

A Thesis/Project/Dissertation Review-2 Report

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CANDIDATE'S DECLARATION

I/We hereby certify that the work which is being presented in the project, entitled "UNDERSTANDING QUANTUM COMPUTING CONCEPTS BY ACTIVITIES USING WEB APPLICATION" in partial fulfillment of the requirements for the award of the Bachelor of Technology in Computer Science and Engineering submitted in the School of Computing Science and Engineering of Galgotias University, Greater Noida, is an original work carried out during the period of July, 2021 to December and 2021, under the supervision of Dr V. Jayakumar (Assistant Professor), Department of Computer Science and Engineering, of School of Computing Science and Engineering, Galgotias University, Greater Noida. The matter presented in the thesis/project/dissertation has not been submitted by me/us for the award of any other degree of this or any other places.

This is to certify that the above statement made by the candidates is correct to the best of my knowledge.

Supervisor Name

Designation

CERTIFICATE

The Final Project Viva-Voce examination of Siddharth raj 18SCSE1010014 and Prerna Sharma,18SCSE1010625 has been held on 20-12-2021 and his/her work is recommended for the award of Bachelor of Technology in Computer Science and Engineering with Specialization in Internet of Things and Bachelor of Technology in Computer Science and Engineering respectively

Signature of Examiner(s)

Signature of Supervisor(s)

Signature of Project Coordinator

Signature of Dean

Date: May, 2021

Place: Greater Noida

STUDENT'S DECLARATION

I hereby declare that the survey, data collection and analysis work related to Summer Training Project report titled "**BANKING BOT PROJECT**" has been carried out exclusively on my efforts under the guidance of **M.THIRUNAVUKKARASAN**.

I, further declare that this work was neither published nor submitted to any other institution for award of any other degree or diploma.

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Abstract

The project report on Impact of Internet-Banking system in India an empirical approach has become very popular during the recent years. As a part of MBA and in order to gain practical and extra knowledge in the field of banking, I am required to make a report on “Impact of Internet Banking System and Technology in India”. The reason for the growing popularity of the subject is that it primarily concerns with the concept and techniques.

The comments and suggestions according to my research and reviews are welcome and will be sincerely acknowledge.

accounts, transactions and getting information on financial products & services. Now a day's most of the commercial banks have launched various services through internet banking including latest service like opening online saving accounts and demand for these services is increasing rapidly. The concept of internet banking is fairly a new concept in India as compared to its developed counterparts. So the research deals with defining the concept of Internet banki

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Chapter -1

INTRODUCTION

The banks have become an essential component of most of the economies as banking services are described as “engines for economic growth” or act as “conduits towards promoting economic growth”. In recent years the world economy has gone through a new phenomenon which is considered as one the most important changes since the industrial revolution, i.e. the birth of “Internet-based Economy”. Considering the benefits of using internet the banks have started to invest in this newly created market. At the initial level, banks mainly focus on developing the commercial web- sites, with the purpose of promoting their products and services using the internet. Gradually, it was realized by banks that the Internet can be an effective distribution channel too. Now with the changing times the traditional approach of banking is being changed and banks are trying to match up with the recent advancement in the field of technology. Revolutionary developments in information and communication technology (ICT) in the past 20 years have changed the way how banks deal with their bank customers. With the rapid development of technology, internet plays a significant role in changing the banking scenario. It provides an online platform for various banking transactions through which it offers various services like online payment, online fund transfer, online stock trading and online shopping etc.

The use of internet as a delivery channel for banking services is increasing widely in banking sector. Internet banking facilities enable financial institution and customers to access their accounts, transactions and getting information on financial products & services. Now a day's most of the commercial banks have launched various services through internet banking including latest service like opening online saving accounts and demand for these services is increasing rapidly. The concept of internet banking is fairly a new concept in India as compared to its developed counterparts. So the research deals with defining the conce of Internet banking

Banking through internet has emerged as a strategic resource for achieving higher efficiency, control of operations and reduction of cost by replacing paper based and labor intensive methods with automated processes thus leading to higher productivity and profitability. Nonetheless, recent empirical studies indicate that Internet banking is not having an independent effect on banking profitability, although these findings may change as the use of the Internet becomes more widespread.

Broadly, the levels of banking services offered through INTERNET can be categorized in three types:

(i) The Basic Level Services use the banks' websites which disseminate information on different products and services offered to customers and members of public in general. It may receive and reply to customers' queries through e-mail.

(ii) In the next level are Simple Transactional Websites which allow customers to submit their instructions, applications for different services, queries on their account balances, etc. but do not permit any fund-based transactions on their accounts.

(iii) The third level of Internet banking services are offered by Fully Transactional Websites which allow the customers to operate on their accounts for transfer of funds, payment of different bills, subscribing to other products of the bank and to transact purchase and sale of securities, etc. (RBI, 2001)

Most of the banks providing Internet banking products and services offer, to a large extent, an identical and standard package of banking services and transactional capabilities. In general, Internet banking products are offered in a two-tiered structure. A basic tier of Internet banking products includes customer account inquiry, funds transfer and electronic bill payment. A second or premium tier includes basic services plus one or more additional services. The list of Internet banking products and services is not inclusive.

Basic: Account inquiry, Funds transfer, Electronic bill presentment and payment.

Premium: Brokerage, Cash management, Credit applications, Credit and debit cards, Customer correspondence, Demat holdings, Financial advice 8) Foreign exchange trading, Insurance. , Online trading, Opening accounts, Requests and intimations, Tax services, E-shopping, Standing instructions, Investments Asset management services etc.

Internet plays vital role between banks and customers to receive and deliver information, this form of banking is described as Internet banking (Reserve Bank of India, 2001).

