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Computerization In Banks -Some Issues

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Abstract: *Renovation in Indian banks is taking place from all aspects and is being refined as time proceeds and the products of the banking industry are enthusiastically modifying the face of banking. This paper defines the way renovation has affected the banking sector and the approach of using IT products which has changed the face of banking sector in India. It tells about the current scenario of the banking industry; and the factors that have brought changes in the industry; and how these factors have contributed to the development of banking. This paper shows how banks have now flourished into one-stop Supermarkets. Their focus is flowing from bulk banking to class banking with introduction of value added and customized products. Technology helps banks to create what appearances like a branch in a business building's lobby without taking to hire manpower for manual operations. These branches are 24 x 7 working which has been made possible due to ATMs, Tele banking, Internet Banking, E-banking and Mobile Banking. The technology determined delivery channels which are used to reach maximum customers in most effective manner and at lowest cost. The splendor of these banking novelties is that it puts both customer and banker in a win-win situation. The need is to design a system to promote marginal efficiency of investment in technology and to increase the gap between marginal benefits and marginal cost involved in Banking Innovation with special reference to technological up gradation. In the paper survey on use of several E-channels and issues related to them is also shown.*
Keywords- *Banking industry, Computerization, Computerization in banks, Issues in banks*

I. Introduction

Improvements in technology employ innovations in a rapid speed in our daily life. With the increased competition in banking sector and increasing demand of customer is forcing banks to provide their service online. One of the major users of communication and information technology in business life is Banking Industry and technology has changed the face of the banking industry through computation.

1.1 INNOVATIONS IN BANKS:

- In late 1980's and early 1990's there was arrival of card- based payments- debit card, credit cards
- In late 1990's Electronic Clearing Service (ECS) was introduced.
- Electronic Fund Transfer/ Special EFT (EFT/SEFT) was introduced in the early 2000's
- Introduction of Real Time Gross Settlement (RTGS) in March 2004
- Introduction of NEFT (National Electronic Funds Transfer)as a replacement for EFT/SEFT in 2005/06
- In 2007 plan for implementation of cheque truncation system as a pilot program in New Delhi.
- Migration from cash and cheque based payment system, it has become a necessity to electronic fund transfer system on account of the following reasons:

a) Large volumes of transaction
b) High cost of physical handling and storage of paper instruments.
c) Delay in realization is a common feature.
d) Finality of payment takes time because the physical movement of instruments in large volumes from branches to and from clearing house, and sorting them according to each bank branch at the center creates problems.

II. History Of Banking Industry

Since independence Indian Banking Industry has gone under many transformations and now Indian Banking industry is no longer same as before. The change in the system is large and a vivid in all its forms, be it qualitative, attitudinal or structural.

The expansion of globalization and changing new technologies forced banks to launch new channels to gain competitive environment reducing cost, enlarging customer database and improving their financial services. The significant transformation which occurred in the banking industry of India were the changes that were occurred in the financial markets, institutions and products. In the earlier 1970's the banking industry was using a traditional system such as they had to record data by following up a database, they had to waste their time in recording that database.

2.1BEFORE COMPUTERIZATION

Earlier banking industry had two main functions primary and secondary. Primary functions included granting of loans and advances and accepting deposits. Secondary functions were providing customers with facilities of foreign exchange, issuing demand draft and pay orders, undertaking safe custody of valuables, important documents, securities, by providing safe deposit vaults or lockers. While performing these activities banks as well as customers had to face many problems like large no of queues, large no of files were there to record data manually and due to which there was a huge wastage of time. In spite of these problems Indian banks also faced also faced difficulty in competing with the international banks in terms of customer service without the use of technology.

2.2 AFTER COMPUTERIZATION

Computerization in Indian banking sector and the use of modern innovation has increased many folds after the economic liberalization as the country's banking sector has been exposed to the worlds market. In 1984 a committee was formed by RBI on mechanization in the banking industry whose chairman was Dr. C Rangarajan, Deputy Governor of RBI.

