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## **CHAPTER- III**

### **THEORITICAL FRAMEWORK OF THE STUDY**

#### **3.1 INTRODUCTION**

As a result of globalization world over, it is difficult for the nation, big or small, developed or developing, to remain isolated from what is happening around. For a country like India, which is one of the most promising, emerging markets, such isolation is merely impossible, particularly in the field of Information and Communication Technology. Information and Communication Technology has shrunken the world as a result of which time and distance have become non-entities. In this changing scenario, banking sector is not an exception. The concept of e-Banking has drastically changed where technology is the most dominating factor which helped the banks to have mixture of knowledge with innovative products or services to maintain and win the competitive market. Before this electronic era, whole banking business was done manually and a little bit through various e-channels such as ATMs, Credit/Debit Cards, Internet Banking, Tele Banking, Mobile Banking, etc. The E-banking is an offshoot of various innovative developments in the fields of Information Technology. The Indian banking industry has started making progress in E-banking. Most of the private, nationalized and even co-operative banks have entered in the technology age and providing various types of electronic facilities and services to their customers. But at the same time it is necessary to know how the customers perceive these facilities and to what extent they are aware about the e-Banking facilities.

#### **3.2 HISTORICAL PERSPECTIVE OF INDIAN BANKING**

Indian banking system dates back to 1870 when the Bank of Hindustan was set up. At that time India was not the democratic country, it was ruled by British. Following British colonization, three banks were set under the Presidency's Act of 1876 i.e. Bank of Madras, Bank of Calcutta and Bank of Bombay. Later in 1921 all these three banks were merged to single entity known as Imperial Bank of India. Before independence all the major bank functions were carried out by the Imperial Bank of India other than foreign exchange services.

India got independence in 1947 and declared as secular, socialist and democratic republic. Reserve Bank of India was set up and Banking Regulation Act was passed in 1949. The highlight

of the Act was to bring the RBI under government control. Another major development happened in banking sector in the year 1955 when RBI acquired control of Imperial Bank of India and renamed it as State Bank of India. SBI then took over control of eight private banks managed by princely states and made its 100 % subsidiary. Through mergers and acquisitions numbers of banks were reduced to 566 in 1951 to 85 in 1960. Nationalization wave swept through all over country and most of the banks were nationalized by 1969.

- **Brief History of Indian Banking**

Three distinct phases can be identified in the history of Indian banking. They are:

1. Pre-Nationalization period prior to 1969.
2. Nationalization of banks and the period prior to banking sector reforms up to 1991.
3. New phase of Indian banking with the advent of financial and banking sector reforms after 1991.

- **Pre-Nationalization period prior to 1969**

The banking system of India was started with the establishment of the first joint stock bank, The General Bank of India, in the year 1786. After this, banks such as Hindustan Bank and Bengal Bank came into existence. East India Company established three banks- The Bank of Bengal in 1809, The Bank of Bombay in 1840, and the Bank of Madras in 1843. These three Presidency Banks were reconstituted under Presidency Banks Act, 1876. After the First World War the Presidency Banks were amalgamated as 'The Imperial Bank of India' in 1921. In 1935, the Reserve bank of India was constituted as the country's central bank under the RBI Act of 1934.

When the country attained independence in 1947 Indian Banking was exclusively in the private sector, relatively small and extremely weak. It was mainly characterized by the following:

- The banks were largely confined to urban areas, extending loans mainly to trading sector dealing with agricultural produce. Virtually no banking services were available at rural and semi urban areas.
- These institutions did not play their due role in the planned development of the country.
- Deposit mobilization was slow as public lacked confidence in banks on account of frequent bank failures.

The Government of India, concerned by frequent failures and the resultant miseries faced by small depositors and others enacted the Banking Companies Act 1949 and the title was changed as 'Banking Regulation Act, 1949' as per amendment in 1965.

- **Nationalization of Major Banks**

It was realized that social control over banks was not adequate to fulfill the requirements of a developing economy in conformity with national priorities and objectives. Consequently, the Government through an Ordinance nationalized fourteen major Indian scheduled banks on 19<sup>th</sup> July, 1969. These banks are: Central Bank of India, Bank of India, Punjab National Bank, Bank of Baroda, United Commercial Bank, Canara Bank and United Bank of India, Dena Bank, Syndicate Bank, Allahabad Bank, Union Bank of India, Indian Bank, Bank of Maharashtra and Indian Overseas Bank. Afterwards in 1980, six more banks, whose demand and time liabilities exceeded Rs. 200 crore on 14<sup>th</sup> March, 1980, were nationalized. These banks are: The Andhra Bank, The Corporation Bank and The New Bank of India, The Oriental Bank of Commerce, The Punjab and Sindh Bank and The Vijaya Bank.

- **Problems faced by the banks prior to 1991-92**

Before 1991-92, the financial sector was characterized by segmented and under-developed financial markets as well as by the paucity of instruments. The structure of interest rates was complex and their levels were regulated by the administration. The sector lacked transparency, accountability and prudential norms, while information on debtors and the ability to recover doubtful assets was very weak, leading to an increasing number of non-performing assets (www.delind.cec.eu.int, 2008).

Before 1991 banking sector in India was facing several problems such as:

- i. Eroding productivity and efficiency of public sector banks which led to continuous losses,
- ii. Increasing NPAs and deteriorated portfolio quality,
- iii. Poor customer service and obsolete work technology,
- iv. Inability to face competition effectively.

In order to remove the above-mentioned deficiencies, Narasimham Committee was appointed in 1991 and it submitted its report within three months in November 1991 with measures to improve productivity and efficiency of the banking sector (Uppal and Kaur, 2007)<sup>1</sup>.

The aim was to improve efficiency, productivity and profitability of the Indian financial sector. The recommendations among other things laid emphasis on revitalizing overall monetary policy framework, strengthening financial institutions and integrating the financial system with the global economy to attract capital and modern technology (Rajneesh De and Padmanabhan, 2002)<sup>2</sup>.

The Narsimhan Committee report suggested wide ranging reforms for the banking sector in 1992 to introduce internationally accepted banking practices. The amendments of Banking Regulation Act 1993 saw the entry of new private sector banks. Current banking system in India works under the umbrella of RBI, which acts as regulatory central body. The major participants in the Indian financial system are the commercial banks, the financial institutions (FI's), non banking companies (NBFC's) and other market intermediaries such as stock brokers and money lenders. Further commercial banks are divided into public sector banks, private sector banks and cooperative banks.

