A FACTOR ANALYSIS APPROACH TO CUSTOMERS PERCEPTION TOWARDS INHIBITING DRIVERS OF MOBILE BANKING TECHNOLOGY-ENABLED FINANCIAL SERVICES

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ABSTRACT

In India, M-Banking system provides transaction and enquiry based financial services to their customers at low cost per transaction compared with branch banking, ATM banking and internet banking. Reserve Bank of India was issued first guidelines to the banks were October'2008 regarding M-Banking. The aim of this empirical research paper is to determine the main reasons for not using M-Banking based on the customer perception. In order to collection of primary data through the questionnaire-cum-interview schedule from the 357 bank customers of public and private sector banks in Tamilnadu State, India using stratified disproportionate random sampling technique. The collected primary data tested with the help of factor analysis and it is determine that sufficient guidance is not available, high level risk, possibility of errors, spend more time, small display size, benefit is not available and Preference of other financial information medium were revealed to be the main reasons for not using M-Banking technology-enabled financial services.

Keywords: Information technology, Mobile banking, Internet banking, ATM, Tele- banking

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I. INTRODUCTION AND EXECUTION OF THE STUDY

1.1Introduction

In recent technological advancement in the financial services has had a heavy impact on traditional bank especially Mobile Banking (M-Banking). It gets current development among the various technological transformation of the banks like card banking, internet banking, ATMs, tele-banking etc. Presently, mobile technology has given potential for banks regarding customers' expectations. The changes that mobile technologies have brought to banking are enormous in their impact on officers/employees, and customers of banks. Advances in mobile technology are allowing for delivery of financial products and services more conveniently and effectively than traditional banks. Rapid access to important financial information and the ability to act quickly and effectively will distinguish the successful banks of the future. The bank gains a vital competitive advantage by having a door marketing of their financial products and accountable of customer service environment and new, streamlined business processes.

1.2 Present Scenario of Mobile Phone and Execution of M-Banking in the Banking Sector

Improvements in wireless technologies and increased uptake of advanced mobile handsets have led to a growing trend in M-Banking activities on a global scale including in India. The wide penetration of mobile phones by the Indians, the overall stability of mobile communication technologies, and the positive experiences with mobile commerce have made mobile solutions applicable for a variety of financial services. India's population is around 1.21 billion. At the end of 2009, the total number of mobile users in India was more than 500 million. As the number of mobile phone users is increasing and its reflected usage of various mobile based services are also increasing. According to Information and Communication Technology statistics in the year of 2000, the number of mobile cellular subscribers is 3.58 million and it was growing at 525.09 million in the year 2009 with tremendous development rate and the number of mobile phones is 43.39 per hundred people. As on 31st January'2011, the number of mobile phone subscribers in India stood at over 771.18 million. It has emerged as the second largest market after China. There are a number of features in the execution of M-Banking that make it an ideal platform for improving the access to and delivery of banking services. This include greater accessibility, low cost of mobile devices and low tariffs, low training costs, multiple access channels for services, real time monitoring, and easy and effective adaptability. When the customers evaluate the quality of the service from banking institution, at the time they take

technologies for conduct financial transaction. At the end 1980, the deregulation process was gaining momentum with the growing high-tech sector in India. The first bank to provide mobile banking facilities in India was ICICI bank in the year 1999, followed by HDFC bank and IDBI bank. In October'2012, seventy four banks (Refer Table-1) permitted to provide M-Banking Service in India.

1.3 M-Banking

M-Banking is a term used for performing balance checks, account transactions, payments, credit applications etc through a mobile device such as mobile phones. Present days m-banking is most often perform via SMS or mobile Internet, but can also be used by special programs called clients downloaded to the mobile device.

1.4 Mobile Banking Business Models

A wide spectrum of M-Banking models is evolving. It helps to retail bank services that process financial transactions on behalf of the banks. These models different primary on the question that who will establish the relationship (account opening, deposit etc.) to the end customer, the bank or non- bank/telecommunication company. Another difference lies in the nature of agency agreement between bank and the non-bank models of branches banking can be classified into three broad categories-banks focused, bank-led and non-bank led.

1.4.1 Bank-led-model

The bank-led model offers a distinct alternative to conventional branch-based banking in that customer conducts financial transactions at a whole range of retail agents (or through mobile phone) instead of at bank branches or through bank employees. This model promises the potential to substantially increase the financial services outreach by using a different delivery channel (retailers/ mobile phones), a different trade partner (telecommunication / chain store) having experience and target market distinct from traditional banks, and may be significantly cheaper than the bank-based alternatives. The bank-led model may be implemented by either using correspondent arrangements or by creating a JV between Bank and Telecommunication/non-bank. In this model customer account relationship rests with the bank

1.4.2 Non-bank-led model

The non-bank-led model is where a bank has a limited role in the day-to-day account management. Typically its role in this model is limited to safe-keeping of surplus funds.