Under mechanization an electronic ledger posting machine was installed which included a type writer keyboard, a printer, two floppy disc drives and a video screen. The machine was used to prepare statement on accounts for customers, maintaining primary ledgers and post transaction entries in them. The reports were submitted by the committee in 1989 and computerization began from 1993 with the settlement between bank administration and bank employees association.

In 1994 for issues related to payment system, security settlement and check clearing a committee on technology was set up in the banking industry which emphasized on Electronic Funds Transfer system.

TABLE: Changes In Banking Technology

Transformation Banking	**Modern Banking**
Sell product	Meet customer needs
Product research	Customer research
Product sale & profitability target sale	Customer segment sale & profitability
Introduce new offering every few months/years	Introduce customer specific new offering every week/day
Banking hours only	Any time banking
Personal contacts	Personnel and electronic contacts
Focus-Customer acquisition	Focus-deepen existing customer Relationship

III. Milestones In Indian Banks And It Transformation

- MICR (MAGNETIC INK CHARACTER RECOGNITION)
  During the years 1986-88 MICR was introduced. MICR technology was used principally by the banking industry to smooth the progress of the processing of cheques and develops the routing number and account number at the bottom of a cheque. This allowed computers to translate information (like account numbers) off printed certificates.
- From the late nineties all branches started handling government business to perform their functions using technology for facilitating computerization of government business.
- IDRBT (Institute for Development & Research in Banking Technology **)**
  In 1996 a committee was formed by RBI in Hyderabad to upgrade technology in payment system. IDRBT was thus established as a result of recommendation of committee.
- Under the Information Technology Act, 2000;IDRBT ensured that e-banking transactions will get requisite legal protection with the commencement of Certification Authority(CA) functions.
- IS AUDIT (information systems audit)
  Its purpose is to determine systems internal control design and effectiveness which included security protocols. Guidelines related to it were made and circulated to ensure IS audit in banks.
- ATM's (AUTOMATED TELLER MACHINES)
  Enabling IT channels which enhances customer service at banks in areas such as cash delivery through card based transaction settlements, Automated Teller Machines (ATMs).etc.
- E-BANKING (INTERNET BANKING)
  E-Banking allows financial institution customers to conduct a secure financial transaction on website to have personal access to internet a customer must register for the service to the institution and some password will be set-up for verification of customer.
- RTGS (REAL TIME GROSS SETTLEMENT)

It is a transfer system for funds where money is being transferred from one bank to another bank on gross and real time basis. When there is no waiting period for payment transaction the settlement is in "real time". One to one basis settlement of transaction without clustering or mesh with other transaction is "gross" settlement.

IV. Transformation Stages In Indian Banks

TABLE: Transformations

STAGE OF TRANSFORMATION	STRUCTURE OF BANKS	OBJECTIVES OF THE BANKS	NATURE OF TECHNOLOGY USED
Pre-Nationalized banks(before 1969)	Private control of banks	Higher profitability	Manual work
Post-Nationalized Banks(1969-90)	Control of Govt.	Social Banking	Limited Computerization
Economic Reforms (1991-2000)	Entry of foreign and NPSBs-Social Banking to IT based Banks	Higher profitability-Fierce Competition	E-banks
Current Stage	Implementation of various committees report	New products and services	Maximum use of IT- Mobile ATMs

TABLE: Process Of Transformation

PARAMETERS OF TRANSFORMATION	PROCESS	IMPLICATIONS
Structure	IT as the catalyst of information	Improved and efficient structure
Business re-engineering		Improved vision for business
Human resources development		Productivity, Profitability and Efficiency has increased.
Work culture		Innovation are taking place.
Information Technology		International Outlook
System, Process and Procedure		Inspire employees
Ethos/Philosophy		-More ethical work culture -Vision for global economy

V. Technology Used:

❖ **Automated clearing House (ACH):**

To handle cheques in clearing house computers are used. It is difficult to clean up, substitute and establish transactions within many banks. To increase the process and wiping the operations immediately an deficiently computers are used in cleaning house. ACH allows huge number of credit and debit transactions in batches.