- **Narasimham Committee Report and Banking Sector Reforms**

Several changes have taken place following the recommendations made by the Narasimham committee, some of which are as follows:

- Free entry of new private sector/foreign banks
- Introduction of prudential accounting norms
- Prescription of capital adequacy requirements
- Increasing trend towards deregulation of interest rates
- Diversification of activities
- Emphasis on fee-based services
- Increasing competition
- Increasing customer expectations

These rapid developments have become new challenges for the banks. And in the post liberalization era the banking sector has truly become one in which the survival of the fittest has become the norm ( Ramakrishnan, 1999)<sup>3</sup>.

V. Leeladhar (2006)<sup>4</sup>, the Deputy Governor of Reserve Bank of India (RBI) had identified a few broad challenges faced by the Indian banks. They are enhancement of customer service; application of technology; implementation of Basel II; improvement of risk management systems; implementation of new accounting standards; enhancement of transparency and

disclosures; and compliance with Know Your Customer (KYC) aspects. The Narasimham Committee felt that computerization and mechanization is a means to improve customer service efficiency in a competitive environment of highly computerized financial companies.

### **3.3 INFORMATION TECHNOLOGY AND INDIAN BANKS**

Information and communication technology incorporation by the banks have changed the way in which banking is being done, worldwide. These changes have been pioneered in India by new private sector and foreign banks to enable them to reach a wider customer base as they had limited number of branches. However the public sector and the old private sector banks which were following the traditional method of banking till a few years ago have also realized the benefits that could be reaped through the introduction of technology in their day-to-day operations. So they are also of late increasingly pursuing a technology-centric strategy in banking operations and services delivery as manifested by their adoption of core banking solutions and the introduction of technology-enabled banking solutions (Sambrani and Suryanarayana, 2007)<sup>5</sup>.

Banks in India have therefore realized that technology strategy has become the corner stone of their business strategy and it provides totally new ways of effecting customer transactions and interactions (Godse, 2005)<sup>6</sup>.

Thrust on the usage of IT in the financial sector in India was heralded by the report of Rangarajan Committee on Mechanisation in Banks, 1984. This report, which is a land mark one, was prepared by the committee constituted under the chairmanship of Dr.Rangarajan in September 1988 to draw up a prospective plan of computerization for a five year period commencing from 1990 to 1994 for the banking industry. This committee identified the purposes of computerization as improvement in customer service, housekeeping, decision-making, profitability and productivity.

V.Leeladhar (2006), Deputy Governor, RBI has described technology as a key driver in the banking industry, the infusion of which has led to new business models and processes. This has revolutionized the provisioning of banking services through introduction of new distribution channels. Banks which have not made enough investments in technology are at peril as they will soon find their customer base eroding. Those banks which have invested in technology have gained great mileage through improved competitive advantage and are potentially poised to

attract increased market share. Technology adoption has also improved the quality of risk management systems in banks.

In India at present considerable divergence exists in the adoption and usage of technology by banks for internal operations as well as for customer interface, as shown below (Financial Sector Technology Vision Document, 2005, RBI):

1. The public sector banks are the ones that are facing the greatest challenge since they have to get over their traditional way of functioning and have to change over to latest technology which will have to encompass all their vast branch networks including those at rural centres.
2. The foreign banks have systems which are generally of international standards.
3. With regard to old private banks, core banking solutions are being implemented in their metro and urban branches.
4. As far as co-operative banks are concerned the bank customers are mostly yet to feel the benefits of IT, as the IT usage is restricted with computerization comprising essentially of accounts related activities.
5. In case of Regional Rural Banks IT usage is confined to usage of computers as standalone machines.

With the development of Information Technology, the world has become a global village and it has brought a revolution in the banking industry. The banks appear to be on the fast track for IT based products and services. Deregulation and liberalization in the financial sector has stimulated financial innovations. Breath taking developments in the technology of telecommunications and electronic data processing have further accelerated these changes. Technology has become the fuel for rapid change IT is no longer considered a mere transaction processing or continued to Management Information System (MIS). In its wider definition it implies the integration of Information System with communication technology.

One sector that has undergone fundamental changes as a consequence of the application of IT is banking. The new technology has radically altered the traditional ways of doing banking business. Today, no banking business or corporate strategy is complete without information technology. There were different phases introduced during the evolution of ICT in

the banking sector. To have a clear picture regarding the developments of ICT, it has been divided into five phases.

- **First phase:** During this phase of development, the banks were focusing on automating the laborious accounting process and the functions performed at back office operations like maintenance of deposits, calculation of interest, and maintaining of ledger accounts.
- **Second phase:** This phase of development took place in 1980 when the front office and back office operations were automated. This helped in improving the customer service, reduction in processing time on the front office and back office operations. In this way, the time on carrying out the activities as well as providing the service to the customer was reduced to a large extent.
- **Third phase:** This phase was started by opening up of new generation private sector banks. These banks with small network and having the advantage of opening the branches under the computerized environment from day one of operations introduced the networking concept and centralized operations. With further investment in ICT the banks could provide innovative financial products at the minimum cost. The core banking solution was introduced and the banks have already captured substantial business under CBS. Now instead of branch-customer concept, bank customer concept is introduced. This meant that the problems of decentralized network, data base and related operational costs are avoided. With the help of core banking solution, the banks were able to lower the service cost after the adoption of centralized operations.
- **Fourth phase:** The centralized operations led in this stage of development, where the customer carried out his own required transactions through automated teller machine, mobile banking, internet banking, and phone banking. The AAA mantra of anywhere, anytime and anyhow implemented through ATMs, internet banking and mobile banking. The operational costs for transactions through ATMs are comparatively less and also provide flexible options to the customers. The other area where there is high potential to transact and operate by the customers and where operating cost is low is “Internet banking”. Internet banking has a least cost per transaction, i.e., \$ 0.01 per transaction than mobile banking, ATM, telephone banking, and normal branch transaction.
- **Fifth phase:** At present the banking industry is in this phase of development, known as interbank connectivity. This connectivity of inter-bank and inter-branch has been possible

through “Real Time Gross Settlement System”. The concept of “bank-customer” has further improved to “banking industry-customer”. In this system, the transactions are on real time basis as and when they occurred.