The process in which internet and computer device are used as a medium to facilitate banking services is termed as internet banking. Internet banking is a web-based service that enables the banks authorized customers to access their account information. It permits the customers to log on to the banks website with the help of bank's issued identification and personal identification number (PIN). The banking system verifies the user and provides access to the requested services, the range of products and service offered by each bank on the internet differs widely in their content. Banks have traditionally been in the forefront of harnessing technology to improve their products, services and efficiency. Banks are using electronic and telecommunication networks for delivering a wide range of value added products and services. The delivery channels include direct dial – up connections, private networks, public networks etc and the devices include Personal Computers. With the popularity of PCs, easy access to Internet and World Wide Web (WWW), Internet is increasingly used by banks as a channel for receiving instructions and delivering their products and services to their customers. Most of the banks offer internet banking as a value-added service.

Internet banking system is a system that has been developed in order to help clients with the daily day to day transactions. Internet banking system means that clients

can now do banking at the leisure of their homes. Also known as online banking the system allows both transactional and non-transactional features. Online banking or internet banking allows customer to conduct financial transactions on a secure website operated by the retail or virtual bank. Online banking is the practice of making bank transactions or paying bills via the Internet. Thanks to technology, and the Internet in particular, we no longer have to leave the house. We can shop online, communicate online, and now, we can even do our banking online. Online banking allows us to make deposits, withdrawals and pay bills all with the click of a mouse. It doesn't get much more convenient than that.

So basically, Internet banking is the technology that allows banking customers to do the things they would normally do in their bank from the comfort of home with a connection to the Internet.

Evolution of Internet Banking In India

Indian banking industry, today, is in the midst of an IT revolution. The technology changes have put forth the competition among the banks. This has led to increasing total banking automation in the Indian banking industry. New private sector banks and foreign banks have an edge over public sector banks as far as implementation reviews on compliance with various laws, and gaining knowledge of various national laws (applicable) and guide the customers through their cross-border dealings.

Chapter -2

Literature review

National Literature Reviews

Pooja Malhotra & Balwinder Singh (2009)

In their research paper “The Impact of Internet Banking on Bank Performance and Risk: The Indian Experience”. The paper describes the current state of Internet banking in India and discusses its implications for the Indian banking industry. Particularly, it seeks to examine the impact of Internet banking on banks’ performance and risk. Using information drawn from the survey of 85 scheduled commercial bank’s websites, during the period of June 2007, the results show that nearly 57 percent of the Indian commercial banks are providing transactional Internet banking services. The univariate analysis indicates that Internet banks are larger banks and have efficiency ratios and profitability as compared to non-Internet banks. Internet banks rely more heavily on core deposits for funding than non-Internet banks do. However, the multiple regression results reveal that the profitability and offering of Internet banking does not have any significant association, on the other hand, Internet banking has a significant and negative association with risk profile of the banks.

In 2014 their paper presents data, drawn from a survey of commercial banks websites, on the number of commercial banks that offer Internet banking and on the products and services they offer. It investigates the profile of commercial banks that offer Internet banking, using univariate statistical analysis, relative to other commercial banks with respect to profitability, cost efficiency, and other

characteristics. By the end of first quarter, 2004, differences between Internet and non-Internet banks had begun to emerge in funding, in sources of income and expenditures and in measures of performance. It was also found that the profitability and offering of Internet banking does not have any significant correlation.

KPMG, “Technology enabled transformation in Banking”, The Economic Times Banking Technology, Conclave 2011, this article has concluded that banking will be transformed by new technology by 2015. customer friendly products, delivery channel, easy and accessible services and competitive pricing would be driving forces-and technology shall play a dominant role in all these. Models using mobile devices and efficient payment systems will make banking services more widely available 24 x 7.

Vikas Chauhan and Vipin Chaudhary (2015)

The present paper attempts to understand the concept of internet banking as well as study the benefit of internet banking from perspective of consumers as well as banks. Further, this paper discusses the challenges and opportunities associated with the internet banking in Indian context. The discussion concludes that concept of Internet banking is slowly gaining acceptance in Indian scenario and efforts are being made by government agencies to make it more popular among consumers.

Rakesh H M & Ramya T J (2014)

In their research paper titled “A Study on Factors Influencing Consumer Adoption of Internet Banking in India” tried to examine the factors that influence internet banking adoption. Using PLS, a model is successfully proved and it is found that

internet banking is influenced by its perceived reliability, Perceived ease of use and Perceived usefulness. In the marketing process of internet banking services marketing expert should emphasize these benefits its adoption provides and awareness can also be improved to attract consumers' attention to internet banking services.

Ankit Kesharwani & Gajulapally Radhakrishna (2013)

In their research paper “Drivers and Inhibitors of Internet Banking Adoption in India”. This paper research on different banks is on condition that e-banking services, as this would revolutionize their profits. Since internet banking in India is still in its nascent stage, it is essential for e-banking institutions to enhance reception and usage of internet as a banking channel by their customers. This paper has reviewed the most of seminal studies in the area of diffusion of innovation and makes an attempt to do an experimental research that looked into the factors that drives and inhibits internet banking usage in India. An investigative factor analysis followed by a positive factor analysis has been applied on 362 internet banking users. Findings resulted in seven factors – perceived benefit, hacking and fraud risk, performance risk, computer self-efficacy, technology intricacy, social influence, and pricing concerns. The results suggest that acceptance and usage of internet banking services can turn into a fundamental concern for future research, as the drivers overcoming the inhibitors over time at an influencing rate. Moreover, this study also compares the findings with extant diffusion of innovation literature and identified several additional factors that can affect internet banking adoption in India.