❖ **National Automated clearing house Association (NACHA):**

It helps to transfer debit for point-of-purchase conversation check. ACH payment is being implemented by both commercial sector and government. Business is also improving by using ACH to accumulate online payment from customers than accepting debit or credit cards. NACHA and Federal Reserve established rules and regulations to govern ACH network.

❖ **Electronic Clearing Services (ECS):**

ECS uses services of cleaning house to transfer funds from one to another bank account. This is used for large transfers from one to many accounts or vice-versa.

Types of ECS:-

Two types of ECS are ECS (credit) and ECS (debit).

1. ECS (credit)-it is used to allow credit to huge number of receivers by raising only one debit to an account like interest, salary payment, pension
2. ECS (Debit)-it is used to inflate debits to a huge number of accounts of customers or account holders for honoring a particular institution e.g. utility companies payments like telephone, house tax charges, water tax charges.

TABLE: ECS Transaction In Rs. Crores

Item	**2005-06**	**2006-07**	**2007-08**	**2008-09**	**2009-10**
ECS CREDIT	32,324	83,277	82,222	97,487	17,833
ECS DEBIT	12,986	25,441	48,937	66,976	69,819

Source: RBI, Annual Report 2009-10

5.1 NATIONAL ELECTRONIC FUND TRANSFER (NEFT):

It is an online system by which funds of Indian financial institutions are being transferred. Funds below Rs 2, 00,000/- are mainly transferred by it. Structured financial messaging solutions (SFMS) were used as a platform to make NEFT. To maintain security in NEFT public key infrastructure (PKI) technique was used.

5.2 ELECTRONIC FUNDS TRANSFER (EFT):

It is electronic transfer or exchange of money from one to another account. This exchange of money takes place across multiple financial institutions through computer systems to help banks offering money transfer service to their customers from any bank branch account to other branch bank.

TABLE: EFT/NEFT Transactions In Rs. Crores

Item	**2005-06**	**2006-07**	**2007-08**	**2008-09**	**2009-10**
EFT/NEFT	61,288	77,446	1,40,326	2,51,956	4,11,088

Source: RBI, Annual Report 2009-10

5.3 CARDS TRANSACTION:

Debit card is an alternative method of payment of cash when transactions are being made. While using it cardholder can see available balance in account. Debit cards are widely used to withdraw cash from ATM, to purchase online on internet, making bill payments, transferring funds, etc. during opening of account banks provide free of cost debit cards. From Jan 1st 2011, RBI announced that user has to enter password on ATM for every transaction with debit card.

TABLE: Card Based Payment Transaction Value (Rs. Crores)

ITEM	**2005-06**	**2006-07**	**2007-08**	**2008-09**	**2009-10**
CREDIT CARDS	33,886	41,361	57,985	65,356	62,950
DEBIT CARDS	5,897	8,172	12,521	18,547	26,566

Source: RBI, Annual Report 2009-10

5.4CORE BANKING:

To adopt core banking solutions (CBS), computerization in branches of banks is closely related with the technological development.

TABLE: Branches Under Core Banking (In %)

Name of the bank	**Branches under core banking solutions**
Public Sector Banks	90%
Nationalised Banks	85.9%
State Bank group	100

