AN EMPIRICAL ANALYSIS OF FACTORS AFFECTING THE ADOPTION OF E-BANKING SERVICES

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Abstract: *In the changing economic scenario and in the face of severe competition, banks are fast assuming the role of financial supermarkets. It has been necessitated by the growing need for one-stop outlets, offering diverse financial products and services to the customers. These changes around the world are dedicated to technology, which is considered as the key driver for the changes and provides a huge support and tremendous impetus to the speed and efficiency needed to deliver variety of customer services. The study revealed that the current usage and growth rates in the use of E-banking services also confirm the huge potential of digital technologies for the banking sector. The present study is an attempt to investigate empirically various factors affecting the adoption of E-banking services. The factor analytic methodology has been used to analyze the benefits of E- banking for based on responses received from the customers who use E- Banking Services. The default solution resulted in extraction of nine factors.*

Keywords *E- Banking, Digital Technologies*

INTRODUCTION

Technological developments, particularly in the area of Information Technology is revolutionizing the way the banking is done. Indian banks, utilizing the latest developments in the technology, are poised for a huge growth in the world of electronic banking. It is said to be the age of E-banking, which is one of the truly widespread avatars of E-commerce the world over. E-Banking, a combination of two words, Electronic technology and Banking, is a process by which a customer performs banking transactions electronically without visiting a brick-and-mortar banking institution. It involves an extensive use of Information technology that eliminates the need for direct recourse to the bank by the customer as an umbrella term, it encompasses a number of products and services under its ambit which include ATM, debit/credit cards, phone/mobile banking and PC/Internet banking etc.

E- Banking, which is defined as the automated delivery of new and traditional banking products and services directly to customers through electronic channels, includes the systems that enable financial institutional customers, individuals or businesses, to access accounts, transact business, or obtain information on financial products and services through a public or private network, including the Internet. Customers access e-banking services using an intelligent electronic device, such as a Personal Computer (PC), Personal Digital Assistant (PDA), Automated Teller Machine (ATM), kiosk, or Touch Tone telephones. The first virtual bank was the ATM (Kass, 1994). Other forms of virtual banking include telephone banking and home banking (Mahoney, 1994; Sraeel, 1995; and Talmor, 1995).

E BANKING IN INDIA

The financial products and services have become available over the Internet, which has thus become an important distribution channel for a number of banks. Banks boost technology investment spending strongly to address revenue, cost and competitiveness concerns. A study on the Internet users, conducted by Internet and Mobile Association of India (IAMAI), found that about 23% of the online users prefer Internet Banking as the banking channel in India, second to ATM which is preferred by 53%. Out of the 6,365 Internet users sampled, 35% use online banking channels in India.

This shows that a significant number of online users do not use Internet Banking and hence there is a need to understand the reasons for not using it. Until the advent of ATMs, people were unaware and/or not directly affected by the technological revolutions happening in the banking sector. ATMs became the major revelation for customers, since it offered the facility to avoid long queues in front of the cashiers in banks. It also provided them the flexibility of withdrawing money anytime, anywhere. In the study by IAMAI, it was found that the people are not doing financial transactions on the banks' Internet sites in India because of reasons such as security concerns (43%), preference for face-to-face transactions (39%), lack of knowledge about transferring online (22%), lack of user friendliness (10%), or lack of the facility in the current bank (2%).

REVIEW OF LITERATURE

In the present section, a review is provided of several comprehensive and revealing research studies citing the experiences of banks and customers with E-banking in India

and abroad, which significantly predict the use and factors affecting usage of e-banking.

Guru et al (2000) examined and predicted strongly the increased usage of internet banking in Malaysia in future due to increased internet access at home.

Mattila et al. (2001) found out factors which defined consumers' adoption of Internet banking in Finland, which is a world leader in electronic banking, and over 39.8 percent of all the banking transactions were made over the Internet. Using the data of a large survey, they developed a cognitive model of the factors which affect the adoption of Internet banking. Prior technology experience, personal banking experience, reference group influence, and security concerns are found to be the main factors, and demographic characteristics and overall perceptions about Internet banking were found to have a significant effect on the adoption.

Suganthi et al. (2001) conducted the review of Malaysian banking sites and revealed that there are various psychological and behavioral issues as trust, security of internet transactions, reluctance of change and preference for human interface which appear to impede the growth of internet banking.