International Literature Review

Shaza W. Ezzi (April 2014)

In their research paper titled “A Theoretical Model for Internet Banking: Beyond Perceived Usefulness and Ease of Use” tried to inquire different types of electronic banking like ATM’s, telephone banking, and electronic funds transfer, Internet banking like has evolved from consumers’ needs to have superior access to banking services clear of most banks teller-staffed, normal operating hours. Additionally, Internet banking has grown swiftly from the recent and the span increases in ecommerce. Internet banking (IB) continues to govern the landscape of electronic banking as consumers continue to use IB to complete schedule banking transactions in addition to conducting on-line sales and purchasing. This study presents a theoretical model considered to help researchers and practitioners better understand the acceptance and adoption of Internet Banking. The proposed model maybe particularly useful in developing nations where consumers are loath to use Internet Banking even when the services are available. However, a review of several studies that have investigated consumers’ acceptance of Internet banking services from a multiplicity of perspectives have not reached a clear consensus of the factors that contribute to overall consumer acceptance and adoption. The paper concludes with discussions of the managerial implications and avenues for future research.

Nabil Hussein Al-Fahim (2013)

In his research titled “An tentative Study of Factors distressing the Internet Banking espousal: A Qualitative Study among Postgraduate Students” tried to find out the factors that affect the internet banking espousal among postgraduate’ students in International Islamic University Malaysia (IIUM). Approach- Semi

structured interviews with eight informant; four adopters and four non-adopters on postgraduate' students were conducted to explore this issue. The results revealed that adopters and non-adopters realized that internet banking (IB) has quite a lot of benefits and amenities. However, non-adopters were concerned about some factors like trust, ease of use, awareness and security. The results also showed that adopters had positive influence on use of online banking and they did not have problems with these factors because they had sufficient knowledge and experience in using online banking. The findings are important to enable bank Executives to have a better understanding of clients' perception to adopt internet banking. This will help banks' managers and owners formulate strategies that could significantly affect IBA among their customers.

Dorra Gherib (2014)

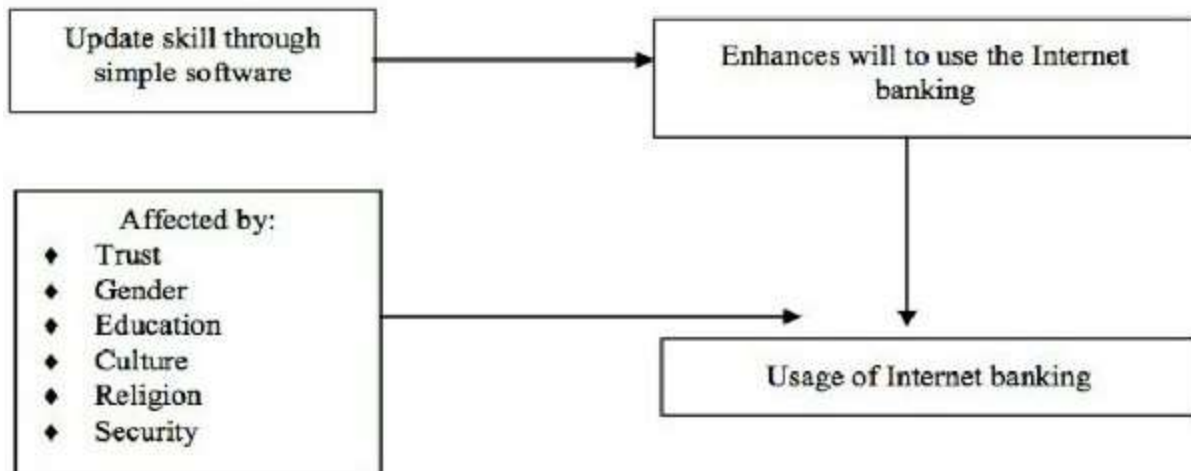
In their research paper titled "Adoption and diffusion of internet banking: case of Tunisian banking sector" tried to observe the embracing of Internet banking in the Tunisian banking industry. The aim is to make out factors that accelerate or slow down the implementation process. The literature review enables identifying a set of variables: organizational, individual and structural. The research methodology used within this study is the case study. Five case studies in banking sector were executed. The sample is shaped by banks that adopted the Internet Banking as a modernization. The analysis allowed the willpower of the related dimensions of the aforesaid variables (competition, perceived benefits, and organizational compatibility). Indeed, this research has exposed some variables that hamper the implementation of technological innovations.

Chapter -3

RESEARCH METHODOLOGY

The present study is based on the secondary data collected from different journals, taken from previous surveys, sites and published data from various issues of RBI and different Public sector banks. Various studies on this subject have also been referred in this study. The present study is an attempt to examine **the performance of Indian banks in terms of providing Internet banking products and services**. This section explains in detail the objectives, recent trends of internet banking.

The Conceptual Model of Internet Banking



Research Objectives of the Study

The purpose of this research report is to help fill significant gaps in knowledge about the Internet banking landscape in India. The research presents data, drawn from a survey of commercial banks websites, on the number of commercial banks that offer Internet banking and on the products and services they offer. It investigates the profile of commercial banks that offer Internet banking, relative to

other commercial banks with respect to profitability, cost efficiency, and other characteristics.

A search was executed on the World Wide Web using a combination of knowledge of Web sites and search tools (predominately the www.google.com) to discover the 'home pages' (main Web sites) of the 93 banks comprising 30 Private, 27 Public and 36 foreign banks.

- To find out the frequency and the factors that influences the adoption of Internet-Banking services.
- To measure the satisfaction level of people regarding Internet-Banking.
- To understand the problems encountered in by people while using Internet-Banking services (ATM, Phone Banking, etc)

transaction is not subjected to any waiting period. The transactions are settled as soon as they are processed. "Gross settlement" means the transaction is settled on one to one basis without bunching with any other transaction.

RTGS system is used only for large value transactions and retail transactions take an alternate channel of electronic funds transfer, a minimum threshold of one lakh rupees was prescribed for customer transactions under RTGS on January 1, 2007.