Source: Details on Trend and Growth of Banking in India 2009-10, P-55

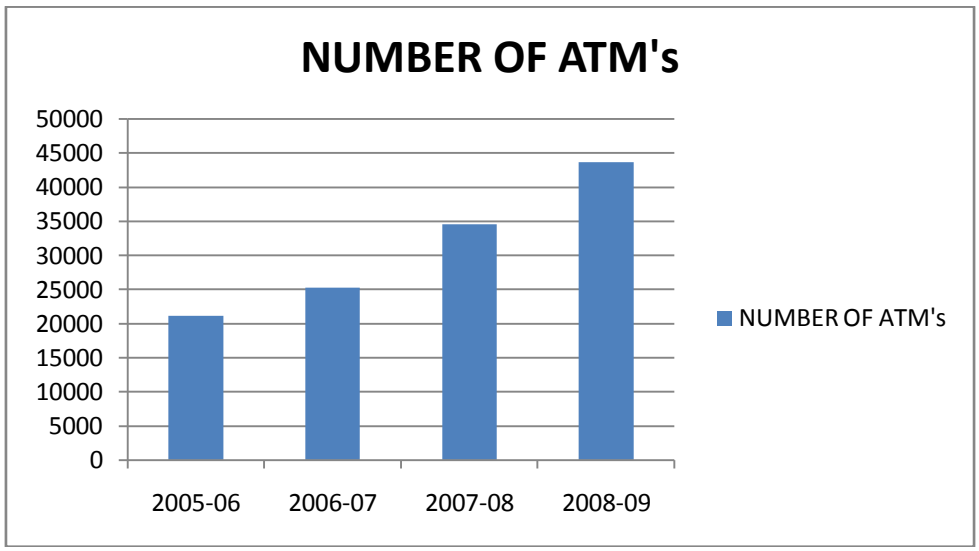
5.8 AUTOMATED TELLER MACHINE (ATM):

ATM is used for many functions of banks like to withdraw cash, to print bank statements, to transfer funds, reservation of train tickets, to pay premiums**.**

TABLE: Growth In ATM Installation (2005 To 2009)

Year	**Number of ATMS**
2005-06	21110
2006-07	25247
2007-08	34547
2008-09	43651

Source: Cyber Media DQ Estimates Research



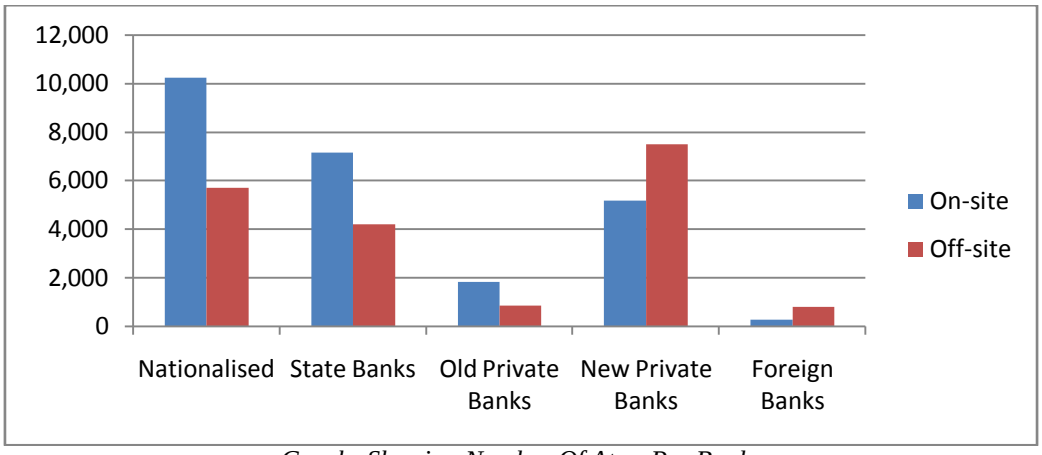
Graph: Details On Trend And Growth Of Banking In India 2008-09

At the end of march 2009 ATM's were installed in the country , largest share in off-site ATM's were eighth private sector banks while largest share in on-site ATM's was with nationalized banks.

TABLE: Branches And Atms Of Scheduled Commercial Banks

GROUP	**Rural**	**Semi-Urban**	**Urban**	**Metro-Politian**	**Total**	**On-site**	**Off-site**	**Total**
NATIONALIZED	13,381	8,669	8,951	8,375	39,376	10,233	5,705	15,938
STATE BANKS	5,560	4,835	3,043	2,624	16,062	7,146	4,193	11,339
OLD PRIVATE BANKS	842	1,554	1,344	933	4,673	1,830	844	2,674
NEW PRIVATE BANKS	271	1,084	1,371	1,478	4,204	5,166	7,480	12,646
FOREIGN BANKS	4	4	52	233	293	270	784	1,054
	20,058	16,146	14,761	13,643	64,608	24,624	19,006	43,651

Source: Report On Trend And Progress Of Banking In India 2008-09



Graph: Showing Number Of Atms Per Banks

5.7 INFINET:

Many components like servers, connecting networks, communication channels etc. are required for working of e-banking. Various service providers were established and connected in India by RBI to control and monitor e-banking. Some service of provider is INFINET which stands for Indian Financial Network. Services which are provided by INFINET are e-mail, transmission of inter-city cheque realization advices, electronic clearing services-debit and credit.