Unnithan et al. (2001) in his comparison of internet banking scenario of Australia and India is overwhelmed by weak infrastructure, low PC penetration, developing security protocols and consumer reluctance in rural sector in India.

Koedrabruen et al (2002) investigated that main features needed for internet banking are balance inquiry, bill payment, fund transfer, business information, and payment for goods purchased in Thailand.

Janice et. al. (2002) based on interviews with four banks in Hong Kong noted that basic transactions and securities trading are the most popular types of operations that customers carry out in internet banking.

Guerrero offers an empirical investigation on the adoption of online banking services among European citizens. The use of e-banking services is explained on the basis of socio-demographic and Internet-specific behavioral indicators. Their paper take cognizance of the fact that gender is a significant moderator of the relationship between Technology Acceptance Model (TAM) constructs (perceived usefulness, perceived ease of use, and subjective norm) and the intention to use a technological innovation (Venkatesh and Morris, 2000; Venkatesh, Morris and Ackerman, 2000). Age of the user is argued to be negatively related to technology use and usefulness perceptions, and positively related to perceived difficulty (Morris and Venkatesh, 2000).

Idowu et al. (2002) corroborate the fact that consumers agree that they enjoy the prompt and efficient service delivery from the banks. The study shows that IT enables the banks to provide prompt and efficient services to their customers. Also 68.5% of the customers agreed that the banks' use of IT encouraged them to patronize the banks they use.

A study by Product and Technology Group, ICICI Bank (2004) concluded that Information Technology has revolutionized the services and mode of services offered by the banks to their corporate clients. The emergence of E-banking has enabled the banks to offer real-time transactions and integrate all customer related functions. Indian Banks are utilizing the new technology to provide better technology and convenient access to its customers and India is thus poised for a huge growth in the world of electronic banking.

Amin et al. (2005) found that all the socio-demographic elements have a significant effect on students' perception and students' perceptions were not homogenous.

Sulaiman et al. (2005) concluded that the adopters perceive e-banking to be an easy and convenient way and carry out their e-banking transactions either from their homes or offices. Also, the age, income and job positions held influenced e-banking adoption. Higher adoption was seen amongst younger persons, persons with high salaries and those holding higher positions.

Riyadh, Akter and Islam (2009) aimed to investigate the factors that affect SMEs' adoption of e-banking in Bangladesh. They argued that despite the availability and potential benefits, SMEs in Bangladesh were slow in adopting e-banking services. For the purpose of identifying factors affecting the adoption of e-banking by SMEs, TOE framework, Technology Acceptance Model (TAM), Institutional Theory and Institutional Intervention Theory were used. Drawing upon these as background theories, an integrated conceptual framework for SMEs' e-banking adoption is developed, which incorporates both the rationalistic goal oriented behaviour of firms and the external forces of technology adoption. Seven variables affecting e-banking adoption by SMEs were identified which are: organizational capabilities, perceived benefits, perceived credibility, perceived regulatory support, ICT industries readiness, lack of financial institutions readiness and institutional influence. The study by Ma, Ma and Zhao (2010) analyzed various factors that influence E-banking quality in the commercial bank sector in China, wherein there are 130 banks, and most of which are providing E-banking services to its customers. Based on the literature review, a research model was developed. Eleven factors were selected from nine areas to gain a better understanding of E-banking service quality. Multiple regression analysis was used to analyze the data. Their results indicated that Security, Reputation and Customer Service are the major factors affecting the adoption of E-banking services in China.

Abukhzam and Lee (2010) argued that though E-banking technology is gaining widespread adoption in the banking industry across developed countries. It is not the case in less

developed nations, such as Libya where the banks continue to deliver most of their banking services and products using traditional banking delivery channels, notably paper-based branch networks. This is largely due to bank staff resistance to new banking technologies. Thus, their paper aimed to bridge this gap by investigating the key factors affecting bank staff's attitude towards e-banking technology and identified a number of factors of e-banking technology adoption. They found various factors affecting e-banking adoption and put them under two categories namely managerial and organizational factors and technical issues. Managerial and organizational factors included Resistance to Change, Lack of Effective Leadership, Lack of IT Knowledge and Awareness and Lack of a Strategic Plan; and technical issues included unavailability of proper telecommunications infrastructure, shortage of IT Training Courses, system compatibility and system complexity.