Core banking Solutions (CBS) - Computerization of bank branches had started with installation of simple computers to automate the functioning of branches, especially at high traffic branches. Core Banking Solutions (CBS) is the networking of the branches of a bank, so as to enable the customers to operate their accounts from any bank branch, regardless of which branch he opened the account with. The networking of branches under CBS enables centralized data management

and aids in the implementation of internet and mobile banking. Besides, CBS helps in bringing the complete operations of banks under a single technological platform.

Automated Teller Machine (ATM) - ATMs were introduced to the Indian banking industry in the early 1990s initiated by foreign banks. It is perhaps most revolutionary aspect of virtual banking. The facility to use ATM is provided through plastic cards with magnetic strip containing information about the customer as well as the bank. In today's world ATMs are the most useful tool to ensure the concept of "Any Time Banking" and "Any Where Banking". The total number of ATMs installed in India by various banks as of end January 2018 was 108111 On-site and 99083 Off-site. The new private sector banks in India have the most offsite ATMs, followed by off-site ATMs belonging to SBI and its subsidiaries and then by nationalized banks and foreign banks, while on-site is highest for the nationalized banks of India.

ATMs of scheduled commercial bank as on Jan-2019

Bank Type	No. of Branches	On Site ATMS	Off Site ATMs	Total ATMs
Nationalized Banks	33,627	38,606	23,265	61,871
State Bank of India	13,661	31,926	22,827	51,753
Old Private Sector Banks	4,511	11,761	12,298	24,059

New Private Sector Banks	11,685	23,523	36,839	60,362
Foreign Banks	242	2,295	3,854	6,149
TOTAL	63,726	1,08,111	99,083	2,07,194

Customer Relationship Management (CRM) - (CRM) refers to the methodologies and tools that help businesses manage customer relationships in an organized way-finding, getting and retaining customers. CRM processes that help to provide employees with the information they need to know their customers' wants and needs and build relationships between the company and its customers.

Design For Collection Data

The data for this study are unique in several respects. First, the data cover the Internet banking offerings of every commercial bank. Secondly, the information was compiled from the websites of the respective banks between mid-December 2014 and December end 2015 for 289 scheduled commercial banks. Data is although confined to commercial banks only; the data are broadly applicable to the banking system at large. As of December end 2015, commercial banks accounted for 32 percent of all banks and 96 percent of all banking system assets.

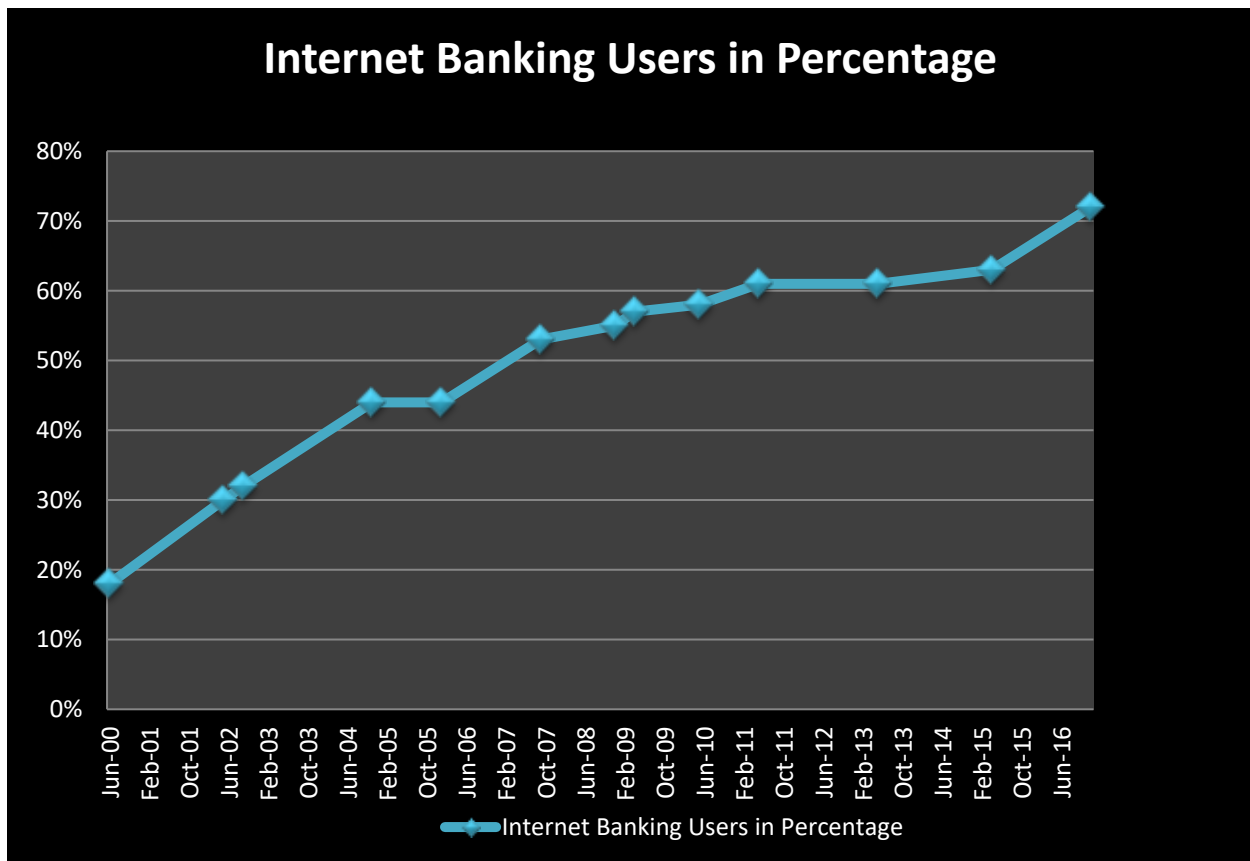
Various Internet banking services are considered for the purpose of making comparative analysis and ranking of private, public and foreign banks. The Internet banking services have been classified into two major categories:

- 1) BASIC Internet banking is defined as the three core Internet banking services: balance enquiry, funds transfer and bill payment.
- 2) PREMIUM Internet banking is defined as BASIC plus at least three other services. However for the purpose of this paper 30 services have been included.