TABLE: Pros And Cons Of IT Technology

Dimensions of IT innovation	**Limitations of electronic-only retail commercial banking**	**Potential for electronic-only retail commercial banking**
Innovation in Service Offering	-Each new technological innovation accounts for (proportionally) smaller reductions in price differentials. -Bank customers remain unwilling to pay for interfaces for the new technology. While merchants expect to share the revenue of new payment through lower commission charges. -Defection rates remain low, thanks to the inertia of bank customers, which has been historically high	-Greater price transparency. -Greater convenience to consumers. -Each customer segment interacts with the bank through the most cost effective distribution channel. -Innovations such as smart cards and digital cash. -creation of new customer segments and improved relationship banking.
Operational Functional Innovation	-The possibilities of scale economies make it very hard for potential entrants to catch up, even with technically better systems. -Continued importance of contextual non-standard sable Elements to assess risks. -More specialized labour force.	-Enhanced financial performance due to reductions in overhead expenses. -Standardised of activities in payment and lending services eliminates uniqueness of proven expertise and ability to control losses from payment activities efficiently.

VI. Threats

The most up to date fraud which is now considered as the secured method of crime not including any physical damage is the technological frauds in banks.

Since 1994 computerization of banks had started in India. Working model for local area network and wide area was developed by reserve bank of India by founding unique microwave stations in order to have safe

and quick money transactions. The main job performed by computers in banks are preserving debit-credit records of accounts, carrying out electronic fund transfer, operating automated teller machines, making periodic balance sheets, printing out accounts statements etc.

6.1 RISK FACTORS:

Computer's internet facilities have revolted international banking to transfer funds and substitute data of interest concerning to banking and to perform other functions of banks and by giving different passwords and pin numbers.

Some of the negative effects of computers are classified as:

6.1.1 COMPUTER FRAUDS

6.1.2 COMPUTER CRIMES

Computer frauds are those in which misuse or defalcations are accomplished by altering with data record of computer or program, etc. whereas computer crimes are those that are committed with a computer i.e. where a computer acts as a standard.

The three most common are:

6.1.1.1 CHEQUE FRAUDS

The tenacious growth of paper cheques joined with the readily availability of most recent technology has resulted in shocking rise in cheque frauds in banks of India. It is fascinating to note that cheques as a payment method is still having a major position in both developing and developed countries.

Hard work is being done by banks to discourage customers from the use of paper cheques. Additional problems related to cheques are inbuilt manually like process of handling, high cost of transportation between parties, handling process.

Concept and Magnitude of Cheque Frauds

There are many ways to classify cheque frauds. One wide distinction is "internal" and "external". Internal cheque frauds are those in which schemes are formulated by insiders –employees are responsible for authorizing, creating and processing cheques. External cheque frauds are those in which schemes are made by independent operators or by classified gangs. Most familiar forms of external frauds are

a. Modification of cheque details

b. Creation of fake cheques

c. Forgery of cheques

Physical controls of security used are high resolution micro printing, watermarks, security inks and reflective holograms etc.

6.1.1.2 ATM FRAUDS

ATM's are electronic machines that are connected to the accounts and records of banking institutions. It allows customers to make banking transactions without going to banks. ATM's are implicit banks that allows users to withdraw money, pay bills, deposit cash etc. ATM machine is derived with the help of an access drive i.e. a card, code i.e. personal identification number or through other methods of access to account of customer or any combination thereof.

Fraud Related to ATMs

Commitment of frauds can be by both insiders and outsiders. It is known that number of frauds will rise with the increase in number of transactions. Frauds can occur due to carelessness on part of both the cardholder and part of bank. If the holder of card does not follow preventative measures then is exposed to risk.