The study by Cheah et al. (2011) investigated the factors that influence Malaysians' intention to adopt mobile banking by extending the renowned framework of Technology Acceptance Model (TAM). A self-administrated questionnaire had been developed and distributed in Malaysia. Out of the 400 questionnaires, only 175 useable questionnaires were returned, yielding a response rate of 43.75 percent. Results were subsequently analyzed by using multiple regression and factor analysis. Factors such as perceived usefulness (PU), perceived ease of use (PEOU), relative advantages (RA) and personal innovativeness (PI) were found positively related with the intention to adopt mobile banking services. However, social norms (SN) were the only factor found insignificant. Perceived risks (PR) was negatively associated with the mobile banking adoption.

The review of the previous research suggests an association between various socio-demographic and e-banking usages like age, sex, income level, the social status etc. But not many studies aim to figure out the factors influencing the usage of E-banking. Hence, this study aims to analyse, in a comprehensive manner, various factors affecting E-banking usage. In this regard, the following hypotheses will be tested:

Need and Objectives of the Study

After a deep insight into the literature, it was found that ample research is required in the field of E-banking adoption in India. The present paper focuses on the primary objective of finding various factors responsible for E-banking adoption among Indian users. The specific objectives of the study are:

1. To know the preferred banks (public or private) by the respondents regarding use of E- banking services
2. To examine the factors affecting the adoption of E-banking services.
3. To empirically verify the level of satisfaction by using E-banking services.

DATA BASE AND METHODOLOGY

This study is based on the primary data collected from various users of E- Banking services in Jalandhar with the help of well drafted, structured and non-disguised type of questionnaire. After a great deal of thought and careful deliberation, a total of 300 respondents were selected on the basis of convenience sampling. Further, it was taken into consideration that sample should be based on wide variety of factors such as education, age, occupation etc. to make the sample more representative. The basic data collection research method adopted in this survey was using questionnaire with personal interactions with the respondents. Respondents were asked for the basic information followed by filling of the questionnaire. Further the relevant questions based upon the judgment were asked which may not be a part of standard questionnaire. For data analysis, **Factor analysis** has been used to determine the factors significant in encouraging adoption of E-banking.

RESULTS AND CONCLUSIONS

Factor Analysis

In order to know about the various factors considered significant in encouraging the adoption of E-banking, the responses obtained were put to factor analysis and the result so obtained was subject to Kaiser- Meyer- Olkin (KMO) measure of sampling adequacy and Bartlett's Test of Sphericity.

Reliability Statistics

Table 1. Cronbach Alpha

Cronbach's Alpha	Number of Items
.811	27

Table 2. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.743
Bartlett's Test of Sphericity	Approx. Chi-Square	934.050
	Df	351
	Sig.	.000

Analysis and Interpretation

The factor analytic methodology has been used to analyze the benefits of E- banking for based on responses received

Table 3. Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.061	22.447	22.447	6.061	22.447	22.447	3.391	12.558	12.558
2	2.543	9.417	31.865	2.543	9.417	31.865	3.242	12.007	24.566
3	1.924	7.126	38.990	1.924	7.126	38.990	2.895	10.724	35.290
4	1.555	5.761	44.752	1.555	5.761	44.752	1.740	6.445	41.735
5	1.325	4.907	49.659	1.325	4.907	49.659	1.523	5.639	47.374
6	1.246	4.615	54.274	1.246	4.615	54.274	1.444	5.350	52.724
7	1.202	4.452	58.726	1.202	4.452	58.726	1.332	4.935	57.659
8	1.109	4.107	62.833	1.109	4.107	62.833	1.242	4.600	62.259
9	1.046	3.874	66.707	1.046	3.874	66.707	1.201	4.448	66.707
10	.980	3.629	70.336						
11	.876	3.246	73.582						
12	.812	3.008	76.591						
13	.732	2.711	79.301						
14	.658	2.437	81.738						
15	.585	2.168	83.906						
16	.558	2.066	85.972						
17	.526	1.950	87.922						
18	.494	1.831	89.752						
19	.481	1.781	91.534						
20	.456	1.688	93.222						
21	.417	1.546	94.768						
22	.378	1.401	96.169						
23	.306	1.135	97.304						
24	.291	1.077	98.381						
25	.166	.613	98.994						
26	.149	.554	99.548						
27	.122	.452	100.000						
Extraction Method: Principal Component Analysis.									

