# An Exploratory Study on Adoption and Use of SMS/Mobile Banking in India with Special Reference to Public Sector Banks

Dr. Garima Malik*, Mr. Kapil Gulati**

Banking through Mobile is crucial these days for those who are busy with their jobs and also for those who are employed. The study is sought to investigate the perceptions of banks and customers regarding the adoption of technology by the use of a survey conducted in NCR (Northern Capital Region) during Feb-March 2012. A sample of two Public Sector Banks was chosen including 300 Bank customers using mobile banking for past six months. Data was gathered through questionnaire followed by small discussion with customers and hence was analyzed using descriptive analysis like Factor Analysis and ANOVA which were applied for interpretation. The findings revealed that Mobile Banking services is still in its fancy. Evidence showed that accessibility and security were the major hurdles to the adoption of SMS banking. The study recommends that two banks conducted an awareness campaign followed by training programme for their customers.

**Key words:** Customer Perception, Adoptability, SMS banking, Technology.

## Introduction

The Introduction of Technology in the Banking sector actually began in 1950s and it became a part of banking industry in 1970s with the introduction of Automated Teller Machines (ATM). In 1980, Mobile Phone Banking and in late 1990, Internet Banking (I-banking) came in to existence. Since then, the IT revolution in the Banking industry has helped to cope with the exponential growth in the number of transactions and to provide improved customer service.

Mobile banking (also known as M-Banking, SMS banking etc) is a term used for performing balance checks, account transactions, payments etc via a mobile phone. Today Mobile Banking is most often performed via SMS or the Mobile Internet but it can also be accessed by consumers through special programs called "Clients Downloaded Programs" to their respective mobile device. SMS banking is the delivery of Banking and Financial services ranging from stock market transactions, management of bank accounts and accessing customized information via telecommunication devices (Tiwari and Buse, 2007). With the rapid increase in technology development in the Mobile Industry, the applications of wireless technology are also increasing with a higher pace of which Mobile Phones are just one example which has enabled various Banks with the opportunity to provide their services anytime and anywhere to the consumers (Birch 1999). The need for mobile banking has given considerable attention by many researchers such as Koivumaki and Salo, 2002; Mattila, 2003; Suoranta and Mattial, 2004; Laforest and Li 2005; Riivari, 2005 to explore and study on this segment. Silicon India classifies mobile transactions as per in Table 1

**Table 1: Mobile Transaction Classification**

| | Push Based | Pull Based |
|---|---|---|
| **Transaction Based** | | * Fund Transfer<br>* Bill Payment<br>* Other services like share trading. |
| **Enquiry Based** | * Credit/Debit Alerts.<br>* Minimum Balance Alerts<br>* Bill Payment Alerts | * Account Balance Enquiry<br>* Account Statement Enquiry.<br>* Cheque Status Enquiry.<br>* Cheque Book Requests.<br>* Recent Transaction History. |

Source: TRAI Report 2011

*Assistant Professor, Amity Business School, Amity University, Noida
**Student MBA-M&S, Amity Business School, Amity University, Noida

With Mobile technology, banks are offering a wide range of services (Table 1) to their customers, anywhere and anytime giving them the opportunity to make full and optimal use of the M-commerce in the Banking Sector. Mobile Banking is gaining popularity in India, mainly because Cell phone usage has grown tremendously and people are becoming more and more tech-savvy with the changing time and the times to come. Mobile banking saves cost, time, effort of going to the bank, standing in queues etc.

SMS (Short Messaging Service) Banking is one of the Information and Communication Technologies (ICTs) that has revolutionized the Banking sector alongside other Electronic Banking technologies and many businesses are launching Mobile services ranging from Information Communication to Transaction Processing. With the rapid increase in technology development in the Mobile Industry, the applications of wireless technology are also increasing with a higher pace of which Mobile Phones are just one example which has enabled various Banks with the opportunity to provide their services anytime and anywhere to the consumers (Birch 1999) and it illustrates and stresses that Online Banking will emerge as a competitive and money saving tool rather than a revenue earner as it has greater flexibility and also low costs on Business transaction. The total number of SMS sent worldwide tripled between 2007 and 2010, from an estimated 1.8 trillion in 2007 to a staggering 6.1 trillion in 2010. In other words, close to 200000 text messages are sent every second.