From the different phases of banking sector, it is now clear that technological advancement has totally changed the scenario of banking sector. So, computerization, information technology and automation of services are key issues for banks to survive in a competitive environment; and are receiving prime attention as it touches everybody’s work in some way or the other. But this cannot be done in a day. Banks do need to have extensive investment on technology to meet all the requirements and to reduce the transaction costs. However, the implementation of IT in banking without undertaking appropriate business process re-engineering (BPR) exercise will not prove to be fruitful. Proper business process re-engineering ensures the IT initiatives to meet the required objectives, and ensures the financial outlay being properly utilized.

### **3.4 DIFFERENCE BETWEEN TRADITIONAL BANKING AND E-BANKING**

Understanding the nature of innovation is a crucial step in managing the changes associated with any innovation (Afuah, 2003)<sup>7</sup>. In order to investigate the changes from traditional bricks and mortar banking to e-banking in terms of technological knowledge, we analyze the key differences in the IT infrastructure, transaction and service dimension. Due to the emergence of internet, the manual record maintaining was shifted from manual to mainframe, to personal computer, to client /server for the IT infrastructure.

Traditional banking requires the interaction with physical facilities, processes and payments (Suresh, 2008)<sup>8</sup>. The customers are also required to carry out transactions with having a physical presence in a particular geographical location. On the other hand, e-Banking is a way of on-line transaction via internet. It constructs an alternative channel by which customers can easily make a transaction anywhere-anytime and reduce the needs for financial intermediaries (Cheung and Liao, 2003)<sup>9</sup>. Further, there is a wide variation between brick and mortar banking and e-banking. In brick and mortar banking, the services are more comfortable, risk is less, and trust can be easily maintained because of personal contact. However, in e-Banking, the services are more convenient, efficient and based on market extension. With relation to market scope, traditional banking is related to physical transaction, customers centered and focused to the

particular customers in a geographic boundary. On the other hand, e-Banking is not confined to a particular area but the customers are connected with internet connection with wide customers' base and having the active participants. From the cost point of view, traditional banking is having restricted networking, high transaction and operating cost. On the other hand, e-Banking is having high technological cost, management cost and high creational cost. From the profit aspect, as the risk is low so profits are also low. In e-banking profits are very high due to the variety of services offered but at the same time advertisement cost, commissions, service charges are very high. However, transaction cost and labour charges are quite low. From the value point of view, the main Stake holders are consumers and financial institutions in traditional banking, whereas internet service providers, content portals, online stores, and retail outlets are all the part of e-Banking.

**Table 3.1 E-Banking channels**

Sr. No.	Traditional Services	E-Banking Services	Medium	Services Available
1	Brick-Morter Services	Automated Branches	PC and LAN	Online deposit and withdrawals.
2	Branch Banking	Core Banking	PC and Internet	Instant deposit and withdraw money, getting mini statements, stop payment, etc.
3	Manual Note Counting	Note counting machines	Electronic device	Instant currency note and bundle of currency note counting at the same time detective fake currency notes.
4	Formal cheques	MICR cheques	MICR technology	Instant clearing of cheques.
5	DD/ MT/ TT	EFT	Internet and Core Banking Solution(CBS)	Instant Fund Transfer from and to any branch under CBS.
6	On Counter Cash Withdrawals	ATM, Debit Card	ATM	Withdraw money, balance enquiry, mini statement, mobile recharge, PIN change, Bill payment, etc.

7	On the Counter Cash Withdrawals	ATM, Debit Card	Point of Sale(POS)	Mobile recharge, Tax payment, Bill payment, etc.
8	Letter of Credit	E-Money	Credit Card	Purchasing and payment of utility Bills.
9	Branch Banking	Internet(PC) Banking	PC and Internet	Balance enquiry, Account Statement, Stop payment, Bill Payment, etc.
10	Branch Banking	Mobile Banking	Mobile(Cell) Phone	Balance enquiry, Account Statement, Stop payment, Bill Payment, etc.

### 3.5 BANK COMPUTERIZATION IN INDIA

The first blue print for computerization of banks in India was drawn in 1983-84 as phased plan for mechanization of banking industry (1985-89)<sup>10</sup>. Although, the Reserve Bank of India installed its first computer in 1968 and a larger one in 1979. But the United Commercial Bank, the Standard Chartered Bank, Lloyd's Bank, Grindlays and others had installed accounting machines before 1966<sup>11</sup>. But in the large scale computerization of Indian Public Sector Banks has been undertaken by the phased plan of computerization in 1985 which was constituted by Dr. C. Rangrajan Committee. Now most public sector banks are computerized fully or partially. In the first phase of computerization spanning the five years ending 1989, banks in India had installed 4776 ALPMs at the branch level, 233 mini computers at the Regional Office level and trained over 2000 programmers/ System personnel and over 1200 Data Entry Technical Operators<sup>12</sup>. According to RBI Annual Report of 2012-13, there are 100% Computerization in SBI group other nationalized Banks and all public sector banks.

**Table 3.2 Bank Computerization in India (2008-09 to 2012-13)**

Sr. No.	Banks	2008-09	2009-10	2010-11	2011-12	2012-13
1	SBI	100%	100%	100%	100%	100%
2	Other Nationalized Banks	93.8%	96.8%	100%	100%	100%
3	All Public Sector Banks	95.7%	97.2%	100%	100%	100%
4	Private Sector Banks	100%	100%	100%	100%	100%

Source-RBI Annual Report 2013-14.

### **3.6 EMERGE OF E-BANKING SERVICES**

The evolution of e-Banking started with the use of Automatic teller machines (ATM) and included telephone banking, direct bill payment, electronic fund transfer and online banking. More recently, it has been transformed by the internet-a new delivery channel that is fast, convenient, available round the clock and from whatever the customers location (Saleh and Anderea 2002)<sup>13</sup>. E-banking services are changing the face of the Indian banks. The potential customers and big companies are shifting their accounts from traditional banks [not fully computerized] to e-banks [fully computerized and provide different channels]. Mobile banking is fast catching up in India, as a cost effective alternative banking model. It is also a virtual banking model. However, there are security issues and regulatory concerns in its usage. Mobile banking can help banks and micro finance institutions to deliver and collect credit in a faster and cheaper way, besides helping in better credit management. **(Dr.Ashish Srivastava, 2006)**<sup>14</sup>