- A cheat may go through the carbons or discarded receipts to find out the card number illegally.
- A clerk who is dishonest makes an imprint from the charge card or credit card for his personal use.

In addition to all these, E-mail and Internet-related fraud schemes are carry out with the increasing frequency, creativity and intensity.

Fraudsters adopt a number of methods which are as follows:

a) Phishing

Phishing is the center stage of Internet Scams. Phishing is the way of sending emails at arbitrary, indicating to come from a candid company which is operating on the internet. When the customers make an attempt, its request disclosing information at a bogus website will be operated by them. Information entered on the bogus website is captured by the criminals and they use it for their own purpose.

b) Skimming

Fraudsters use skimmers to make fake ATM cards, a swipe-card device which reads consumer's ATM card's information. Scammers swipe information from credulous customers by inserting onto an ATM. They take a blank card and by inserting the card they are able to encode all the information when they swipe from an ATM. And through a small camera which is mounted on the ATM the skimmer catches the PIN.

c) Spoofing

The invader creates a misleading context which false you in making an unsuitable security- appropriate decision. For example false ATM machines have been set up. If they will be having PIN number they will be having enough information to steal from the account.

6.1.1.3 Credit Card Frauds

Credit card is made of polyvinyl chloride sheet. The innermost sheet of credit card is known as core stock. Personal data is embossed over it and the cards are of fixed size. Fraudsters of credit cards steal credit cards from banks, clients and merchants. Credit card fraud is committed in many ways like:

- Authentic cards are distorted.
- Forged cards are made
- Duplicitous telemarketing is made with credit cards.
- Forged cards are taken on duplicitous applications on the address and name of other people.

People have concern that as e-commerce and internet facilities are expanded on large scale than credit card frauds will increase rapidly.

VII. Issues In Risk Management In Online Banking

The problem arising with the banks is that they have already invested huge amount of money in the online initiatives and their online offerings are remaining unprofitable. Banks are already having its existing customers so they are not getting large number of customers. Just enrolling customers to use the id will not be sufficient, the user will have to use the website frequently. Banks should make efforts to increase the usage of their site by customers and co-ordinate with the branches effectively. By doing this they will be able to obtain maximum value which would include cost reduction, higher customer retention and cross-selling opportunities.

An important issue on which banks must focus on is integrating online channel with all other banks. Integrated channels working together are effective than a group of channels which are working without co-ordination. Internet banking initiatives like risk management and implementing controls follow same principles like other processes. Most dangerous thing is considering risk management a technical problem and leaving it on IT management

Following are some of the risks which are integral in online banking:

Strategic Risk: It is one of the prospective and current risks that affect capital arising and earnings from divergent business decisions associated mainly with Board and Management decisions. As senior management is responsible for developing the business's strategy and establishing of management affective oversight over risks, then they are predictable to take an informed and planned strategic decision as whether and how the bank is providing e-banking services. There are many managers who do not understand strategic and technical aspects of the Internet Banking. Encouraged by the competition, banks introduce online banking without cost-benefit analysis even if the management does not have plan, manage and monitor the performance of technology related to products, services and delivery channels. Poor investment decisions and e-banking planning can increase a financial institution's strategic risk.

Operational-Transactional Risk: Transactional risk is also known as IT or security risk which affects capital arising and earnings from fraud, abandon, error and the inability to maintain predictable service levels. One of the important challenges faced by the banks in the online environment is predicting and managing the number of that the banks want to obtain. Certain factors like structure and complexity of banking products, types of services offered, difficulty of understanding and executing new technologies will increase the level of operational risk, especially when the institutions recommend innovative services that are not yet standardized.

Information Security Risk: Information security risk has negative impact on capital arising and earnings out of information security processes, and thus revealing the institution about the insider attacks or malicious hacker, denial-of-service attacks, viruses, data theft, fraud and data destruction. Most sensitive computer systems are used for storing highly confidential information and for high value payments which are tend to be most carefully secured. The programmes and viruses or anti viruses and security systems must be updated whenever required.

