

# Technology Infrastructure Management in Banks 2020 – Agenda for Future

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**ABSTRACT:** *Technological developments have vastly altered the banking landscape in India with significant improvement in processes and procedures leading to higher productivity, rapid product development through alternative e-delivery channels. But IT is not fully developed in all the bank groups. This paper is an attempt to study the technological development in various bank groups. The study considers the parameters like ATMs as a percentage of total branches of scheduled commercial banks, ATMs of scheduled commercial banks (Off-site and On-site), extent of computerization of branches-public sector banks, I-banking branches as a percentage of total branches, M-banking branches as a percentage of total branches, Tele-banking branches as a percentage of total branches, IT Index. On the basis of these parameters the study concludes that technology is developed in all the bank groups except public sector bank group. Public sector banks are partially computerized while foreign and new private sector banks are fully computerized by their birth. ATMs, I-banking, M-banking and Tele-banking branches are also more in the new private sector and foreign bank groups. ATMs branches of foreign and new private sector banks are three times more than their total branches. Maximum fruits of IT are reaped by new private sector banks and foreign banks as compared to their counterparts. All these parameters have been analyzed for the period 2006 to 2007. Ratio technique is used to analyze the data. The study also finds some challenges faced by the PSBs and suggests some strategies to face these challenges.*

**Key Words:** *Information Technology, E-delivery Channels and Agenda for Future*

## INTRODUCTION

The changes after economic liberalization and globalization process, initiated since 1991 have significant impact on the financial system particularly on banking industry. The fast pace of changes have radically and perceptibly transformed the operational environment of the banking sector. Information technology revolution is entirely changing the way banking business is done and has considerably widened the range of products and increased the expected demands of the customers. Technology has become the fuel for rapid change. Across the world, sophisticated software applications and advances in tele communications have interacted with rapidly improving hardware technology to profoundly alter management processes and the manner in which products and services are manufactured and distributed. This process has also resulted in a dramatic increase in productivity which is necessary to achieve a sustained increase in real incomes and standard of living. The present state-of-the-art information technology has allowed organization to wipe out the difference in time as well as distances. Information technology is no longer considered as mere transaction processing or confined to management information system. In its wider definition, it implies the integration of information system with communication technology and of innovative application to product manufacturing, design and control. Banking sector has undergone fundamental changes as the consequences of the application, information technology. Informational technology has radically altered the traditional ways of doing banking business. To understand this paradigm shift one has to look at the banking scenario in developed economies. To keep in view of this importance of technology, banks should manage technical infrastructure. Management of technical infrastructure is very necessary in this competitive and globalized era.

### E-delivery Channels

After the IT-Act of 1999, many banks have started to use e-delivery channels in routine functioning. The following are the prominent e-delivery channels used in banks.

#### ATM

ATM is a device that allows customers who have an ATM card to perform routine banking transactions without interacting with a human teller. ATMs are currently becoming popular in India that enables the customers to withdraw their money 24 hours, 9 days, 7 days a week. ATM sharing system through proper connectivity and switching technology provides the first real opportunity to serve the customers on a nation wide basis. International ATM sharing already a reality in North America and Europe seems likely to add a

whole new dimension of convenience for both businessman and tourist traveling abroad. The ATM sharing in India across banks started with SWADHAN-Shared Payment Network System in Mumbai.

#### **Benefits to Customers**

- 24 hours access availability
- Less time for transactions
- Acceptability of card across multiple bank ATMs, even foreign tourists can access Maestro/VISA ATMs.
- Plethora of services available in addition to cash dispensing.

#### **Benefits to Banks**

- Cost of setting up ATMs much lower than the branch.
- Migration of the routine transactions to the ATMs frees the bank's staff for more productive work
- ATMs serve as the crucial touch points for cross selling of bank's products
- Enables the bank to display products on the screen and serves as a media for publicity for the bank.
- Less hassle in handling cash

#### **Internet Banking**

"Internet bank" to mean a bank offering its customers, the ability to transact business with the bank over the internet. Internet banking refers to the use of the internet as a remote delivery channel for banking services. Subsequently, dial-up connections, personal computers, Tele-banking and automated teller machines (ATMs) became the order of the day in most of the developed countries. It is a web-based service that allows the banks authorized customers to access their account information. In this system, customers are allowed to log on the banks website with the help of identification issued by the bank and personal identification number (PIN). Banks replies the user and enables customers to access the desired services.