The field of Research is comparatively new in India. In fact, the potential of SMS banking is very obvious in India. As noted earlier, a dramatic increase in the number of mobile usages among India can become as a yardstick to promote SMS banking as part of Bank services. India had 884 million subscribers (73 percent of population) in November 2011 and it went up by 154 million from November 2010 (as per the report of TRAI, Jan 2012) out of which 66% of mobile subscribers are the urban dwellers.

**Literature Review**

**Schofield & Kubin 2002**: "The Telecommunications industry worldwide has scrambled to bring what is available on networked computers to mobile devices". According to this research paper, Presently, the use of Electronic Banking is considerably high and as more and more users sign up for electronic-banking, the maturity as regards remote banking

(i.e. banking outside the banking hall) is on the increase.

**Laforet & Li (2005)**: conducted a research on "Present and future of Internet Banking in China" and has produced interesting findings in the field of Mobile and Internet Banking. The important findings revealed that respondents' level of education was not found to influence online and mobile banking adoption in China. In fact, as far as mobile banking is concerned, lack of understanding of its benefits was found. At least among the urban population survey, 33 percent used online banking and 14 percent used mobile banking. Thus, the level of awareness of such service is low in China.

**Howcroft et al (2002)** revealed that younger consumers value the convenience or time saving potential of online and mobile banking more than older consumers. Younger consumers also regarded the lack of face-to-face contact as less important than older consumers. Another important finding as highlighted by Howcroft in the year 2002 was that the education levels of respondents did not affect the use of telephone or online banking.

**Al-Ashban et al.s (2001)**: "Adaptation and the use of Internet Banking in the Sultanate of Oman." This research paper was designed to investigate customer adoption of telephone-based banking. Generally, the study discovered that 87 percent of the respondents have an education higher than diploma, which was also parallel with the use of the service to be 72 percent during the past three years, 40.2 percent of them having started using tele-banking services less then one years. Other studies by Suoranta and Mittila (2004) and Riivari (2005) claimed that mobile banking were very sophisticated and considered as the newest channels to conduct banking electronically.

According to study reported by **SKMM (2004)**, a mobile phone was considered as a necessity good instead of communication tool. Findings indicated that younger user equal to 12.3 percent of total utilization, which is beyond the respondents who are aged 50(9 percent). Younger user for this study means teenagers (aged 15-25) consisting of secondary students and university students. Another important finding revealed that Malay teenagers were higher user among the other races comprising of 47.50 percent compared to Chinese (32.4 percent), India (6.9 percent) and other bumiputra (5.4 percent).

**Research Objectives**

This study was undertaken to discover the factors that affect the usage of SMS/Mobile Banking in India and to identify why people have not fully accepted it despite its advantages. Therefore, its objectives were:

- To gain insight into SMS/Mobile banking users'/non-users' perceptions, requirements and problems.
- To findout the factors influencing the use of SMS/Mobile banking.
- To help banks in making SMS/Mobile transactions user friendly and satisfactory

**Research Design**

The study was an Exploratory Research which was sought to investigate the adoption and use of SMS banking which is a new phenomenon in the Indian Banking sector. The research targeted public sector banks i.e those that are offering the service of SMS/Mobile banking. For this study, two public sector banks were selected on the basis of the market share i.e

"State bank of India (SBI)" and "Punjab National Bank (PNB)". The bank staffs were the main source of information for preparing the questionnaire on the SMS/Mobile banking services offered, the level of adoption of the service, volume of SMS transactions, security issues of application and set up requirement among the information sought. The sample size includes 300 respondents, as the set of questionnaires were given to them randomly. A structured questionnaire was adopted and modified from previous studies on this topic. The questionnaire contains two sections: the first section was designed to gather the respondents' personal and demographic information. The second part was designed to gather the respondents' awareness and factors on those the questionnaire was pre-tested with a sample of 30 customers of two commercial banks which was modified to increase its clarity and applicability. Data collected was coded before analyzing. Respondents' profile was presented first followed by the section SMS banking services adoption, befits of SMS banking, challenges / hurdles of SMS banking.

**Demographics Characteristics**

The sample consisted of 300 customers of three banks those offering the SMS Banking services from last two years onwards. The distribution is illustrated in table 1 below.