Credit Risk: A customer's failure to meet his financial commitments is called credit risk. Internet banking allows customers to apply for praise or credit from anywhere in the world. It is very difficult for the banks to verify the identification of the customer, if they are making payment through the internet. Verifying guarantees

and if the person is in another country then in case of conflict different dominion procedures may cause difficulties.

VIII. Suggestions &Recommendations:

8.1 FOR ATM:-

1. Avoid leaving cards at ATM.
2. Watch over the privacy of PIN number as you safeguard hard cash.
3. Never keep ATM card and PIN number together.
4. Don't give your ATM card to anyone and never disclose Pin to other people.
5. Do remember PIN.

8.2 FOR CREDIT CARDS:-

1. While using the card keep an eye on it.
2. Don't give your credit card information on phone call.
3. Don't reply to 'phishing' mails.
4. Don't use unsecured websites
5. Immediately sign your credit card as soon you receive it.

OBJECTIVES:

- ❖ Evaluating how computerization takes place in banking sector.
- ❖ Estimating the convention of various banking tools.
- ❖ Evaluating the usage pattern of various I.T tools in banking industry.
- ❖ Estimating the precautionary measures that litigant take against frauds.
- ❖ Evaluating preventing measures to be taken against frauds.

IX. Methodology:

Data was collected from 79 respondents who were the users of various IT tools/services. Objective questionnaire was used-as a result of which responses were tabulated.

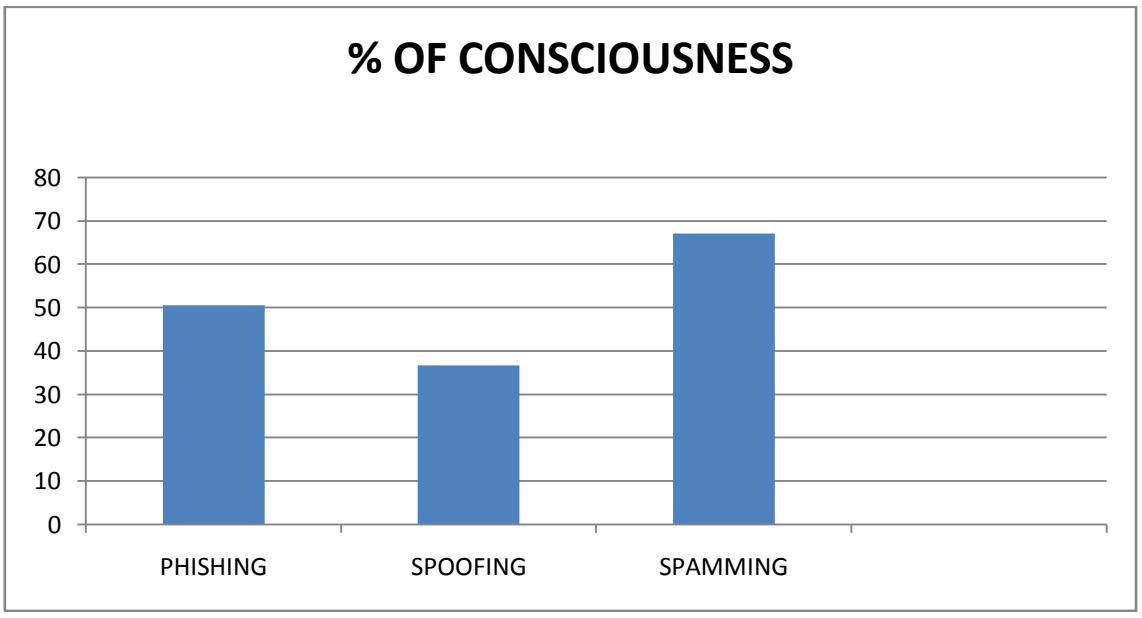
10.1 ANALYSIS

79litigants questionnaires were filled. The data was gathered through a tested and ordered questionnaire. Respondents were chosen randomly, making sure that they were shrewd customers using most latest banking products.