### **3.7 SCENARIO OF E-BANKING ABROAD**

Since its inception, Internet banking has experienced strong and sustained growth. In the European Union, 60 million people, representing 18 per cent of the adult population, use online banking. In France, the number of online banking accounts is recording an annual growth rate of 75 per cent. However, Estonia is a country that has become a leader in Internet banking (which now reaches 18 per cent of the population), Two Brazilian banks, Bradesco and Banco do Brasil; have thus achieved more than 4 million online customers each. Mexico is another leader of Internet banking in Latin America. The Republic of Korea leading in online brokerage and in mobile banking. In South-East Asia, Internet banking is also developing rapidly in Thailand, Malaysia, and Singapore and to a lesser extent, in the Philippines. Compared with overall Internet usage estimated at 4.4 million in Australia, the major banks together have attracted only 1.2 million to online banking. According to the Internet World Stats 2010, China with 31.6 percent of its population, United States with 77.5 percent, Japan with 78.2 percent, India with 6-9 percent, Brazil with 37.8 percent, Germany with 79.1 percent, Russia with 42.8 percent, United Kingdom with 82.5 percent, France with 68.9 percent and Nigeria with 28.9 percent occupies the position of top 10 countries with the highest number of internet users. Technology is affecting the life of every individual in this present age. Online banking is also one of the technologies

which are getting recognition round the globe. There are a lot of customers around the world who are accepting this technology quickly. There are many banks which are providing these facilities to customers. The core reason of the transfer of almost 50 percent of clients from traditional banking to online banking is perceived usefulness, security and privacy provided by online banking.

**(Tahir Masood Qureshi, Muhammed Khaqan Zafar, 2008.)<sup>15</sup>** The current statistics shows that hardly 10 percent of Indian customers use the internet for banking. Among all the facilities provided the maximum of them uses only for checking balance or requesting for a cheque book. Very few customers use the advance interactive services provided by banks. In India , banks have entered the domain of information technology and computer net working not only for improving the quality of services rendered to the customers, but also for better marketing of their products. Un-precedence changes resulting from internet revolution have built the confidence on the Indian banks and they are now in a position to face the competition even from the international banks. It is true that electronic banking has reduced operational costs substantially by cutting unnecessary duplication of work and also enables extend quality services to the customers. **(Vissapragada Srinivas, 2009)<sup>16</sup>**

### **3.8 DEVELOPMENT OF I-BANKING IN INDIA**

The financial reforms that were initiated in the early 1990s and the globalization and liberalization measures brought in a completely new operating environment to the banks. The bankers are now offering innovative and attractive technology-based services and products such as ‘Anywhere Anytime Banking’, ‘Tele Banking’, ‘Internet Banking’, ‘Web Banking’, etc. to their customers to cope with the competition. The process started in the early 1980s when Reserve Bank of India (RBI) set up two committees in quick succession to accelerate the pace of automation of operations in the banking sector. A high-level committee was formed under the chairmanship of Dr. C. Rangarajan, then Governor of RBI, to draw up a phased plan for computerisation and mechanisation in the banking industry over a five-year time frame of 1985–1989. The focus by this time was on customer service and two models of branch automation were developed and implemented. Having gained experience in the earlier mode of computerization, the second Rangarajan committee constituted in 1988 drew up a detailed

perspective plan for computerization of banks and for extension of automation to other areas such as funds transfer, e-mail, BANKNET, SWIFT, ATMs, i-banking, etc. The Government of India enacted the Information Technology Act, 2000 (generally known as IT Act, 2000), with effect from 17 October 2000 to provide legal recognition to electronic transactions and other means of electronic commerce. RBI had set up a 'Working Group' on i-Banking to examine different aspects of i-Banking. The Group had focused on three major areas of i-Banking such as (1) technology and security issues, (2) legal issues and (3) regulatory and supervisory issues. RBI had accepted the recommendations of the 'Working Group, and accordingly issued guidelines on 'internet banking in India' for implementation by banks. The 'Working Group' has also issued a report on i-Banking covering different aspects of i-banking. Internet banking in India is currently at a nascent stage. While there are scores of companies specializing in developing i-Banking software, security software and website designing and maintenance, there are few online financial service providers. ICICI bank is the first one to have introduced i-Banking for a limited range of services such as access to account information, correspondence and, recently, funds transfer between its branches. ICICI is also getting into e-trading, thus offering a broader range of integrated services to the customer. Several finance portals for provision of non-banking financial services, e-trading and e-broking have come up. Commercial applications such as Electronic Bill Presentment (EBP) and Procurement systems may not be introduced in India immediately, but are likely to have a greater impact than the retail applications. The corporate sector is adequately computerized and has already recognized the important role of ecommerce in future. Increasingly, companies are setting up websites even where there are no immediate tangible benefits to them from doing so.

### **3.9 STATUS OF E-BANKING IN INDIA**

In Indian context, many publications throw light over the importance of e-Banking and also its prospects for the Indian banking industry. Various authors have found that i-Banking is fast becoming popular in India. (Pegu, 2000)<sup>17</sup> However, it is still in its evolutionary stage. By the year 2006–2007, a large sophisticated and highly competitive i-Banking market will develop. Almost all the banks operating in India are having their websites, but only a few banks provide transactional i-Banking. A survey carried out by (Malhotra and Singh, 2006)<sup>18</sup> shows that only 48% of the commercial banks operating in India as on March end 2005 offers i-Banking. In

India, comparatively less number of studies has been conducted on the current status of i-Banking and customer satisfaction compared to other countries. Thus, there is a lot of scope for the research to present new ideas concerning i-Banking in India which may be useful to the Indian banking industry. There are a series of papers that observe that i-Banking has revolutionized the banking industry and the banking industry is under pressure to offer new products and services. However, to succeed in today's electronic markets a strategic and focused approach is required. *M.S. Khan, S.S. Mahapatra and Sreekumar 2009*<sup>19</sup>

### **3.10 THE INTERNET USERS IN INDIA**

The role of internet is becoming inevitable to corporate and society. Across the world, governments and corporate are increasingly working towards the better utilization of the internet. The internet which was initially perceived as a communication media is now metamorphosing into a powerful business media (Sakkthivel, 2006)<sup>20</sup>. According to the Internet & Online Association of India (IOAI), the Indian internet population is currently over 25 million and is expected to grow to 100 million by 2007 (Survey by New Media Review, 2005). In July 2005, Internet World Stats reported that there were 39,200,000 internet users in India representing 3.6% of the population. (Internet World Stats, August 2005). Even with millions of web users in its cities, the internet penetration rate for India remains well below 5%. Despite India's technology outsourcing power, the country's internet penetration rate is low. According to Internet Usage and Telecommunications Market Report, 2010, internet usage and population statistics reported that Indian internet population is currently over 1,175,108,018. Asia internet states reported that there are 81,000,000 internet users in India representing 6.9 % of the population. Compared to 2005 statistics it has nearly doubled. In India, slowly but steadily, the Indian customer is moving towards i-Banking. A number of banks have either adopted i-Banking or are on the threshold of adopting it. The banks started i-Banking initially with simple functions such as getting information about interest rates, checking account balances and computing loan eligibility. Then, the services are extended to online bill payment, transfer of funds between accounts and cash management services for corporate. Recently, banks have started to facilitate payment of e-commerce transactions by directly debiting bank accounts or through credit cards. It will add to the revenues of the bank.