1.4.3 Bank-focused model

The bank-focused model emerges when a traditional bank uses non-traditional low-cost delivery channels to provide banking services to its existing customers.

1.5 Position of M-Banking services in India

The performance of M-Banking services shows in the month of July'2012 is 3705690 volume of transactions and its value is Rs. 3.38 billion but July'2011 is 1744691 volume of M-Banking transaction and it value of Rs. 1.20 billion.

Table – 1: Name of bank approved for M-Banking

Allahabad Bank	Catholic Syrian Bank Ltd.	ING Vysya Bank Limited	Shreyas Gramin Bank
Andhra Bank	Central Bank of India	Jammu & Kashmir Bank Ltd	South Indian Bank Ltd.
A P Mahesh Co-op. Urban Bank Ltd.	Citi Bank N.A.	JanataSahakari Bank Ltd.	South Malabar Gramin Bank
Axis Bank Limited	City Union Bank Limited	Jhabua- Dhar Kshetriya Gramin Bank	Standard Chartered Bank
Bank of America NA	Corporation Bank	JP Morgan Chase Bank NA	State Bank of Bikaner & Jaipur
Bank of Baroda	Dena Bank	Karnataka Bank Limited	State Bank of Hyderabad
Bank of India	Deutsche Bank AG	KarurVysya Bank Ltd	State Bank of India
Bank of Maharashtra	Development Credit Bank Ltd	Kotak Mahindra Bank Limited	State Bank of Mysore
Barclays Bank PLC	FirstRand Bank Ltd.	Nainital Almora Kshetriya Gramin Bank	State Bank of Patiala
Baroda Gujarat Gramin Bank	HDFC Bank Limited	Oriental Bank of Commerce	State Bank of Travancore
Baroda Rajasthan Gramin Bank	ICICI Bank Limited	Pallavan Grama Bank	Syndicate Bank
Baroda Uttar Pradesh Gramin Bank	IDBI Bank Ltd.	PragathiGramin Bank	Tamilnad Mercantile Bank Ltd.
Bassein Catholic Co-op. Bank Ltd.	Indian Bank	Punjab National Bank	The Cosmos Co-operative Bank Ltd.
BNP Paribas	Indian Overseas Bank	Punjab & Maharashtra Co-op. Bank Ltd.	The Development Bank of Singapore Limited (DBS Bank Ltd.)

Canara Bank	IndusInd Bank Limited	Punjab & Sind Bank	The Dhanlaxmi Bank Limited
The Dombivli Nagar iSahakari Bank Ltd.	The Lakshmi Vilas Bank Ltd.	The Thane Janata Sahakari Bank Ltd.	Vijaya Bank
The Federal Bank Limited	The Ratnakar Bank Ltd.	UCO Bank	Yes Bank Limited
The Greater Bombay Co-operative Bank Ltd.	The Royal Bank of Scotland N.V.	Union Bank of India	
The Hong Kong and Shanghai Banking Corporation Ltd.	The Saraswat Coo-op Bank Ltd.	United Bank of India	

1.5 Statement of the problem

M-Banking services encourages to permit the unbanked to avail of financial services, reduce the administrative cost of the banks, more business demand, time-saving purpose, reduce the occupational stress of the employees and speed of delivery in financial products are to be influenced to the implementation of mobile phone technology based financial information system in Banking industry of Indian context. But, these advantages are completely available when the number of registered customers under M-Banking and their usage is increased. Now, M-Banking customers are very low in the Indian context, for that reason the researcher has undertaken this research work titled "A Factor Analysis Approach to Customers Perception towards Inhibiting Drivers of Mobile Banking Technology-Enabled Financial Services" with the raising of following question

What is the reason for not using M-Banking?

1.6 Objective of the study

The primary aim of the study is to determine the main reasons for not using M-Banking services by the customers

II. RELATED LITERATURES

Perception of cost, risk, low perceived relative advantage and complexity were revealed to be the main reasons behind the reluctance to use the M-Banking service among the various group of Brazilian Internet users (Cruz, P., et.al), security code and fees charged by banks are the inhibiting factors for non-adoption of M-Banking among the university students in Taiwan

(Yang, A.S.,). Security is the major obstacle among the users of M-Banking compared with expensive and uncomfortable under M-Banking based financial services in German (Tiwari, R., et.al).