The findings were as follows:

TABLE: Consciousness About The Technology Threats

	YES	NO
PHISHING	40	39
SPOOFING	29	50
SPAMMING	53	26



SPAMMING clearly is most dominating of these three, though all of them are dangerous. What is not clear is that whether people are really able to appreciate the dangers it poses or maybe they just take it for granted.
PHISHING websites are common these days and itis secure to note that all respondents at some point or other have visited a phishing site. It is hazardous sign thus that they are not well-known with the huge dangers it poses. Similar threats exist with spoofing.

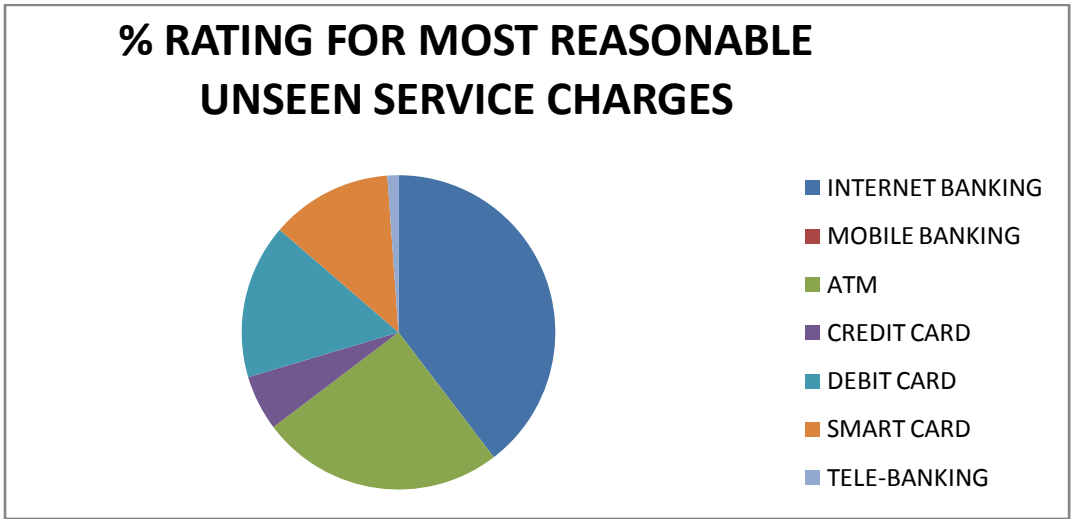
TABLE: Preventive Measures Taken

QUESTIONS	YES	NO
have you ever given your credit card information on a unverified	40	39
have you ever replied to 'phishing' mails	29	50
Surfed unsecured website	53	26
Written your PIN number on your credit card	24	55
Written your Credit Card number in a public place	15	64
Did you ever carried the only needed card	24	55
Do you change your ATM PIN every month	13	66
Do you use your birth date, phone number as your pin	53	26
Do you always ensure that card is swiped in your presence	47	32
Do you save receipts generated	31	48

The above table shows the preventive measures taken by people. It is evident that people are making some silly mistakes with their transactions.

TABLE: Marking For Unseen Service Charges

E – Channels	**Most Reasonable**	**Reasonable**	**Undecided**	**Unreasonable**	**Most Unreasonable**
Internet Banking	34	20	14	9	2
Mobile Banking	0	15	17	18	29
ATM	22	34	23	0	0
CREDIT CARD	5	31	16	15	12
DEBIT CARD	14	46	10	9	0
SMART CARD	11	28	13	16	11
TELE-BANKING	1	48	13	7	10



INTERNET BANKING is clearly leading here, followed by ATM's and DEBIT CARD's. it is pleasant to see that ATM's are growing as inexpensive, efficient and paperless way of dealing.

X. Conclusions:

In the beginning of new technological period of certain technology in banks, technology is the one which is subjected to and has balanced fundamental changes in the banks.
We implicit from the Paper:

- It is a time that we have initiated ourselves in the next course and touched new heights of brilliance in the working and efficiency of banks.

- ❖ Safety measures in terms of firewalls, data interruption, digital certification are few safety security measures which must be rooted in the software used by banks
- ❖ Regular quest for improvement of skills, mission, commitment and vision to perform efficiently for gaining profit are some area's high needs urgent attention.

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