### **3.11 E - BANKING – RECENT TRENDS IN INDIA**

Initially, the Indian banking system was domestically oriented at the time of nationalization in 1969. National policy objectives were the guiding force and banks were primarily involved in mobilizing domestic savings, lending funds to specific sectors of the economy and raising resources for financing public deficits. Technology in Indian banking has evolved substantially from the days of back office automation today's online, centralized and integrated solutions.

**Padmanaban.G(2005)**<sup>21</sup> has stated that “the banking in India has undergone rapid transformation. The last decades have witnessed a sea change in the nature of services offered by banks which has a positive impact on the customers of banks. Technology will be considered as an emerging tool for providing the better customer service. According to the internet & online Association of India (IOAI), the Indian internet population is currently over 25 million and is expected to grow to 100 million by 2007. Internet World Stats reported that there were 39,200,000 internet users in India representing 3.6 percent of population (internet world stats, August 2005). Even with millions of web users in its cities, the internet penetration rate for India remains well below 5 percent. According to Internet Usage and Telecommunication Market Report, 2010, Internet usage and population statistics reported that Indian internet population currently over 1,175,108,018. Asia internet stats, 2010 reported that there are 81,000,000 internet users in India representing 6.9 percent of the population. Compared to 2005 statistics it has nearly doubled. In India, slowly but steadily, the Indian customer is moving towards internet banking. Online banking is currently emerging as a new approach in India for providing improved accessibility and expediency to customers.

- **E-Banking**

The terms Internet Banking or e-Banking both are used as supplementary. E-Banking is one of the major parts of e-Financing. E-Banking refers to the banking operations done over World Wide Web. However more comprehensive and well established definition is given by the United Nations Conference on Trade and Development (UNCTAD). This definition covers almost all area of e-Banking. *Internet Banking refers to the deployment over the internet of retail and wholesale banking services. It involves individual and corporate clients, and includes bank*

*transfers, payments and settlements, documentary collections and credits, corporate and household lending, card business and some others.* A client operating through a PC linked to internet opens the special e-Banking site office bank and then, using a set of special secure numbers, gets accessed to his bank accounts and has the opportunity to consult them as well as to make all necessary payments and transfers from his personal accounts.

Due to these technological changes, the term which gains the utmost importance is “Electronic Banking”. E-Banking is defined as the automated delivery of new and traditional banking products and services through electronic, interactive communication channels. Through e-Banking individuals and corporate customers can access accounts, transact business, transfer funds or obtain information on products and services through the electronic media without any paper transactions. For many customers e-Banking means 24 hours access to cash through ATM or direct deposit of pay cheques into savings account but electronic banking involves different types of transactions. E-Banking also means transferring of funds electronically with the use of computer and other electronic modes. It allows customers to automate cash receipt payment. Increased productivity and cutting of transaction costs are the most obvious benefits of e-banking. The dramatic difference in cost and speed between traditional ‘brick-to-brick’ banking and Internet-mediated financial ‘brick-to-click’ banking services and related information delivery has led to rapid growth of online payments, e-Banking and online credit risk management. However, the Indian banking industry is expected to be a leading player in e-business while the banks in developed countries are working primarily via internet as non-branch banks.

### **3.12 E-BANKING PRODUCTS AND SERVICES**

E-Banking has provided immense opportunities in offering goods and services to the customers. These products are totally changing the outlook of banking sector. Now the industry is shifting towards cashless society, where physical cash, notes and coins have become a thing of the past, and digital cash and electronic purse have taken their place. There are many non-cash payment methods which are in use. These are as follows:

#### **• Automated Teller Machine (ATM)**

Generally, people assume that ATM means ‘All Time Money’, but technically it stands for ‘Automated Teller Machine’. ATM is a cash rendering teller machine. This is a machine which is

frequently seen at banks and other locations, such as shopping centres and building societies. Customers can withdraw any sum up to a limited amount, can view the status of his account and order a new cheque book. There is a number called Personal Identification Number (PIN), which is a key for carrying the desired transactions. On the other hand, we can say that it's a machine which replaces the human aspect of providing the cash and standing in a long queue. ATMs can be installed on the bank's premises (onsite ATMs) for which no license is required from RBI. However, for ATMs to be installed at public places (offsite ATMs), banks have to obtain a license. These offsite ATMs are mainly installed at airports, railway stations, market places, petrol pumps, etc.

The first bank to introduce ATM concept in India was the Hong Kong and Shanghai Banking Corporation (HSBC) in the year 1987, Indian Bank, Bank of India was the first bank to introduce ATM in Bombay in 1988, followed by Vijaya Bank at Delhi in 1989 and thereafter almost all commercial banks have started ATM facility. Today some Urban Co-operative Banks (UCBs) and District Central Co-operative Banks (DCCBs) also providing ATM service in India. However, SBI is implementing the concept of 'ATM in Quality'. SBI group has installed more ATMs in India. The Corporation Bank has second largest network of ATMs amongst public sector banks in India. Today all public sector banks are taking the installation of ATMs seriously for Indian market. They are either setting up their own ATM centres or entering into tie-ups with other banks.

POS is an integrated PC based device with a monitor, POS keyboard, POS printer, Customer Display, Magnetic Swipe Reader and an electronic cash drawer all rolled into one. More generally the POS refers to the hardware and software used for checkouts kept at merchant's shop. POS terminals are predominantly used for sale and purchase transactions. In India the users of POS service are relatively less. Therefore to encourage customers for the use of POS, RBI has allowed cash withdrawal from POS terminals across the country since 2009. According to the bankers this will also encourage the use of debit card at POS enabled merchants.