#### **Benefits to Customers**

- Convenience
- Tailored products and services
- Ease of access
- Ease of changing supplier
- Low cost
- Financial planning capability

#### **Benefits to Banks**

- Cost saving
- Reaching new segment of the population
- Bring efficiency
- Enhancement of bank's reputation
- Better customer service

#### **Mobile Banking**

Mobile banking is a system of providing services to the customer to carry out banking transactions on the 'Mobile Phone' through a cellular service provider. It is a service of banks to make available, the facility of banking wherever the customer is and whenever he needs. We can rather call this facility as "Anywhere and Any Moment Banking" but it is restricted to only information about his account and not cash services.

#### **Benefits to Customers**

- Customers need not stand in the bank counters/front offices for various enquiries about his account
- Customer can save his valuable time in banking transaction
- Give information at anytime and anywhere
- Customers can pay his utility bills in time and save paying penalties
- Plan funding his accounts for the cheques issued to various customers
- Cheque book request can be made sitting in his work place

#### **Benefits to Banks**

- Bank can utilized the time saved for expenses of business, marketing and sales activities by channel migration of customers to mobile banking
- Bank can take advantage of profits by way of commission for cellular companies by selling prepaid talk time through ATMs
- Banks providing mobile banking service can have competitive advantage on those banks, which are not providing this service

- Mobile banking enables banks to reduce costs of courier, communication and paper works etc.

### Smart Cards

It is a plastic card with chips embedded on them have been globally accepted as the most effective and secure data storage and payment mechanisms. These cards have the capability to store data and transact using this data. Since data is stored in the card, it can work in an offline mode and does not rely on a back-end or networking for transaction.

### Benefits to Customers

- Portable data, anywhere, anytime
- Time saving
- Large storage capacity
- Minimize the risk associated with fraud/theft

### Benefits to Banks

- Secure data storage
- Reduce cash
- Data digitization without large scale investment
- Increased productivity of bank staff
- Remote access
- Increased customer base

### Tele Banking

Tele-banking is only a relatively new electronic banking product. However, it is a fast becoming one of the most popular products. Customers can perform a number of transactions from the convenience of their own home or office, infact from anywhere they have access to a phone. Customers can check balances and statement information, transfer funds from one account to another, and pay certain bills and other statement or Cheque books.

### Credit Card

Credit card can be called as and equivalent of a loan sanctioned by the banks to its customer. Credit card facilitates and makes it possible to “Use First and Pay Later” the specified amount of credit as per the agreed terms of sanction. Before issuing a credit card to a customer, the bank would like to know and be sure about the identification, age, level and source of income and repaying capacity. A person intending to get a credit card issued from a bank will have to fill in a prescribed application form for the purpose. Identification documents required to be enclosed with the application.

### Debit Card

Debit card is a deposit access product where the card holder uses his own money in his bank account on the principal of “Pay First and Use Later”. It is the only passport for the success of banks in the highly competitive and globalized world.

## SCHEME OF THE PAPER

The paper has been divided into six sections. After the brief introduction, second section reviews some studies related to present study. Third section highlights objectives and research methodology. Fourth section discusses results. Section five reflects challenges and strategies and last section concludes the paper.

## II REVIEW OF THE RELATED STUDY

*Chopra, V.K. (2001)* concludes that it is a need to accept the challenges before PSBs and fought with planning, adoption of technology focused approach, rationalization of staff, reduction in operating expenses, increase in non-interest income through varied schemes etc. The new banking scenario should be in line with expectations of the controlling and regulatory authorities of the country, and shall be at par with the kind of banking offered by their peers, worldwide.

*Shastri, R.V. (2000)*, studied the emergence of IT in banking sector. He highlighted some challenges faced by banks regarding IT implementation. This paper also highlighted future outlook of IT oriented banks.