Table 4. Factor Analysis

Sr. No.	Variables	Statements	Factor Loadings
1	Direct access to bank	It involves an extensive use of Information technology that eliminates the need for direct recourse to the bank by the customer.	.761
2	Potential	Current usage and growth rates in the use of e-banking services also confirm the huge potential of digital technologies for the banking sector.	.647
3	Integration	The emergence of E-banking has enabled the banks to offer real-time transactions and integrate all customer related functions.	.627
4	Modern	E-banking is compatible to modern lifestyle.	.619
5	Convenient	E-banking is an easy and convenient way and carry out their e-banking transactions either from their homes or offices.	.672
6	Diverse	E-banking necessitates the growing need for one-stop outlets offering diverse financial products to the customers	.659
7	Multli-facility	**As** an umbrella term, E-banking encompasses a number of products and services under its ambit which include ATM, debit/credit cards, phone/mobile banking and PC/Internet banking etc.	.785
8	Efficient management	Through E-banking, one is able to manage finances more efficiently and effectively.	.653
9	Easy	E-banking makes banking transactions easy to conduct.	.780

Sr. No.	Variables	Statements	Factor Loadings
10	comfortable	E-Banking is hassle free	.807
11	Better services	E-banking provides fast services.	.683
12	Control	E-banking ensures greater control over finances.	.807
13	Flexibility	E-banking improves flexibility of business transactions.	.617
14	Accurate info	E-banking provides accurate information.	.544
15	Eco-friendly	E-banking is eco friendly	.630
16	Secure	E-banking services are secure to conduct.	.679
17	Time	There is no time constraint of banking transactions.	.671
18	Cashless	Use of cashless instruments	.680
19	Facilities	Pay bills regularly through E- payment mode	.523
20	Internet	Well versed with usage of internet and intranet services	.696
21	Trustworthy	Usage of E-banking is trustworthy	.671
22	Well equipped	Well equipped with computer and peripheral devices	.660
23	Free	E- banking is free of cost service	.591
24	Quality	Service quality	.614
25	Incentives	Price incentives	.528
26	Promotions	Promotion of E-banking by the banks	.725
27	Habit	Habit of using E-banking facility	.683

Table 5. Factor Labelling

Factor 1

Factor Label	Statements	Loadings
Efficiency and Effectiveness of E- Banking	Through E-banking, one is able to manage finances more efficiently and effectively.	.653
	E-banking makes banking transactions easy to conduct.	.780
	E-Banking is hassle free	.807
	E-banking provides fast services.	.683

Factor 2

Factor Label	Statements	Loadings
Benefits of E- banking to Customers	The emergence of E-banking has enabled the banks to offer real-time transactions and integrate all customer related functions.	.627
	E-banking is compatible to modern lifestyle.	.619
	E-banking is an easy and convenient way and carry out their e-banking transactions either from their homes or offices.	.672
	E-banking necessitates the growing need for one-stop outlets offering diverse financial products to the customers	.659
	As an umbrella term, E-banking encompasses a number of products and services under its ambit which include ATM, debit/credit cards, phone/mobile banking and PC/Internet banking etc.	.785
	E-banking ensures greater control over finances.	.807

Factor 3

Factor Label	Statements	Loadings
E- banking in Developing Economy	E Banking is Eco Friendly	.630
	There is no time constraint of banking transactions.	.671
	Use of cashless instruments	.680
	Pay bills regularly through E- payment mode	.523
	E- banking is free of cost service	.591
	Service quality	.614

Factor 4

Factor Label	Statements	Loadings
Use of Technology	Usage of E-banking is trustworthy	.671
	Well equipped with computer and peripheral devices	.660
	E- banking is free of cost service	.591

Factor 5

Factor Label	Statements	Loadings
Incentives available	Current usage and growth rates in the use of e-banking services also confirm the huge potential of digital technologies for the banking sector.	.647
	E-banking services are secure to conduct.	.679
	Price incentives	.528

Factor 6

Factor Label	Statements	Loadings
Usage in Banks	E-banking improves flexibility of business transactions.	.617
	Promotion of E-banking by the banks	.725

Factor 7

Factor Label	Statements	Loadings
Usage among Customers	E-banking provides accurate information.	.544
	Habit of using E-banking facility	.683

Factor 8

Factor Label	Statements	Loadings
Service used for E- banking	Well versed with usage of internet and intranet services	.696