#### • **Mobile Banking**

The traditional brick and mortar is done from fixed branch premises, where the customer has to go personally for carrying out business transactions. Through mobile banking the customer can conduct a host of banking transactions and inquiries through the mobile. Mobile banking can also be carried through a mobile van with or without computerized banking system. The mobile

van moves from place to place on designated routes at designated hours and the customers can transact their banking business, such as deposit, withdrawal, cheque collection , draft issuance, pass book updates, etc. Mobile banking helps the customer to do his account management, electronically which was earlier possible through internet banking. Mobile banking service is divided into two categories:

(i) **SMS Based:** This service can be availed from any mobile having SMS based service. The customer types the required keywords and PIN number and send the message to the predefined number.

(ii) **Menu Based:** The customer downloads and installs the application on the mobile. Whenever the customer wants any sort of information, he selects the application, selects the request from menu and sends the request to the designated number. This request is internally sent as SMS text. The central computer at bank sends back the result to him.

• **Internet Banking:** As the banking industry has been constantly innovating and with the advent of technological development particularly in the area of telecommunication and information technology, one such innovation is internet banking. Internet banking is defined as an internet portal through which the customers can use different kinds of banking services from bill payments to making investment (Pikkarainen et al., 2004)<sup>22</sup>. All the banks using internet as an additional channel or banks using internet only as delivery channel are now on the equal footing to offer their banking services on the internet and to compete for customers around the world (Karjaluo et al., 2002)<sup>23</sup>. Internet banking is useful for both the bankers and the customers. The rationale use of internet banking technology from the bank point of view is mainly related to cost savings (Sathye, 1999)<sup>24</sup>. Internet banking sites can be segregated into four categories from level I, which offers just minimum functionalities, such as access to one's deposit account data, to level IV sites that offer sophisticated services. Generally, internet banking is offered in two ways. First, an existing branch with physical offices can establish a website and offer its customer internet banking in addition to traditional banking channels. Second way is that bank may be established as "virtual", "branchless" or "internet" with a computer server at its heart that is housed in an office that serves as bank's legal address. Virtual banks may offer customers the ability to deposit and withdraw the funds at automated teller machine or other remote channels used by the banks (Furst et al., 2002)<sup>25</sup>.

Nevertheless, Internet banking has relatively high initial set-up costs (both technological and marketing) with savings following later and it appears, at present, that no major banks have achieved significant cost reductions through its provision (Linetal., 2001)<sup>26</sup>

• **Electronic Fund Transfer (EFT):** In the present age of integrated technology consisting of computers and communication facility, distances need no longer be constraint in providing customer service. EFT system hosted and operated by the RBI, permits transfer of funds, from any account to any other account at any branch of any member bank in any other city (Jain, 2006). In other words, electronic fund transfer facilitates the quick movement of deposit money from one bank account of one customer to the bank account of another customer. In this system, the sender and the receiver may be located at different cities. As an important tool of customer services, EFT system addresses the needs of individual customers to transfer money from one place to another within a day or two. Following are the participants of this scheme:

- \_ Individual customer through their banks/ branches.
- \_ Service branches of the bank.
- \_ Reserve Bank of India (National Clearing Centre and deposit account of RBI)

**Real Time Gross Settlement (RTGS):** RTGS stands for Real Time Gross Settlement. RTGS system is funds transfer mechanism where transaction of money takes place from one bank to another on a 'real time' and 'gross' bases. The RTGS system is primarily for large value transaction system established as per recommendations of Dr. R.H. Patil Committee (2002). RTGS system has been implemented from March 26, 2004, placing India at par with the best practices in the world in terms of payment systems. It is system for large value clearing operated by RBI. This system ensures settlement of payment with no credit risk involved. It is therefore, essentially a system for settlement of large value and time critical payments. The system facilitates inter-bank as well as customer payment.

Interbank clearing is used by banks mainly for four types of transactions namely: call money transaction, Rupee payment of foreign currency transaction, bank to bank transactions for funding upcountry requirements and inward remittances. Inter-bank clearing was introduced in Chennai in April 1989 followed by Mumbai, Kolkata and New Delhi. In India all bank branches

are not RTGS enabled because only core banking (CBS) enabled bank branches can extend this facility.

**Electronic Clearing Service (ECS):** To solve critical problem of large clearing transactions, in April 1968 the clearing banks set up Inter Bank Computer Bureau, later to become a separate company known as ‘Bankers Automated Clearing Service-BACS’. Now there is MICR, ECS Debit and Credit clearing services and National Electronic Clearing Services are now available to bankers and customers both as clearing mechanisms. ECS scheme operated by RBI since 1996-97. A new Variant of ECS styled by National Electronic Clearing Service (NECS) was introduced in September 2008.

ECS credit facilities are the bulk payments where by the accounts of the institution remitting the payment and the payments remitted to beneficiaries’ account. In India it is mostly known as pay unite system provided by banks to employs.

ECS debit facilities are the collection of payments by utility companies. In this system the accounts of customers of utility company in different banks are debited and the accounts are transferred to the account of the company. ECS debit is automated method of payment which an option to pay monthly/ quarterly/half-yearly/yearly interest/dividend/salary/pension, utility bills like telephone, electricity, loan installments, insurance premium etc. directly through customers’ bank account. The RBI report shows that there is significant growth in the ECS transactions in India since its inception. At the end of year March 2010 there are 34,550 branches participated in ECS and the amount of ECS based credit is increased from Rs. 97,468.58 crore in 2008-09 to Rs. 1,64,902.30 crore in 2012-13 and ECS based debit transactions has been increased from Rs. 66,975.84 crore to Rs. 1,28,290.10 crore in 2012 -13.