*Jalan, B. (2003)*, IT revolution has brought about a fundamental transformation in banking industry. Perhaps no other sector has been affected by advances in technology as much as banking & finance. It has the most important factor for dealing with the intensifying competition & the rapid proliferation of financial innovations.

*Shetty, V.P. (2000)*, technology is dramatically altering the ways in which financial services are delivered to consumers and continue to do so in future too. Electronic banking or the use of computers and electronic technology as a substitute for traditional paper based transactions, is here to stay.

*Uppal, R.K. and Kaur, R. (2007)*, studied the status of IT in Indian banking sector. IT revolution has not only changed the way banking business is done but has also widened the sense of products/services offered by the banks, ultimately, the paper finds some of bank problems in e-age & their solutions and suggests some areas of comprehensive research.

### OBJECTIVES, RESEARCH METHODOLOGY AND DATABASE

#### Objectives

- To study and analyze the extent of technological developments in various bank groups.
- To study and analyze the challenges of before Indian banks especially public sector banks and suggests some strategies to face these challenges.

### III Research Methodology

#### Research Design

The present study is concerned with the banking industry in India. Post-LPG (Liberalization, Privatization and Globalization) period has shown transformation in Indian banking industry. Particularly, with the introduction of IT in banking industry a lot of changes have taken place, particularly in new private sector banks and foreign banks working in India. Many new products and services are provided by these banks as compared to their counterparts. Thus public sector banks are technology wise backward. It is a need of the hour to suggest strategies for the improvement of technical infrastructure of public sector banks.

#### Sample Design

The universe of the study is Indian banking industry. The Indian banking industry has been divided into four major bank groups.

- Public Sector Bank Group – G-I (28)
- Old Private Sector Bank Group – G-II (20)
- New Private Sector Bank Group – G-III (08)
- Foreign Bank Group – G-IV (29)

#### Parameters of Study

- ATMs as a percentage of total branches of scheduled commercial banks
- ATMs of scheduled commercial banks (off-site and on-site)
- Extent of computerization of branches-public sector banks
- I-banking branches as a percentage of total branches
- M-banking branches as a percentage of total branches
- Tele-banking branches as a percentage of total branches
- IT index

All the parameters have been analyzed for the period 2006 and 2007. The ratio method is applied to calculate these ratios.

#### Database

- Report on Trend and Progress of Banking in India 2006 to 2007 RBI, Mumbai
- Performance Highlights, Various Issues, 2006 to 2007, IBA, Mumbai

### IV. RESULTS AND DISCUSSIONS

#### ATMs as a percentage of total branches

In the era of globalization and privatization it has become an imperative to introduce the information technology in the banking sector. Along with other factors IT is a survival and vital factor for the Indian banks. In 1999, IT Act has introduced and RBI allowed using e-delivery channels in all the banks. Various studies have found ATMs among the e-delivery channels is a very popular. Now-a-days banks have started mobile ATMs. They have started mobile ATMs services in space, trains and ships. But unfortunately there is a big gap among the bank groups regarding the use of ATMs.

Table 1 indicates that ATMs as a percentage of total branches. No doubt, in G-I, G-II, G-III number of ATMs have increased but in G-V and G-IV ratio is very high as compared to their counter-parts. The major implication of this table is that G-IV and G-V are more reaping the fruits of IT and it has become motivational and threat for other bank groups.

**Table 1 ATMs as a percentage of total branches**

Bank Group	Per cent	
	2006	2007
Public Sector Bank Group	0.25	0.34

Old Private Sector Bank Group	0.62	0.86
New Private Sector Bank Group	0.89	1.76
Foreign Bank Group	1.70	2.34

Source: Performance Highlights, Various Issues, 2006 to 2007, IBA, Mumbai

**ATMs of Scheduled Commercial Banks**

The total numbers of ATMs installed by the banks were 27,088 at end-March 2007 as reflected in table 2. ATMs installed by foreign banks and new private sector banks were more than three times of their branches while the number of ATMs were much lower for public sector and old private sector banks. Of all the ATMs installed in the country at end-March 2007, new private sector banks had the largest share in off-site ATMs while public sector bank group had the largest share in on-site ATMs.