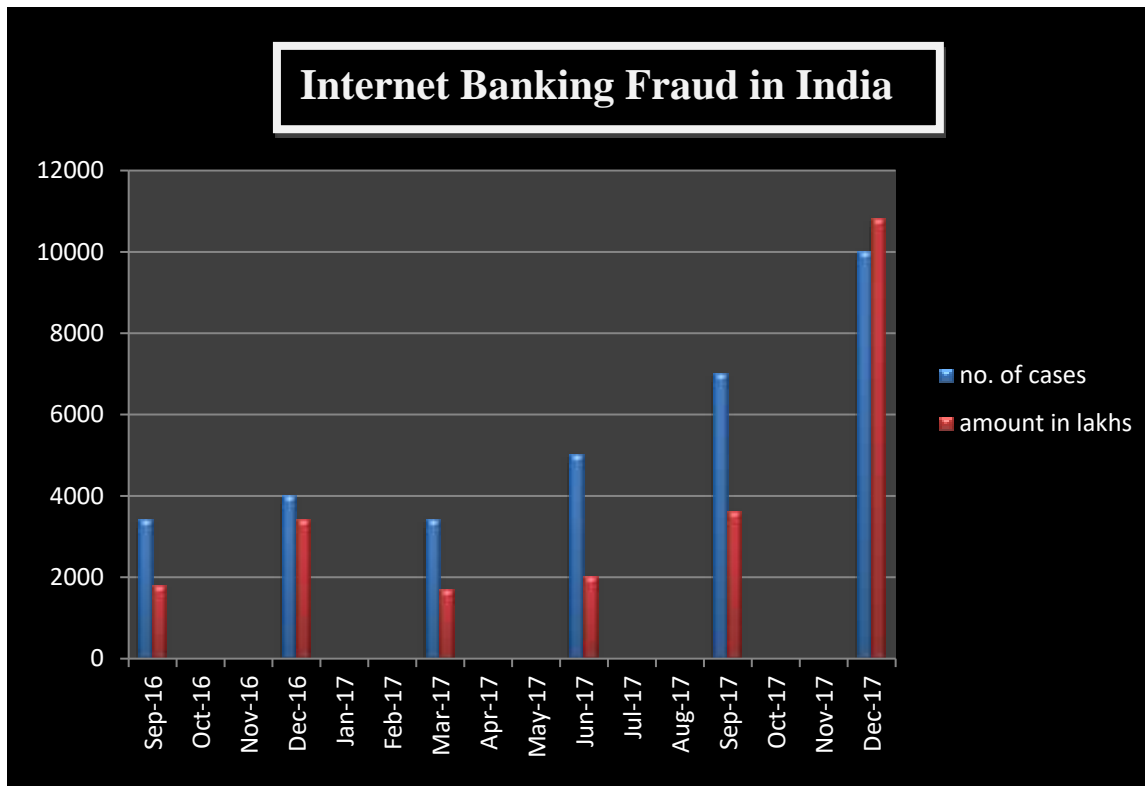
Chapter -4

Analysis of Internet Banking in India

In India, slowly but steadily, the Indian customer is moving towards Internet banking. A number of banks have either adopted Internet Banking or are on the threshold of adopting it. The banks started Internet banking initially with simple functions such as getting information about interest rates, checking account balances and computing loan eligibility. Then the services were extended to online bill payment, transfer of funds between accounts and cash management services for corporate. Recently, banks have started to facilitate payment for e-commerce transactions by directly debiting bank accounts or through credit cards. It will add to the revenues of the banks.



This table shows the percentage of users of Internet Banking is increasing fastly. As in year 2000 to 2005 and 2015 to 2016, users increase at fast rate.



This table shows the rise in the internet banking fraud day to day. As March, 2017 to December, 2017 there is highly increasing the fraud cases and the amount of fraud in these months increasing tremendously.

1.Consumer Behavior and Concerns: Usage Patterns

A significant proportion of Internet banking users (56.5%) use Internet banking 1-5 times a month, which is low compared to the e-developed countries, and also Asian counterparts like Korea and Japan. Another 31.5% are using e-banking 6-10 a month. Daily users of Internet banking are almost absent and the percentage of those using once in two days is meager to establish any significance probably because of low Internet penetration. However researches indicate that in spite of

low availability of sophisticated branch networks, spread of Internet would promote I-banking.

Table 1.1: Gender Wise Usage of the Internet Banking

Frequency of Use (Times per Month)	Percentage of Total Respondents		
	Female	Male	Total
Never	-	-	1.0%
1-5	15.8%	40.7%	56.5%
6-10	9.3%	22.2%	31.5%
10-15	3.7%	1.9%	5.6%
16-20	-	2.7%	2.7%
Above 20	-	2.7%	2.7%

Table 1.2: Education Background and Internet Banking

Frequency of Use (Times per Month)	Percentage of Total Respondents			
	Under - Graduate	Graduate	Post- Graduate	Professiona l
Never	-	-	-	-
1-5	2.8%	37.8%	11.2%	5.6%
6-10	-	1.6%	9.3%	6.5%

10-15	-	-	0.1%	4.7%
16-20	-	0.1%	0.2%	-
Above 20	-	0.1%	0.1%	0.1%

A significant variation exists between the various banks for the frequency of usage ($F= 7.503$) with high value for Indian private banks followed by multinational banks. Interviews conducted at banks revealed that the use of Internet banking is mainly attributable to day-to-day transactions, which is further confirmed by the questionnaire responses. Gender wise usage of the Internet banking reflects a polarization towards males (Table 1.1). These results are obvious because the conventional, brick and mortar banking is also dominated by the male users. This implies a good scope for the Indian banks to capitalize the opportunity and focus on females. Research studies conducted by IAMAI also indicates that male users constitute the major chunk of the Internet banking population (www.iamai.in). In India, female workers in the organized sector have been conventionally low. But, the recent trends show a potential for significant rise in the female working population especially, in the awake of policy programs focusing on education for female child and spread of Information technology. In addition, the BPO and other ITES sectors are on rise and once the females become Internet savvy in India, they can turn out to be good customers for the banks with high probable usage.