		<b>2008-09</b>	<b>2009-10</b>	<b>2010-11</b>	<b>2011-12</b>	<b>2012-13</b>
<b>ECS (Credit)</b>	<b>Vol.</b>	889.94	981.33	1018.54	1216.28	1423.35
	<b>Amt.</b>	97468.58	117612.60	128902.04	142201.34	164902.30
<b>ECS (Debit)</b>	<b>Vol.</b>	1600.55	1492.81	1582.25	1623.71	1741.28
	<b>Amt.</b>	66975.84	69523.87	78498.10	92312.45	128290.10

Source: RBI Annual Report 2008to 2013

- **MICR cheque clearing service:** MICR (Magnetic Ink Character

Recognition) is the technology to reading and identification of paper documents by electronic machines. MICR is a character recognition technique used primarily by the banking industry to facilitate the processing of cheques. According to available information MICR technique was first demonstrated to the American Bankers Association in July 1956 and by 1963 it was almost universally employed in the U.S. MICR cheques are processed by the MICR scanner, it is the electronic device for scanning MICR cheques and recording to city, name of bank, name of branch and other details of cheque. The MICR scanning machine can scan the MICR cheque and read their data and convert in digital form and sent that information to service computer of the bank to further clearing operation. It facilitate easy clearing and sorting of thousands of cheques.

As per changing technology, RBI has taken one more step in the cheque clearing system in 80s, it is known as inception of Magnetic Ink Character Recognition (MICR) technique for cheque clearing. This technique was installed in Mumbai in 1986 followed by Chennai, New Delhi (1987) and Kolkata (1989). The MICR clearing is now in operation by centers including RBIs 16 MICR clearing centers in Hyderabad, Bangalore, Ahemdabad, Kanpur, Jaipur, Nagpur, Baroda, Pune, Gauhati, Trivandrum etc. Now almost all banks are issuing the MICR cheques to their customers. MICR cheque is a paper instrument but it has MICR coding. The codes are arranged on cheque by the order-city, name of bank and name of branch as given in following figure:

- **CTS (Cheque Truncation System):** Other than electronic clearing service

RBI has implemented CTS (Cheque Truncation System) to faster cheque clearing services. In the cheque truncation process the physical cheque will be converted in electronic image and image of cheque would be sent to the drawee branch along with the relevant information like MICR fields, date of presentation, presenting banks to its clearance. This process works through the INFINET (Indian Financial Network) with proper authentication. The required time frame of cheque clearing via cheque truncation is T+0 (same day) for local clearing and T+1 (within one day) for intercity clearing.

The Cheque Truncation System was implemented in the National Capital Region in February 2008. Cheque Truncation System will be rolled out at Chennai. However in most of the

developed countries cheque truncation system is in force since long. Countries like Denmark; Belgium has adopted this system since more than two decades. Singapore has adopted this system from the year 2002. The present system of MICR cheque clearing requires the cheque to be physically moved from place to place for their presentation. It is required as per the Negotiable Instrument Act 1881, under which the physical instrument had to be presented to the drawee branch for payment. Now the law amended during the year 2002, according to IT Act 2000 to paving the way for the presentment of electronic images instead of physical instrument. As in February 2010 the RBI has issued more specific norms for scanning and imaging cheques for truncation as 'CTS-2010 Standard'. This system is beneficial because of the following reasons:

- 1) Speedy collection of cheques.
- 2) Increasing customer service.
- 3) Reduction in the frauds related with clearing.
- 4) Minimum cost of collection of cheques.
- 5) Reduction in reconciliation problems.
- 6) Elimination of logistic problems.

**E-Money/Plastic Money:** The evolution of money is one of its progressive dematerialization from metal money to e-money. Recently paper money system has been replaced by e-money. According to the Report on Electronic Money published by European Central Bank, e-money is an electronic store of monetary value on a technical device that may be largely used for making payments to undertaking other than the issuer without necessarily involving bank account in the transaction but acting as a prepared bearer instrument (Desai, 2007 pp 12-13)<sup>27</sup> It is also known as plastic money, Cyber cash, e-cash and Digcash (Digital Cash). Plastic card is also known as plastic currency involving electronic device in their functioning is gaining popularity as a convenient mode of payment.

As per history of the electronic money the most popular type of e-money is debit card, since their launch in 1987, debit card have established as the most popular card payment with consumers. Initially, developed as a convenient and cost effective alternative to point of sale (POS) cheques, debit cards are increasingly used as a substitute for cash. A debit card is a plastic card which provides as e-payment method to cash when making purchases. Debit cards are

accepted at many locations including grocery stores, retail stores, gasoline stations and restaurants. It is an alternative to carrying a cheque book or cash. There are currently two ways that debit card transactions are processed. They are: Online debit cards and Offline debit cards. Online debit cards require electronic authorization of every transaction and the debits are reflected in the users' account immediately.

**Credit card:** A credit card system is a type of retail transaction settlement and credit system named after the small plastic card issued to the users of system. In case of credit cards, the issuer lends money to the consumer. These cards combine a payment instrument with a credit agreement. Bank credit cards are generally issued by a bank under a license from a national organization such as Visa and Master card and typically involve in revolving credit agreement. At present there are four major service provider who are providing technical services to banks to provide credit and debit card facilities worldwide i.e. Visa, Master Card, American Express and Discover.

**Debit card:** it is a plastic bank card used at ATM or POS terminal that enables a customer to have funds directly debited from customers' bank account. Some financial service such as check cashers and Currency exchanges, may market a so called debit card that is not tied to a deposit account but instead functions as an stored value card (Anguelov et al, 2004)<sup>28</sup> The debit cards most commonly used in UK are Visa Debit card issued under the Visa card scheme and Maestro Cards, previously known as Switch cards have been rebranded as Maestro to make them part of worldwide scheme.

There are two types of Debit cards: Online and Offline Debit cards. Online debit card require the card to be present with the card holder entering a PIN to complete the sale while offline debit card transactions may or may not be authorized against the card holder. However, now most of the banks are providing online debit cards.

Use of card based payment system was introduced during 1960s in India. While as a branch of Diners Club Card in August 1980, credit card facility was provided by Central Bank of India as Master card. Then Andhra Bank has issued a credit card in 1981 with linkage VISA and Japan Credit Bureau International. In India card fashion increasing day by day due to its convenience and utility. Many banks have providing customized credit and debit cards to increase their

business in India. However the card base as well as usage has increased considerably during recent years. Because of increased use and transaction through credit cards in India RBI has issued new guidelines to issue credit cards in India as per notification date 1<sup>st</sup> July, 2009 to insure credit card frauds and customer protection.