**Table 2**  
**ATMs of scheduled commercial banks (on-site and off-site)**

Per cent

Bank Group	Branches	On-site ATMs	Off-site ATMs	Total
Public Sector Bank Group	49,666	10,289	6,040	9,888
Old Private Sector Bank Group	4,606	1,104	503	6,441
New Private Sector Bank Group	2,497	3154	5,038	8,192
Foreign Bank Group	273	249	711	960
Total	57,042	12,796	12,292	27,088

Source: Report on Trend and Progress of Banking in India 2006 to 2007 RBI, Mumbai

**Extent of computerization of branches-public sector banks**

The first step in technology was introduction of computers in branches of banks. After the IT Act, all the bank groups have fully computerized branches except public sector bank group. Out of 27 public sector banks (excluding IDBI) only 15 banks have computerized their branches fully exhibits table 3 while seven banks have computerization between 70 to 90 pc of their branches. Four banks, Punjab and Sind Bank (89.9), UCO Bank (62.2), Union Bank of India (37.3) and United Bank of India (71.8) pc have yet to fully computerize more than half of their branches.

**Table 3**  
**Extent of computerization of branches-public sector banks**  
(Per cent)

Extent of Computerization	Number of Banks	
	2006	2007
Nil	-	-
Upto 10 Percent	1	-
More than 10 and Upto 20 Percent	-	1
More than 20 and Upto 30 Percent	2	1
More than 30 and Upto 40 Percent	2	1
More than 40 and Upto 50 Percent	-	1
More than 50 and Upto 60 Percent	3	-
More than 60 and Upto 70 Percent	2	1
More than 70 and Upto 80 Percent	2	1
More than 80 and Upto 90 Percent	-	4
More than 90 and less than 100 Percent	5	2
Fully Computerized	10	15
Total	27	27

Source: Same as table 2

**Internet banking branches as a percentage of total branches**

In the year 1999, various e-delivery channels were introduced. I-banking is one of those e-delivery channels. Some banks adopt I-banking to increase their customers. But use of I-banking is not very popular. It can be seen from the table 4 that in G-IV and G-V use of I-banking is much as compared to G-I, G-II. In G-I and G-II I-banking branches are 23.64 pc and 24.98 pc respectively in the year 2007. Thus table implies that it is a need for public and old private sector banks to increase the use of I-banking in this wake of competition.

**Table 4**  
**Internet banking branches as a percentage of total branches**

Bank Group	Per cent	
	2006	2007
Public Sector Bank Group	16.29	23.64
Old Private Sector Bank Group	20.72	24.98
New Private Sector Bank Group	74.23	79.25
Foreign Bank Group	47.37	56.54

Source: Same as Table 1

### Mobile banking branches as a percentage of total branches

Mobile banking offers to banks is that it drastically cut down the cost of providing service to the customers. For service providers, mobile banking offers the next surest way to achieve growth. This is the reason that mobile banking is becoming popular in all the banks. Table 5 also describes that all bank groups increased the number of M-banking but as compared to other bank groups, G-III shows the highest ratio i.e. 82.32 pc. There is homogeneity in the M-banking branch ratio of public and old private sector bank group in the year 2007. Thus this table further implies that technology is not very developed in the public and old private sector bank groups.

**Table 5**  
**Mobile banking branches as a percentage of total branches**

Bank Group	Per cent	
	2006	2007
Public Sector Bank Group	15.84	24.91
Old Private Sector Bank Group	17.80	24.94
New Private Sector Bank Group	69.26	82.32
Foreign Bank Group	46.96	57.31

Source: Same as Table 1

### Tele-banking branches as a percentage of total branches

Tele-banking is also lagging behind in public sector banks as shown in table 6. There are only 16.50 pc Tele-banking branches in 2007 while new private sector and foreign banks have 20 pc more Tele-banking branches than public sector banks.