Results reveal that a significant portion of the frequent (1-5 times a month) Internet banking users (37.8%) is a graduate followed by postgraduates who use Internet banking not more than 10 times a month. Interestingly, the professionals' category is not the frequent user. After combining the categories of professionals and post graduates, it is established that they are the second grade users of internet banking though not using beyond 1-10 times a month (Table 2).

The study shows that the income groups 2 and 3 {Less than Rs. 15,000 and Between Rs.15000-30000} are frequent users of the Internet banking. Research conducted by Ekos Research Associates Inc. Canada indicates that use of electronic banking is a positive function of income levels. However, Indian conditions are different from those of developed countries therefore it is difficult to generalize. None the less, the findings have strategic implications for the banks since their reference group is somewhat different as noticed during the interviews with the bankers.

Acceptance of internet banking

	Frequency	Percentage
Yes	79	39.5
No	121	60.5
Total	200	100

Hence the study was done to find out whether the demographic profile has an influence

on the acceptance and non-acceptance of internet banking.

Consumer Behavior and Concerns: Satisfaction

The overall satisfaction scores of the respondents obtained on a scale of 1-10 on various measurable variables and tested for F-ratios reveals that satisfaction level differs among income groups, use frequency and banks (F-values - income groups = 11.828; use frequency = 21.165; banks = 9.28). The mean satisfaction levels in case of public sector banks are the lowest. This may be due to late starts, poor infrastructure or lower risk tolerances. Satisfaction levels are comparatively better

for private banks because of their strategic business models as mentioned earlier. On the basis of mean scores obtained for incomes groups it may be concluded that the persons having income in the range of 15,000 – 30,000 are highly satisfied compared to others. This was obvious because this is the class, which uses Internet banking frequently. A survey of the Korean customer revealed high Internet banking use and consequently high satisfaction. But, the overall mean scores of satisfaction indicate that in general, Indian consumers are partially satisfied with the Internet banking services.

2.Consumer Behavior and Concerns: Preferences

The results show that most of the consumers use Internet banking for account information and day-to-day transactions. Examination of the websites of various Internet Banking service providers suggest that websites offering only basic level services and the other facilities like transfer balances, investment in securities, loan and mortgages etc. are not available. It can be concluded that the usage levels can grow once the web sites are equipped with multiple products offering coupled with appropriate infrastructure, which is, as highlighted, the problem of most of the banks in India.

Table 2.1: E-Banking Services of Foreign Banks

Banks		Daily Transaction s	Account Information	Transfers	Other
ABN Bank	Amro	100%	100%	30%	30%

Bank of Punjab	60%	80%	0%	20%
Canara Bank	100%	100%	0%	0%
Citi Bank	100%	83%	50%	33%
HDFC Bank	62%	85%	50%	33%
HSBC	100%	0%	0%	0%
ICICI Bank	75%	83%	8%	13%
IDBI Bank	86%	0%	0%	0%
State Bank of India	100%	33%	0%	0%
Standard Chartered Bank	100%	0%	50%	0%
UTI Bank	86%	100%	14%	0%

Table 2.1 reveals that the e-banking services of foreign banks and some flag public sector banks are used primarily for daily transactions and private banks like HDFC, BOP ICICI are lagging.

Another major use of the e-banking is account information. It is well known that account information has been for many years a major area of concerns from the point of view of customer services. This is one of prominent advantages of Internet banking what bankers revealed. The funds transfer facilities are used mostly in case of private banks and customers of none of the public sector banks were found to be using the Internet banking for this purpose. It was also found that those who use e-banking frequently visit the bank branches only 1-2 times per month. Citibank and ABN Amro bank are popular among their customers for Internet

Banking. In general, people are highly concerned about security and therefore they do not rely on the public sector banks for Internet fund transfers.

Consumer Behavior and Concerns: Consumer Expectations

Table 2.2 Expected vs. Actual Performance (Conventional Banking)

Parameters	F-ratio
Accuracy (ACC)	47.593
Speed (SPEE)	13.174
Confidentiality (CONF)	30.311
Customization (CUS)	10.167
Ease of Use (EASE)	22.820
Safety (SAFE)	51.064
Empathy (EMP)	40.384
Trust (TRUST)	101.761

Table 2.3: Conventional vs. Internet Banking

Parameters	Computed F-ratio
Accuracy (ACC)	9.943
Speed (SPEE)	18.257
Confidentiality (CONF)	3.416
Customization (CUS)	22.804
Ease of Use (EASE)	89.188
Safety (SAFE)	28.641
Empathy (EMP)	62.841

Trust (TRUST)	38.932
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Table 3.4

Position of Foreign banks providing Internet Banking in India

No. of Banks	Banks with Web sites	Banks providing Internet banking	Banks providing Internet Banking in India	Accessible Web sites
36	35	25	20	16

Although only a minority of banks offers Internet banking, as Table 3.5 shows, the banks offering these services accounted for most of the assets in the Indian commercial banking system. As a group, transactional Internet banks had, on average, 187 percent more assets, 115 percent more employees, and 60 percent more offices and 157 percent more deposits than non-Internet national banks.