### **3.13 MODERN PAYMENT SYSTEM IN INDIA**

The modern payment system is featured by computerization of clearing operation. The important milestone in development of payment system was Magnetic Image Character Recognition (MICR) based mechanized cheque processing technology in Mumbai (1986), Chennai, New Delhi (1987) and Kolkata (1989). To reduce the pressure on the cheque clearing and settlement process and to improve customer service (particularly to high volume but low value clearing) the Central Bank introduced an Electronic Clearing Service (ECS) credit scheme and ECS debit scheme to facilitate payment of charges to utility services. An efficient and stable payment system is the backbone of any economy. Knowing the importance of payment system in the financial world, the RBI has taken number of steps to strengthen the institutional framework for the payment and settlement system in the country. The emergence of e-commerce has created new financial requirements that in many cases cannot be efficiently fulfilled by the traditional payment system. The improvement in payment system in India has facilitated the integration of financial market. For recognizing these needs the RBI has implemented bank computerization project in India and providing ICT based networking facilities to the banks and financial institutions in India.

In Indian banking system ATM also provides better alternative to traditional payment system. It can be used for payments of utility bills, fund transfer between accounts, deposit of cheques and cash into accounts, balance enquiry and several other banking transactions. Apart from these facilities RBI has enhancing the payment system by introducing MICR technology, ECS, EFT, NEFT, Card Based Clearing (CBC), RTGS, etc. according to the changing payment and settlement system in India the government of India has introduced 'The Payment and Settlement Bill 2006'. The Bill seeks to designate the RBI as the authority to regulate the payment and settlement system. It is implemented to enhance payment system with four broad objectives: *Safety, Security, Soundness and Efficiency.*

### 3.14 RISKS IN E-BANKING

E-Banking improves a bank's performance and competitiveness so that existing customers can benefit from greater degree of convenience in effecting transactions. However, the banks are facing with different levels of risks and expectations arising from electronic banking as compared to traditional banking services. Financial institutions have faced difficulties over the years for a multitude of reasons. Banks need to manage the credit risk inherent in the entire portfolio as well as the risk in individual credits or transactions. Banks should also consider the relationships between credit risk and other categories of risks. Various kinds of risks are involved with e-banking .Some of these risks are discussed below:

**Operational Risk:** Due to the introduction of e-Banking technology, operational risks are on the rise and should be managed in a proper way. The bank needs to manage these risks in the areas of security, data confidentiality, data system integrity, system availability and outsourcing. These risks are closely linked to reputation risks and legal risks for banks as if the security breaches than it will have damaging effects on the reputation of bank which could have the legal consequences also. Security constitutes an important part in the operational risk of e-banking. Threats can come from inside and outside the system. It includes “hijacking”, “sniffing” or “spoofing” to retrieve and use confidential consumer information, add customer assets and subtract customer liabilities or interrupt operations. Human resource management must ensure that personnel involved in maintaining and operating the websites and system are adequately trained in security practices. In order to have a proper security system, there should be segregation of duties, means accessing and control should be different. These practices should be regularly tested and reviewed by outside experts. Further, the key to control transaction risk lies in adapting effective policies, procedures and controls to meet the new risk exposures introduced by e-Banking. These controls include division of duties, dual controls, information security controls, processes, tools, expertise and testing of different methods of e-Banking.

**Reputational Risk:** Reputational risk is the risk related to negative opinion of the customers that result in critical loss of funding of the customers. Reputational risk may arise due to action taken by the bank itself or in response to action of the third parties. This risk mainly arises when the system is not able to perform as expected. This risk may also arise from targeted attacks on

banks. For example, a hacker penetrating a bank's website may alter to intentionally spread the inaccurate information among the customers regarding bank's products and services. So, reputational risk is increased through e-banking if the bank fails to deliver secure, accurate and timely services on a consistent basis.

**Legal Risk:** Legal risks also arise in e-Banking. Banks engaging in electronic banking and electronic money activities can face legal risks with respect to customer disclosures and privacy protection. Customers who have not been adequately informed about their rights and obligations may bring suit against a bank. Failure to provide adequate privacy protection may also subject a bank to regulatory sanctions in some countries. Banks choosing to enhance customer service by linking their internet sites to other sites can also face legal risks. A hacker may use the linked site to defraud a bank customer; and the bank could face litigation from the customer.

**Financial Risks:** It is the constant and terrible fear of transactions errors causing a potential monetary loss suffered by customers who perform online transactions. So, it is clear that e-banking is actually lacking the assurance provided in traditional banking (Lee, 2009) and this is due to the fact that online banking is considered as an innovation which is incompatible with consumers' habits (Kuisma et al., 2007)<sup>29</sup>.

**Performance Risk:** This is the risk caused due to malfunctioning of online banking websites. Customers are often afraid that a disconnection from the Internet will occur while performing electronic transactions that can lead to "huge" unexpected losses (Kuisma et al., 2007). This idea was confirmed by Sathye (1999) who argued that Internet access is a crucial variable on which the adoption of online banking depends and by Almogbil (2005)<sup>30</sup> who succeeded to show that a significant relationship exists between the speed of internet access and the acceptance of electronic banking.

**Privacy Risk:** It refers to the potential loss due to fraud or a hacker compromising the security of an online bank user (Lee, 2009)<sup>31</sup>. This risk is accentuated since the emergence of phishes whose hobby consists of attempting to collect personal information, such as usernames, passwords and

credit card details. They not only lead to users' monetary loss, but also violate users' privacy (Entrust, 2008)<sup>32</sup>.

**Time Risk:** It is the time loss; the lateness in receiving the payment or the difficulty of navigation (Lee, 2009). This can be due to a disorganized website, to slow downloadable pages and long time needed to be a PC-literate.

**Credit Risk:** Credit risk is not increased due to loan originated through e-Banking channel. But sometimes bank may not be able to evaluate the credit worthiness of the customer due to remote banking procedures. However, online loan origination and approval tend to make risk management of lending tasks more difficult and challenging. The banks should always verify the customers' identity for online credit applications and also the monitoring and controlling the growth, pricing, underwriting standards and ongoing credit quality of loans originated through e-banking channels.

**Other Risks:** The use of electronic delivery channels for banking activities also has implications for other traditional banking risks such as strategic and business risk, credit risk, liquidity risk, market risk and foreign exchange risk. Offering e-Banking service to the customers involves strategic and business risk as the sophisticated technology involved in e-Banking cause's uncertainties in business transactions. To build a new customer base, the banks have to set up their prices very competitively. Investment in technology involves significant start up costs. Adequate opinion of experts is needed. Supervisors must ensure that management of banks are aware of these risks involved in e-banking and carefully access their strategic options so that the added uncertainties may be compensated by additional returns.

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