Factor 9

Factor Label	Statements	Loadings
Elimination of need for direct recourse to bank	It involves an extensive use of Information technology that eliminates the need for direct recourse to the bank by the customer	.761

from the customers who use E- Banking Services. The cache of factor analytic methods is quite a rich and rigorous one. The Principal Components Analysis (PCA) has been used to explore and confirm the inter-relatedness between the occurrences of variables pertaining to various benefits

The correlation matrix of the 27 variables on benefits of E-banking has been subjected to the PCA. It provided a set of components, which explained variances in descending order of total variance of a set of variables pertaining to a domain of variables under study. Theoretically, it extracted as many components as is the number of variables.

The number of principal components to be retained has been decided based on Kaiser's criterion of Eigen value>1 and Bartlett's test. The Bartlett's test of significance led to acceptance of 27 significant principal components.

The PCA with varimax rotation method has been used to maximize the sum of squared loading of each factor extracted in turn. It explained more variance than the loadings obtained from any other method of factoring. The factors loaded by variables having significant loadings of the magnitude of 0.40 and above have been interpreted.

The scales of measurement were tested using Cronbach α reliability test. Cronbach α was 0.811, which is satisfactory level of construct validity. The correlations between the factors were then examined which revealed the existence of correlation between certain factors. This perusal suggested the use of factor analysis to investigate any distinct underlying factors and to reduce the redundancy of certain barriers indicated in the correlation matrices. Principal Component Analysis was chosen as the method of extraction in order to account for maximum variance in the data using minimum number of factors.

The default solution (eigen values>1) resulted in extraction of nine factors.

Factor 1: Efficiency and Effectiveness of E- Banking

Factor 2: Benefits of E- banking to Customers

Factor 3: E- banking in Developing Economy

Factor 4: Use of Technology

Factor 5: Incentives available

Factor 6: Usage in Banks

Factor 7: Usage among Customers

Factor 8: Service used for E- banking

Factor 9: Elimination of need for direct recourse to bank

CONCLUSION AND FUTURE OF E BANKING

Under E- banking, a number of services can be availed by the clients like checking account balances, transferring

money, paying bills, collecting receivables and ultimately reducing transaction costs and establishing greater control over bank account, without visiting the bank physically at the time convenient to them without incurring any additional cost. Apart from these benefits, there are a number of factors that influence the users of E-banking services. The present study tries to probe into the factors affecting the customers availing E-banking services. In today's fast changing world of technological progress, more and more people are turning to any option that makes their life run more smoothly and affords them more convenience in handling day to day activities. One such activity, managing their bank account, is made easier through the use of their computer and the internet.

Many types of people are drawn to the use of online banking. Some will use it for certain services, but they prefer to go to the physical location for other banking matters. Others use internet banking exclusively and never go to the actual brick and mortar bank. Banks could conduct their business much more cost efficiently if it was all done through the internet, but not all customers are willing to forego the person to person transactions that they have been used to for so long. They have not yet been able to put their trust in computers and the internet, especially when it comes to their money.

Use of internet banking can allow the customer to handle almost all their banking transactions online. They are able to access their account balances, past and present transactions, transfer funds from one account to another, pay bills, look up checks, reorder checks, stop payments, complete loan applications, and make contact through messaging with bank staff members. One of the most appealing parts of it all is being able to do these things 24 hours a day, seven days a week, and without leaving their homes. Customers will also realize a savings in time, effort, gasoline and fees for parking when they do their banking through the internet. They won't have to worry about making a frenzied dash to try to get to the bank before closing time.

Most banks in operation today have some degree of online banking services available to their customers. They have firewalls and security features on their sites that will guarantee complete privacy and that account information is visible only to the customer. Basically, the process of using internet banking is pretty much the same with most banks. The customer sets up access to their online account by either choosing or being assigned a username and password. Once the customer has logged in using their username and password, they will have access to their account information and will be able to see any transactions that have taken place as well as deposits, charges, and transactions that are in progress. This information can be printed off so that a written copy is available for records or in case proof is needed to verify something later on. When the customer is finished, he or she needs to be sure to log off properly so that their information is safe and can't be accessed by anyone else.

E-banking has made it much more convenient for people to manage their money, and banks encourage its use. As more and more people become increasingly familiar with the world of the internet and learn to place more trust in its security, the future of E-banking is looking brighter and brighter.

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