**Table 1: Demographic Characteristics of the Respondents**

| Variable | Frequency | Percentage |
|---|---|---|
| **Age** | | |
| 20 years and under | 65 | 7.5 |
| 21-25 years old | 145 | 48.3 |
| 26-30 years old | 70 | 27.0 |
| 31 years old and above. | 20 | 38.0 |
| **Gender** | | |
| Male | 194 | 64.66 |
| Female | 106 | 35.33 |
| **Education** | | |
| High school | 9 | 3 |
| Graduate | 67 | 22.33 |
| Post graduate | 224 | 74.66 |
| **Household Income** | | |
| 1-3 lacs | 35 | 11.66 |
| 3-5 lacs | 89 | 29.66 |
| 5-8 lacs | 140 | 46.66 |
| 8 and above | 36 | 12 |

**Source: Field Data**

Above data represents that the respondents using the service are basically in the age group of 21-25 (48.3%) and then 31 years old and above (38%). The fact has to be noticed that amongst the respondents, approx 65% were male respondents' and rest 35% were female respondents'. 74% of respondents had got post graduate education, 22% are Graduate and 3% respondents had done High School Education.

**Analysis and Results**

Data collected was analyzed through series of validated tools and procedure. For simplifying the coding procedure, codes were assigned to two sample banks. (Table 2)

Table2: The name Assigned to Banks

| Coding | Name of the Bank |
|---|---|
| Bank1 | State Bank of India |
| Bank2 | Punjab National Bank |

**SMS /Mobile banking Services** : Respondents from both the banks were asked to select the services of SMS/Mobile banking, which they are using for their respondents.

**Table 2: Uses of SMS/Mobile Banking Services**

| Services | Bank1 | Bank2 |
|---|---|---|
| Periodic Balance Report | 150 (100%) | 150 (100%) |
| Fund Transfer | 87 (58%) | 55 (36%) |
| Electronic bill payment | 80 (53%) | 75 (50%) |
| Mobile Recharge | 45 (30%) | 55 (36%) |
| Balance Enquiry | 68 (45%) | 74 (49.33) |
| Mini Statement | 40 (26%) | 28 (18%) |

Above table shows the percentage of Bank Customers and the Services availed by them. 100% respondents of both the banks were used the Periodic Balance Report service and this report was sent by the bank on weekly basis. Second popular service is of the Electronic Bill Payment that is most frequently used service by 53% respondents of Bank1 and 50% respondents of Banks2. Fund Transfer Service was used by 58% respondents of Bank1 but only 36% of respondents of Bank2 used this service. On an average 50% of respondents of both the banks used the Balance Enquiry Service. Other Automated Service which includes Mobile Recharge, Mini Statements does not have a huge penetration of usage by the respondents.

**Acceptability of Mobile/SMS banking services:** Respondents were asked whether they are familiar with benefits of mobile banking services. They had the options to rate in the form of a 'Yes' or a 'No'. Researcher also tried to findout if there is any association between the acceptability of service with the age of respondents.

**Table 3: Acceptability Verus Ages**

| | Bank1 | | Bank2 | |
|---|---|---|---|---|
| Ages | Yes | No | Yes | No |
| 20 years and under | 35 | -- | 30 | -- |
| 21-25 years old | 69 | 26 | 50 | -- |
| 26-30 years old | 24 | 6 | 30 | 10 |
| 31 years old and above. | 5 | 6 | 8 | 2 |

Ho: There is no significant difference in acceptability of mobile banking services among customers of both the banks.

H1: There is significant difference in acceptability of mobile banking services among customers of both the banks

Table 4: Chi-Square Test

| | Value | Df |
|---|---|---|
| $\chi^2$Calculated Value | 10.933 | 4 |
| $\chi^2$ Value | 9.488 | 4 |

Above Table reveals that calculated $c^2$ that value is more than the tabulated value (i.e.,9.488 for 4 degree of freedom at 5% level of significance). Therefore we reject the null hypothesis. Hence, it can be concluded that significant difference exist for acceptability of mobile banking services among the customers of both the banks.

**Factors influencing the usues of Mobile/SMS Banking:** Data were analyzed by conducting Factor Analysis for dimension reduction and to findout relevant factors. Bartlett's Test of Sphericity indicated a chi-square value of 6423.212 with 160 degree of freedom at significance level of .000, thereby confirming that the population correlation matrix is not an identity matrix. Further, a high KMO value of 0.856(>0.5) confirmed the appropriateness of use of factor analysis for identification of relevant variables.

