb, the value should be between 1.5 and 2.5 to indicate independence of observations (Garson, 2010). As shown in Table 5 the value of the test is 1.782 which indicates independence of observations.

ANOVA table showing the regression model fit presented in Table 6 shows that all the three models are statistically significant at 5 per cent significant level.

TABLE 5: ANOVA^a Table Showing the Regression Model fit - Adoption of MB

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	22.862	1	22.862	101.633	.000
1	Residual	33.293	148	.225		
	Total	56.155	149			
	Regression	26.152	2	13.076	64.068	.000
2	Residual	30.003	147	.204		
	Total	56.155	149			
	Regression	27.019	3	9.006	45.132	.000°
3	Residual	29.136	146	.200		
	Total	56.155	149			

^{*}Significance at 5 per cent level

TABLE 6: Coefficients^a Significance of PEOU, PU and EFF to Adoption of MB

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		В	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.678	.256		6.549	.000		
1	peou	.608	.060	.638	10.081	.000	1.000	1.000
2	(Constant)	.764	.334		2.290	.023		
	peou	.426	.073	.447	5.829	.000	.617	1.621
	pu	.401	.100	.308	4.015	.000	.617	1.621
	(Constant)	.662	.334		1.985	.049		
3	peou	.392	.074	.411	5.278	.000	.586	1.706
	pu	.342	.103	.263	3.327	.001	.570	1.754
	eff	.131	.063	.144	2.084	.039	.739	1.352

^{*}Significance at 5 per cent level.

All the Independent variables viz., PEOU (t=5.278, p=0.000), PU (t= 3.327, p = 0.001) and EFF (t = 2.084, p = .039) are statistically significant at 5 per cent significance level and hence hypothesis that PEOU, PU and EFF have no significant effect on adoption of mobile banking are rejected. PEOU, PU and EFF have positive effect on the adoption of mobile banking. The beta (β) coefficients give a measure of the contribution of each variable. Higher the beta value, the greater is the effect of independent variable on the dependent variable. PEOU has highest beta coefficient (β = 0.392) and therefore it has greater effect on adoption of mobile banking followed by PU (β = .342) and EFF (β = .131).

VI. Conclusion And Recommendations

The profile study of respondents revealed that majority of mobile banking users are males. It is also found that majority of the users are below the age of 35 years, well educated with graduate or postgraduate, employees, with monthly income between □15000 and □45000. Analysis on factors influencing the adoption of mobile banking that PEO, PU and EFF are push factors on adoption of mobile banking. These findings refer to the fact that customers use MB from the benefits they get in comparison to other banking delivery channels, especially banking at physical branches. These findings lead to the conclusion that when MB is perceived as easy to use, efficient and useful, adoption of mobile banking among customers would be greater. Practical implication of these results is that mobile banking service providers need to highlight the benefit of mobile banking among the customers and also make MB interface simple and easy to use. Based on the study findings, the researcher acknowledged different milestones that mobile banking has managed to change the way banking used to be conducted and therefore concluded that mobile banking is key for the socio-economic development of the country at large. It has brought services closer to the people thus making it easy to transact without delays and restrictions of time limits. Reflecting the findings it is recommended that since a number of respondents thought that mobile banking is not fully accessed anytime and anywhere due to the network non-availability in some parts of the country, it will be important for the banking sector in liaison with the mobile service providers to ensure that network coverage is all over the country in order to comfortably serve all corners of the country with mobile banking.

a. Dependent Variable: adop

b. Predictors: (Constant), peou

c. Predictors: (Constant), peou, pu d. Predictors: (Constant), peou, pu, eff

a. Dependent Variable: adop

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