**Table 6**  
**Tele-banking branches as a percentage of total branches**

Bank Group	Per cent	
	2006	2007
Public Sector Bank Group	8.24	16.50
Old Private Sector Bank Group	18.48	20.84
New Private Sector Bank Group	41.92	47.93
Foreign Bank Group	44.53	58.46

Source: Same as Table 1

### IT index of scheduled commercial banks

IT index includes ATMs, credit card, debit card, M-banking, Tele-banking, I-banking etc. Table 7 clearly shows that IT is more develop in foreign and new private sector bank group rather than public sector bank group. Thus the table implies that public sector bank group has poor technical infrastructure.

**Table 7**  
**IT index of scheduled commercial banks**

Bank Group	Per cent	
	2006	2007
Public Sector Bank Group	46.70	48.77
Old Private Sector Bank Group	48.08	49.11
New Private Sector Bank Group	59.73	62.72
Foreign Bank Group	59.52	65.55

Source: Same as Table 1

Thus all the tables conclude that public sector banks have very less number of branches of M-banking, I-banking and Tele-banking. These banks are partially computerized. On-site ATMs are more in public sector banks while the off-site ATMs are more in foreign banks.

## V. AGENDA FOR FUTURE

Although a lot of reforms have been made in public sector banks, still there is a need to modify the policies of public sector banks. At present they are facing many internal and external challenges, which are hindering their performance but these banks can face these challenges with care and some modifications.

### Technology

Our public sector banks are lagging behind in technology when we compare them with their counterparts. Public sector banks having vast branch network in rural, poor and uneducated areas, to which the level of automation and efficiency of services are immaterial. Still, these areas lack the basic infrastructure, so how it is possible to introduce e-services/technology. Hence there is a need to make capable at least to compete with our new private sector banks.

### Competition

Due to LPG banks are facing a severe competition. To stay ahead in the race, therefore, banks will have to leverage technology for innovative product development including developing sophisticated financial products. While some banks have taken lead in developing new tech-savvy products to beat the competition, also the public sector banks in particular will have to speed up their efforts in this area.

### Poor Human Resource Management

The profitability of any organization depends on the productivity of its people, as they are the real strength of that organization. New private sector banks and foreign banks have understood this mantra and hence appointing people with fresh and creative mind with full of knowledge of latest technology. Approximately 90 pc of their staff is young with fresh brains. But public sector banks are overloaded with much experienced senior staff but with old hands who never ready to change accordingly. Now days, it is the need of the hour to develop and manage the human resources to make adaptable to the changing environment. It is a big challenge for these banks that how to manage their human capital to make it productive, because unproductive staff is only burden on business and hence weaken banks as compare to private sector and foreign banks.

### Infrastructure

Banks are increasingly building payment infrastructure with various security mechanisms (SSL, SET) because there is tremendous potential for profit, as more and more payment will pass through the internet. However, the challenge for banks is to offer a payment instruments (credit cards, debit cards, direct debit to accounts, e-checks, digital money, etc) and scalable enough to allow for a stable regardless of the workload.

## STRATEGIES

- Public sector banks should adopt the latest technology to provide e-services as need of the hour. It will also help to reduce their burden of extra establishment expenditure.
- Technology should be cost-effective, customer-driven and especially implementable in the real working
- Appoint young employees with fresh and creative minds expert in latest technology and trained the other ones also.
- Public sector banks should make their own effective competitive strategies taking into consideration the strategies of new private sector and foreign banks.
- Introduce innovative and globally accepted products/services.

## IMPLICATIONS

After making a comprehensive study regarding the use of various IT delivery channels of various products and services in banks, this study will become very useful for those banks which have still not fully adopted IT in banks, particularly public sector banks. They can modify some services, delivery channels as per the requirements of the customers, it will further helpful to improve the CRM in banks. This study will be more useful for the planners, policy makers, banking industry and those who are interested in banking studies.

## VI. CONCLUSION

Thus the study concludes that more developments in technology are taking place. In the face of the new competitive pressures, inherent rigidities in public sector banks to enhance their overall efficiency pose serious challenges. The gap between partially using IT in banks and fully using IT in banks has widened. Post LPG financial sector reforms experienced that as compared to new private sector banks and foreign banks,

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in public sector banks very less IT has taken place. This IT in new private sector and foreign banks is becoming threat and also motivation for Indian public sector banks. Thus in this competition those banks will survive in the future which will manage technology infrastructure upto 2020.

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