Internet and Non-Internet Banks: Comparison of Performance

Evaluating bank performance is a complex process that involves assessing interaction between the environment, internal operations and external activities

Chapter-5

FINDINGS

The main findings can be summarized as follows:

- Only 17 percent of scheduled commercial banks offered Internet banking in the fourth quarter (Q4) of 2015. However among the commercial banks 51.6 percent offered internet banking. As a group these Internet banks accounted for almost 75 percent of commercial banking system assets and 73 percent of deposits account.
- Among the public sector banks 48 percent of banks offered internet banking, however only 15 percent offered fully transactional internet banking. Among the private sector banks 50 percent of banks offered internet banking, however only 33 percent of banks are fully transactional banks. Similarly 55 percent of foreign banks offered internet banking and all are fully transactional banks.
- Foreign and private Internet banks offered a broad range of services over the Internet. Public sector banks lag behind in offering wider range of internet banking services and products.
- Overall, Internet banks generally are less reliant on core deposits for funding and make greater use of purchased funds relative to deposits. However, the difference is significant in case of private sector banks only.
- Internet banks generated a substantially higher proportion of their income from non-traditional activities compared to non- Internet banks. However there is no significant evidence to prove it.

- Overall internet banks were having higher premises and fixed assets expenditure. Thus banks with relatively high expenses in maintaining their branch networks may be expected to have the greatest incentive to adopt Internet banking. The private sector banks were having higher premises and fixed assets expenditure. However there is no statistical significance to show the relation between offering of internet banking and higher premises and fixed assets expenditure. A major reason of their less profitability may be the newness of the banks.

- Internet banks in foreign sector are more profitable than non-Internet banks; however, Internet banks in the private sector are significantly less profitable than non-Internet banks. The Internet banks in public sector are also less profitable than non-Internet banks.

- There is no statistical significant difference between the Internet and non-internet banks with respect to accounting efficiency and credit quality. However, private sector Internet banks are more efficient than private non-internet banks.

- For all banks, Internet banking is not a significant determinant in explaining the profitability. The impact of internet banking is significant in case of private sector banks only. Though the univariate analysis shows that the average ROE of private Internet banks is less than non-Internet banks, the difference may be attributed to high premises and fixed assets expenditure (EXPENSES), high non-interest expenses (INEFFICIENCY) and high non-current loans (CREDQUAL). However this significance also disappears when all the control variables are added in.

- Most of the growth in Internet banking in India is due to private sector and foreign banks operating in India.

- Most of the market is still untapped in India. There is a lot of scope for banking institutions to expand their Internet banking services to have a more sophisticated customer base.

RECOMMENDATIONS

1. **Security Organization:** Organizations should make explicit security plan and document it. There should be a separate Security Officer / Group dealing exclusively with information systems security. The Information Technology Division will actually implement the computer systems while the Computer Security Officer will deal with its security. The Information Systems Auditor will audit the information systems.

2. **Popularize the Internet Banking:** The banks should emphasize more on popularizing internet usage by customers which results into improvement in customer satisfaction and also cost reduction. As the use of Internet is increasing day by day so the internet banking is also rapidly followed by the customers. To make e-payment services more adaptable among the customers banks should provide more services through internet banking for query as well as for transaction purpose. To increase the popularity of e-payment among customers. RBI should stop physical cheque clearance beyond a certain amount say INR 5 lakhs or INR 10 lakhs. So transactions that are conveniently go through electronic channels should be priced higher for paper based clearing.

3. **Security Infrastructure:** At present, PKI is the most favored technology for secure Internet banking services. However, it is not yet commonly available. While PKI infrastructure is strongly recommended, during the transition period, until IDRBT or Government puts in the PKI infrastructure, the following options are recommended

- Usage of SSL, which ensures server authentication and the use of client sidecertificates issued by the banks themselves using a Certificate Server.
- The use of at least 128-bit SSL for securing browser to web servercommunications and, in addition, encryption of sensitive data like passwords intransit within the enterprise itself.

4. **Penetration Testing:** The information security officer and the information systemauditor should undertake periodic penetration tests of the system, which should include:

- Attempting to guess passwords using password-cracking tools.
- Search for back door traps in the programs.
- Attempt to overload the system using DDOS (Distributed Denial of Service) & DOS(Denial of Service) attacks.
- Check if commonly known holes in the software, especially the browser and the emailsoftware exist.
- The penetration testing may also be carried out by engaging outside experts (oftencalled ‘Ethical Hackers’).

5. **Back up & Recovery:** The bank should have a proper infrastructure and schedules forbacking up data. The backed-up data should be periodically tested to ensure recoverywithout loss of transactions in a time frame as given out in the bank’s security policy.Business continuity should be ensured by having disaster recovery sites where backedupdata is stored. These facilities should also be tested periodically.

6. **Monitoring against threats:** The banks should acquire tools for monitoring systems and the networks against intrusions and attacks. These tools should be used regularly to avoid security breaches.
7. **Education:** They should educate on a continuous basis their security personnel and also the end-users. The major reason of slow pace adoption of electronic mode of fund transfer particularly in the retail segment is lack of education particularly on the part of bank staff. There are several branches in the state which are not even aware of national electronic fund transfer system. So banks need to increase the degree of awareness at EFT/NEFT should also be used for bill payments like mobile bills, telephone bills, electricity bills as millions of customer required such kind of services. Further it should also cover the LIC policies premium and payment. MICR code with branch, bank, location is familiar to millions of account holders in the country but shifting to IFSC code (Internally used within the system) from MICR code is quite difficult for the customers to understand so still IFSC code gain the popularity both code must coexist.
8. **Certified Products:** The banks should use only those security solutions/products which are properly certified for security and for record keeping by independent agencies (such as IDRBT).
9. **Approval for I-banking:** All banks having operations in India and intending to offer Internet banking services to public must obtain an approval for the same from RBI. The application for approval should clearly cover the systems and products that the bank plans to use as well as the security plans and infrastructure. RBI may call for various documents pertaining to security,

reliability, availability, auditability, recoverability, and other important aspects of the services. RBI may provide model documents for Security Policy, Security Architecture, and Operations Manual.