Table 5 Rotated Component Matrix (Loading Criteria>0.5)

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| Mobile banking services like customers having ATMs in their pocket | | | | .914 | | | |
| SMS banking services Save the time also | | | | | .856 | | |
| Through these services we get Accurate Information | .730 | | | | | | |
| We get prompt services | | .782 | | | | | |
| Banks Provide security for threats to loose information | | .617 | | | | | |
| Banks provide variety of services through mobile banking | | | | .831 | | | |
| Easy to interact with bank | | | .873 | | | | |
| Bank provides good training programme to their customers | | | .756 | | | | |
| Availability of service any time | | | .870 | | | | |
| Banks are not charging extra fees for this service | | | | | .888 | | |
| Customers having more control on their money | | | | .743 | | | |
| Banks send time to time information of their services | .856 | | | | | | |

Rotation Method: Varimax and Kaiser Normalization

The factor analysis resulted in five factors, which are appropriately named in line with the factors that motivate the adoption of Mobile / SMS Banking Services which are shown together with the factor loadings in table 6.

**Table 6: Factor analysis**

| Factor Number | Name of Dimension | Statement | Factor Loading | |
|---|---|---|---|---|
| F1 | Accuracy | Through these servi ces we get Accurate Information | .730 | 13.35 |
| | | Banks send time to time information of their services | .856 | |
| F2 | Security | We get prompt services | .782 | 9.96 |
| | | Banks Provide security for threats to loose information | .617 | |
| F3 | Convenience | Easy to interact with bank | .873 | 12.86 |
| | | Bank provides good training programme to their customers | .756 | |
| | | Availability of service any time | .870 | |
| F4 | Control & Accessibility | Banks provide variety of services through mobile banking | .831 | 11.08 |
| | | Customers having more control on their money | .742 | |
| | | Mobile banking services like customers having ATMs in their pocket | .914 | |
| F5 | Cost | SMS banking services Save the time also | .856 | 10.42 |
| | | Banks are not charging extra fees for this service | .888 | |
| | | Ease of Navigation in the bank site | 0.608 | |

Thus the pertinent factors which seem to motivate the adoption of mobile/sms banking can be summarized as accuracy, security, convenience, control-accessibility and cost.

**Hypothesis Testing**

The data was further subjected to ANOVA testing for validation of hypothesis and also indepth analysis of the variance towards perception of the customers with respect to their banks.

Ho: There is no significant difference among the customers' of two banks regarding the intentions for using the mobile/SMS banking services.

Data related to measurement of customers' intentions for using the services was subjected to ANOVA test in order to analyze the variation in perceptions of customers' of the selected banks. The following table gives the ANOVA of the five factors that motivate the uses of these services with reference to their banks. It is clear from the significance column (p values) that in terms of security and cost, the supposition that two bank customers are not perceived similar, is rejected, indicating towards the fact that two bank customers have different views for these features, hence hypothesis is rejected.

In case of accuracy, convenience, control and accessibility given by the bank, all the customers are perceived similar to each other and hence hypothesis is accepted.

| | | Sum of Square | Df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| Accuracy | Between groups | 25.106 | 3 | 7.183 | 5.267 | .000 |
| | Within Groups | 1345.815 | 1054 | 1.137 | | |
| | Total | 1370.921 | 1057 | | | |
| Security | Between groups | 23.546 | 3 | 6.515 | .683 | .500 |
| | Within Groups | 1078.779 | 1054 | 1.021 | | |
| | Total | 1102.325 | 1057 | | | |
| Convenience | Between groups | 23.127 | 3 | 6.312 | 6.523 | .000 |
| | Within Groups | 1078.333 | 1054 | 1.210 | | |
| | Total | 1101.46 | 1057 | | | |
| Control & Accessibility | Between groups | 22.184 | 3 | 7.728 | 7.754 | .000 |
| | Within Groups | 1017.108 | 1054 | 1.876 | | |
| | Total | 1039.292 | 1057 | | | |
| Cost | Between groups | 19.156 | 3 | 6.055 | 6.317 | .100 |
| | Within Groups | 1458.741 | 1054 | 1.500 | | |
| | Total | 1477.897 | 1057 | | | |

POST HOC TEST LSD Test

Once it was determined from ANOVA table that differences do exist among the means of two banks, Turkey's HSD test, which is a post hoc test, was used to determine the means that differ. Turkey's HSD was designed for a situation with equal sample sizes per group, but can be adapted to unequal sample sizes as well (the simplest adaptation uses the harmonic mean of n-sizes as n*). This test identifies homogenous subsets of means that are not different from each other at an alpha level of 0.05.