III. METHODS AND MATERIALS

The descriptive research design is most appropriate for current research work and this study was using following methodology.

3.1 Data and Source

The present study depends on the primary and secondary data. Primary data helps to determine the reasons for not using M-Banking by the customers. In addition, secondary data helps to develop theoretical concept of this research work. The primary data were collected from customers who are operating their financial transaction in the public and private sector bank branches of Tamilnadu State. Secondary data collected from authorized bank website, journals, books and other websites.

3.2 Questionnaire-Cum-Interview schedule

The required primary data collected from bank customers in Tamilnadu state through the questionnaire-cum-interview schedule. This study totally distributed 500 questionnaires to the bank customers in Tamilnadu. Out of a total of 500 questionnaires distributed, 480 were collected back. The bank customers were provided their responses against with a list of twenty one statements regarding reasons for not using M-Banking. In relation to these statements, the customers were asked to indicate the degree of agreement against each statement through 5-point Likert scaling technique from strongly agree to strongly disagree based on the proper scoring technique.

3.3 Sampling area and Framework

Tamilnadu state is sampling area. The distribution of questionnaires to the bank customers restrict in two Districts via State capital of Chennai and South Indian Manchester of Coimbatore. The customers selected from various bank branches using stratified disproportionate random sampling method. Finally, 357 customers were included in the study with a response rate of 71.4 percent.

3.4 Period of Study

The primary data were collected during the period from January to June'2011.

3.5 Framework of Analysis

The collected primary data analyzed with the help of multivariate techniques of factor analysis based on the suggestion given by Kaiser-Meyer-Olkin Measure of sampling adequacy and Bartlett's Test of Sphericity. The Kaiser-Meyer-Olkin value comes out to be 0.633 and it is higher than the 0.5. In addition, Bartlett's Test of Sphericity value (3876.684) shows with the asymptotic significant value of chi-square value (.000) which is less than the one percent level of significant value (0.01). These tests are suggest that there is a high relationship among the selected variables for conducting factor analysis.

IV. ANALYSIS AND INTERPRETATION

4.1 Customers perception towards reasons for not using M-Banking technology-enabled financial services

This section determines the reasons for not using M-Banking services through the factor analysis with the help of SPSS 13.0. It is summarize the several reasons into smaller sets (factors) of linear composites that preserved most of the original information in the data set. The data was subjected to principal component analysis, a method categorized under the broad area of factor analysis. The large number of reasons reduced to seven principal components through varimax rotation (Table – 2). Factor analysis helps to determine the factors (grouped reasons) for not using M-Banking services.

Table - 2: Reasons for not using M-Banking

Reason	I	II	III	IV	V	VI	VII	Communalities
O1	0.757	0.188	0.080	0.179	-0.295	-0.003	-0.017	0.734
O2	0.201	0.758	-0.032	0.258	-0.374	0.039	-0.173	0.854
O3	0.036	0.122	0.211	0.125	0.043	0.863	0.020	0.823
O4	-0.045	0.142	0.821	0.244	-0.036	0.018	-0.223	0.808
O5	0.186	-0.054	0.193	0.846	0.153	0.105	0.070	0.830
O6	0.854	0.010	0.024	0.006	0.052	0.059	0.074	0.742
O7	0.108	0.766	0.161	-0.215	0.050	0.022	0.119	0.687
O8	-0.232	-0.019	-0.062	0.072	-0.147	-0.012	0.789	0.707
O9	0.241	-0.085	0.715	0.032	0.133	0.231	0.149	0.671
O10	0.014	0.021	0.196	0.454	0.687	0.162	0.086	0.751
O11	0.732	0.165	-0.051	0.145	-0.002	-	-0.055	0.596

						0.074		
O12	0.175	0.779	-0.006	-0.192	0.252	0.127	0.102	0.764
O13	0.140	-0.080	-0.172	-0.112	0.154	-0.174	0.661	0.559
O14	-0.112	-0.132	0.493	-0.176	0.633	0.187	-0.041	0.741
O15	-0.152	0.015	0.015	0.270	0.804	-0.051	-0.048	0.748
O16	0.796	0.165	0.114	0.134	-0.252	0.053	0.023	0.758
O17	0.034	0.825	-0.072	0.052	-0.124	0.039	-0.237	0.763
O18	-0.019	0.047	-0.020	0.085	0.063	0.870	-0.192	0.808
O19	-0.267	0.035	0.680	0.002	0.201	-0.028	-0.240	0.633
O20	0.123	-0.110	-0.009	0.856	0.152	0.107	-0.112	0.808
O21	0.765	-0.014	-0.265	-0.075	0.110	0.002	-0.138	0.693
Eigen value	3.433	2.623	2.170	2.089	2.062	1.704	1.393	15.475
% of variance	16.346	12.492	10.335	9.948	9.819	8.115	6.635	73.690
Cum. % of variance	16.346	28.838	39.173	49.121	58.941	67.056	73.690	