10. Standing Committee: RBI may set up a standing Committee to monitor security policy issues and technologies, to review prescribed standards, and to make fresh recommendations on a regular basis.

Limitations of the Study

1. . The information about the various services and products of Internet banking being offered by the banks in India has been explored from the web sites of the banks only. No other information source has been availed. Whatever the information was available on the websites of the banks has been used for the purpose of present study.
2. Time was the major limitation, which may have affected the inferences drawn in the study.
3. The sample taken for the purpose of study comprises only commercial banks operating in India.
4. Only important products and services of Internet banking are studied. The Internet banking products and services used for this study are not concluding.
5. Lack of a critical mass of early adopters of security and trust technology among bankers operating in India to drive the transition from bricks and mortar to internet banking.

CONCLUSION

It is concluded from the above study that the Internet banking is a remarkable development in the banking sector. The ability to carry out banking transactions through the Internet has empowered customers to execute their financial transactions within the comfort of their homes. Internet banking provides benefits both bankers and customers alike. For the bankers this system is cost-effective, as it has considerably reduced the administrative costs and paperwork related to the transactions. Besides, banks can also cater to the needs of thousands of customers at the same time. Conventional banking has always been slow and time consuming. But, Internet banking has tremendously reduced the time required to process banking transactions, thereby making banking faster and convenient. With many other advantages the greatest advantage of Internet banking lies in the fact that customers are no longer required to wait in those long and wearisome queues of the banks to request a financial transaction or statement. With the help of Internet banking, customer can access any information regarding their account and transactions, any time of the day. Therefore, customer can regularly monitor their account as well as keep track of financial transactions, which can be of immense help in detecting any fraudulent transaction. In addition to this, fund transfers, both national and international, have also become faster and convenient. There are lots of advantages of Internet Banking services like; time saving, minimum efforts, cost saving, easiness and many more. But, most of the people in India especially in the rural and semi-urban areas are not using these services. This study was focused on to semi-urban areas customer's perception towards impeding the usage of Internet banking and in this study identified nine factors i.e. cost, reliability, processing

barriers, security issues, technological incontinence, lack of infrastructure, conventional approach, risk and resistance. To increase the use of Internet banking in semi-urban areas carrying out Internet banking properly, a basic knowledge of computers and the Internet is required, which limits the number of people willing to avail this facility as till date 40% of India population still stay in village where internet development is moving at very steady rate hence it is most important to develop Internet Banking services in remote areas of India. Many people, who are not comfortable with computers and the Internet, often find it difficult to use internet banking. Therefore, for beginners, Internet banking is really time consuming process. In addition to this, people also find a difficulty in trusting a completely mechanized system like Internet Banking, in case offinancial matters. In many instances, a simple mistake, like clicking a wrong button, may create a big problem. However, this uneasiness can be avoided by printing the transaction receipt and keeping it with oneself, until the bank statement is received.

However, with the advances in technology, many banks have taken the adequate measures to ward off any problems related to the security of internet banking and providing easy way to access it. The present study is an attempt to present the present status of Internet banking inIndia and its implications for Indian banking industry. A survey of the bank websites during the period of June, 2017 reveals that only69 percent of the commercialbanks operating in India as on March end 2016 offer Internet banking. Using dataon the financial performance, the present study also analyzed the performance ofan Internet group in comparison to non-Internet banking group and impact ofInternet banking on banks' performance and risk. A panel data of 85 banks

(operating as on March end 2017) was taken for the period of 2011-2017.

The analysis indicates several significant differences in the profile of banks thatoffer Internet banking and banks that do not. Broadly speaking, on an

average, Internet banks are larger, more profitable and are more operationally efficient than non-Internet banks. Internet banks have higher asset quality and are better managed to lower the expenses for building and equipment. In contrast to developed countries Internet banks in India rely substantially on deposits, the traditional source of financing.

Last, but not the least, attempt was made to see if there is any association between adoption of Internet banking and the banks' performance and risk. The evidence reveals no significant association between adoption of Internet banking by banks and their performance. However, Internet banking has a negative and significant impact on profitability of private sector banks particularly new private sector banks. Thus, adoption of Internet banking was a reason behind the lower profitability of these banks, as Internet banks in new private sector were operating with higher cost of operations, including fixed cost and labor cost, thus affecting negatively the profitability of these banks. On the other hand, internet banking has a negative and significant impact on risk, which shows that, the adoption of Internet banking has not increased the risk profile of banks.

As the Indian banking is in transition phase as it enters in Internet banking two things stand out –

- Using Less Paper
- Doing Transaction Wirelessly

By designing and offering simple, safe and secure technology, banks reach at the doorsteps of the customers with an objective of “delight customer satisfaction”. In fact Information technology has succeeded in creating a win-win situation for all concerned segments in India.

Internet banking seems poised to become an important part of the Indian banking sector in the years to come. As because of current government (from 2014 i.e. BJP) and government policies, the use of internet and technology in all sectors

increasing, also in banking sector. The banking today is re-defined and re-engineered with the use of Information Technology and it is sure that the future of banking will offer more sophisticated services to the customers with the continuous product and process innovations. Thus, there is a paradigm shift from the seller's market to buyer's market in the industry and finally it affected at the bankers level to change their approach from "conventional banking to convenience banking" and "mass banking to class banking". The shift has also increased the degree of accessibility of a common man to bank for his variety of needs and requirements. Analysts claim that Internet banking holds lots of potential with the emergence of growing Internet awareness among customers, integration of banking services with e-commerce service, the increasing reach of the Internet and the entry of global players in the banking sector. Reserve Bank of India has come out with Internet banking related guidelines.

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