Table: Tukey's HSD Homogenous Subsets for Accuracy of Services

| Banks | N | Subset for alpha |
|---|---|---|
| | | 1 |
| Bank 1 | 150 | 5.0364 |
| Bank2 | 150 | 4.7885 |
| Means for groups in homogenous subsets are displayed | | |

In case of accuracy of SMS/Mobile banking services, Bank1 customers got more accurate services as compared to bank2 customers.

Same test was applied for the cost of service factor for analyzing the variation among the services of two banks.

Table: Tukey's HSD Homogenous Subsets for Cost of Services

| Banks | N | Subset for alpha |
|---|---|---|
| | | 1 |
| Bank 1 | 150 | 5.0686 |
| Bank2 | 150 | 4.2983 |
| Means for groups in homogenous subsets are displayed | | |

It can be found from the above table that there is significant difference among the two banks for charging the cost of services. Bank 1 services are more costly as compared to bank 2 services.

**Conclusions & Implications:**

Around the globe, various initiatives use the mobile phone to provide financial services to those without access to Traditional Banks. It has become impetrative for the banks to adopt such technologies and strategies which ensure their success. As a result, the banks are trying to develop an understanding about their customers by analyzing their behavior regarding the services. The findings of the present study convey that the banks must concentrate in not only providing the core services through Mobile Banking but also improving the quality of the services that leads to Customer Satisfaction.

The research findings confirmed that SMS/Mobile Banking is an effective banking and financial service delivery channel. Results clearly show that all the respondents of both the Banks were using the Periodic Balance Service, further Fund Transfer and Electronic Bill Payment service was most popular among the Bank customers. Since acceptability of SMS/Mobile banking significantly differ among the Bank customers and hence it was noted that the major challenges in front of Banks were services like 'poor acceptance among customers', 'security concerned', etc.

This study clearly points out on the factors influencing the usage of SMS/Mobile Banking after analyzing the data through Factor Analysis, from which five factors were found those were 'accuracy', 'security', 'convenience', 'control & accessibly' and 'cost'. These factors were overloaded by 13 variables. Therefore keeping in the mind that these factors having critical importance for the banks, they should focus upon for positioning of services in the market in such a manner that these Technological/Innovative services are highlighted effectively among the Banking customers. Further analysis has clearly pointed out that customers of both the bank perceived the factors in a similar way except two factors 'accuracy' and ' cost of service'. After analyzing the variation on two factors, point to be noted is that on both the factors, Bank1 (State Bank of India) has higher mean as compared to Bank2 (Punjab National Bank).

Finally it can concluded that SMS/Mobile Banking services are gaining popularity among the users day by day but still banks have the potential of increasing its usage for customers. However, lack of Regulations for Electronic Banking in India remains a setback for mobile banking which needs to be addressed to ensure customer trust and to make it more effective in the times to come.

**References**

Al Ashban, A., & Burney, M.A (2001), "Customer adoption of tele-banking technology: The case of Saudi Arabia Journal of Bank Marketing", Vol.19, No.5, pp.191-201.

Brich, D.G.W.(1999), "The interest isn't the only digital channel to consumers", Journal of Internet Banking and Commerce, Vol.4,No.1

Howcroft ,B., Hamilton, R.,& Hewer,P.(2002), "Consumer attitude and the usage and adoption of home-based banking in the United Kingdom", International Journal of Bank Marketing, Vol.20,No.3,pp111-21

Laforet, S., & Li,X.(2005), "Consumer attitudes towards online and mobile banking in China", International Journal of Bank Marketing, Vol.23.No.5,pp.362-380

Riivari , J.(2005), "Mobile banking: A powerful new marketing and CRM for financial services companies all over Europe", Journal of Financial Services Marketing, Vol.10,No.1 ,pp.11-20

Suoranta, M.,& Mattila,M.(2004), "Mobile banking and consumer behaviors: New insights into the diffusion pattern", Journal of Financial Service marketing, Vol.8,No.4, pp.354-366

http://www.skmm.gov.my/index.php?c=public&v=art_view &art_id=817,

Featuring the hand phone User Survey , 2004.