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Table 2 gives the rotated factor loadings, communalities, eigen values and the percentage of variance explained by the factors. Out of the twenty one reasons, 7 factors have been extracted and these 7 factors put together explain the total variance of these reasons to not using M-Banking services to the extent of 73.69%. In order to reduce the number of factors and enhance the interpretability, the factors are rotated. The rotation increases the quality of interpretation of the factors. There are several methods of the initial factor matrix to attain simple structure of the data. The varimax rotation is one such method to obtain better result for interpretation is employed and the results are given in Table 3.

Table - 3: Clustering of Parameters into factors on reasons for not-using M-Banking

Factor	Reasons for not using M-Banking	Rotated factor loadings

I - 16.346	O6 (Sufficient guidance is not available)	0.854
	O16 (My cell phone is inappropriate for banking operations)	0.796
	O21 (Network problems)	0.765
	O1 (The mobile internet/Short Message service is expensive)	0.757
	O11 (The amount to be transacted not big enough)	0.732
II- 12.492	O17 (There is a high level risk in mobile banking)	0.825
	O12 (I did not know about mobile banking)	0.779
	O7 (I do not like to use mobile phone in banking/latest technology-enabled banking services)	0.766
	O2 (The bank's mobile banking service has high fees)	0.758
III - 10.335	O4 (Possibility of errors)	0.821
	O9 (Use has been dissatisfactory)	0.715
	O19 (I like the mobile banking with regional language)	0.680
IV - 9.948	O20 (I do not want to spend more time using the mobile phone)	0.856
	O5 (Possibility of misuse of financial information)	0.846
V - 9.819	O15 (Display size of the mobile phone is small)	0.804
	O10 (The cost of purchasing mobile device suitable for mobile banking operations is too high)	0.687
	O14 (Its use is too complicated)	0.633
VI - 8.115	O18 (There are no benefits in using mobile banking)	0.870
	O3 (Slow data transmission)	0.863
VII - 6.635	O8 (I prefer to do my transactions by other ways)	0.789
	O13 (It requires more knowledge and learning)	0.661

Seven factors were identified as being maximum percentage variance accounted. The 5 reasons O6, O16, O21, O1 and O11 were grouped together as factor I and accounts for 16.346% of the total variance. The 4 reasons O17, O12, O7 and O2 constituted the factor II and accounts for 12.492% of the total variance. The 3 reasons O4, O9 and O19 constituted the factor III and accounts for 10.335% of the total variance. The 2 reasons O20 and O5 constituted the factor IV and accounts for 9.948% of the total variance. The 3 reasons O15, O10 and O14 constituted the factor V and accounts for 9.819% of the total variance. The 2 reasons O18 and O3 constituted the factor VI and accounts for 8.115% of the total variance and the 2 reasons O8 and O13 constituted the factor VII and accounts for 6.635% of the total variance. Thus the factor analysis condensed and simplified the 21 obstacles to non-acceptance of m-banking are grouped into 7 factors explaining 73.69% of the variability of all the reasons.

4.2 Final clusters on inhibiting drivers of M-Banking technology-enabled financial services

This study recognize that the main reasons to customer perception about not using M-Banking consists unavailability of sufficient guidance, risk factors, possibility of errors, time, small display size of mobile phone, benefit is not available and preference of other technology based banking services/branch banking.

V. Suggestions of the Study

The above completed research work finding seven major reasons for not using M-Banking services and these reasons are rectify through the following ways

- The bank employees and M-Banking usage customer segmentation should involve themselves in guiding their customers and friends, relatives etc respectively.
- The entire mobile manufacturer should produce mobile phones with bigger display size.
- To overcome risk and error factors through the banks can assure the customers regarding the latest technology employed by them.
- The banks need to ensure that their m-banking systems are well secured, reliable and user-friendly, and need to promote and familiarize their customers about the M-Banking.
- Banks should explain the various benefits of M-Banking better than the traditional banking with respect to time factor, cost etc.
- The banks can reduce the operative performance of mobile functions under m-banking.

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