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**REVIEW OF
LITERATURE**

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CHAPTER II

REVIEW OF LITERATURE

The review of literature relating to the study on 'An Analytical study on E-Banking Systems and their Performance in Coimbatore city' is discussed under the following heads:

- I) Banking Sector Reform;
- II) History of E-Banking in India;
- III) Concept of E-Banking;
- IV) Merits of E-Banking;
- V) Demerits of E-Banking; and
- VI) Specific studies relating to the topic

I) Banking sector reform

Vidya Sanaih (2006) states that the advent of nationalization of banks helped to increase the number of branches increase the volume of deposits and ensured wider dispersal of the advances. The developments taking place abroad and in India as well, which made the position of Indian banks vulnerable include:

increased competition within the financial services sector, technology leading to lower transactions and information costs, lower entry barriers leading to new suppliers of banking services, unsustainable cost structure, symptoms of excess capacity, less protective regulation etc. Realizing these ill-effects, efforts were made to bring reforms in financial system of the country.

In the view of Kanthah (2006) Reserve Bank of India has come out with a new set of broader framework of guidelines. The Committee on Banking Regulations and Supervisory practices had released guidelines on capital

measures and capital standards in July 1988 which were accepted by the Central Banks in various countries including RBI.

Panthah (2007) states that the financial reforms initiated are based on twin principles of operational flexibility and functional autonomy so as to continuously enhance efficiency, productivity and profitability of the financial institutions. It aimed at providing a diversified, efficient and competitive financial sector with ultimate objective of improving the allocative efficiency of available resources, increasing the return on investments in promoting an accelerated growth of real sector of the economy.

Khan (2007) observed that a legal framework that clearly defined the rights and liabilities of parties to contracts and provides for speedy resolution of disputes is a sine qua non for efficient trade and commerce, especially for financial intermediation. Keeping this in view several legislative initiatives have been undertaken in the banking and financial sector over the past several years.

Satish (2007) states that the banking sector is leveraging on technology and end to end Core Banking Solutions (CBS) not only to cut costs but also to better serve the customer and beat the competition. Core Banking is the nerve centre of any banking operation. It makes banking simple and also helps to achieve transparency and good corporate governance.

II) History of E-Banking in India

During the **FIRST PHASE** of development, the banks were focusing on automating the laborious **accounting process and back office functions** like maintenance of deposit accounts, calculation of interest and maintenance of general ledgers. The Advanced Ledger Posting Machines (ALPM) was used for this purpose. This was just the beginning but demonstrated the advantages of introducing the technology in a bigger way.

The **SECOND PHASE** of development took place in the late 1980's when the banks gave serious thought to **automate the front office as well as the back office** functions to improve the level of customer service with reduction in processing time as well as to automatically synchronize the front-office and back-office functions for control purposes. The Total Branch Mechanization (TBM) was introduced during this period and the branches were able to capture the entire data/transactions related to their operations in a stand alone mode.

The **THIRD PHASE** was sparked by the opening of new generation private sector banks. These banks with small network and with the advantage of opening the branches under computerized environment from day one of operations aggressively introduced the **networking concept and centralized operations**. With substantial information technology investments and lower operating costs, these banks could provide innovative financial products at a cheaper cost. The existing banks also networked their branches as well as initiated the process of centralized operations.

The "Core Banking Solution (CBS)" is introduced aggressively and the banks have already captured substantial business under CBS. The "branch-customer" concept is done away with and the "bank-customer" concept is introduced. The banks were able to take full advantage of centralization by improving the efficiency from administrative and cost perspective. This has improved the level of customer service to a great extent through operational conveniences and reducing the transaction/remittances time. The banks were able to retain and improve the customer base as well as able to lower the service cost after adoption of the centralized operations.

The centralized operations led to the **FOURTH PHASE** of development whereby the banks have provided options to the customers to carry out on their own the required transactions through **Automated Teller Machines (ATM), Mobile banking and Internet banking**. This provided the option to the

customers to transact in additional way or through the tech-way. Anytime, Anywhere and Anyhow is implemented through ATMs and Internet banking.

In the **FIFTH PHASE** of development wherein the “intra-bank” connectivity is effectively extended as “inter-bank” connectivity. The paperless on-line inter-bank remittances have become possible through “Real Time Gross Settlement (RTGS)”. The concept of “bank-customer” has further improved to “banking industry – customer”. The “cash tree” consortium of networking the ATMs of various banks is another customer-friendly development in this direction. The above trends indicate that most of the banks are shifting from a ‘product-centric’ model to a ‘customer-centric’ model as they develop their new E-Banking capabilities.

The earliest model of ATM was invented by Mr. Luther George Simian. The origin of ATMs can however be traced back to June 1967 when Barclays Bank installed the first cash dispenser manufactured by Burroughs in the UK. Chemical Bank installed the first ATM in 1969 at its branch in New York using a coded card for dispensing a set sum of money. In 1971, Don Wetzel introduced a more advanced ATM and where payment of cash, acceptance of cash, and transfer of money to different accounts was possible.

Phases of ATMs	Functions
First Generation	Basically dispensed cash and offered limited banking functions.
Second Generation	Use of micro computer technology, technical improvements and significant reduction in cost.
Third Generation	ATMs were configured to suit the specific requirements of the banks and also permitted up gradation as and when new technology emerged.
Fourth Generation	ATMs graduated to systems based on PC's and thus could support a wide range of services.
Fifth Generation	Open Web-Enabled ATMs, delivery of wide range of bank products and services, integration of ATM channel with the other retail banking delivery channels.

III) Concept of E-Banking

According to Net Banker (2003) a true internet bank is one that provides account balances and some transactional capabilities to retail customers over the World Wide Web. Internet banking involves the use of internet for delivery of banking products and services, which includes: transferring funds across one account, order demand drafts, pay utility drafts, pay utility bills, stop payments on cheque, obtain account balance, view one's statement of account online, send E-Mail to bank for any queries, apply for loans etc. A study on the use of Internet banking by Reserve Bank of India indicated that there were only 1 percent online users in 1998. This increased to 16.27 percent in March 2000. By 2015, the online population is expected to touch 7 crores.

According to Chopra (2006), the income tax department introduced the novel system for payment of taxes called Online Tax Accounting System

(OLTAS) effective from 1st June 2004. The objective of Online Tax Accounting System is to afford faster credit to Government, better accounting of tax and better service to the tax payer.

Ramnathan (2007) states that ATM is a device used by bank customers to process account transactions. The customers are no more dependent in the brick and mortar branch of a bank since the advent of the ATM has made the concept of “24*7=365 Days Banking” a reality. Citibank has the highest percentage (89.95) of offsite ATM to total ATMs. State Bank of India has got the highest number of ATMs (5443). ICICI Bank has got the highest number of ATMs among the New Private Sector Banks (2209). Corporation Bank has got the highest number of ATMs (901) amongst the Nationalized Banks.

In the view of Justin Paul (2007), Biometric ATM is an “innovative” technology that uses various “human” features to recognize individuals and grant them access. Fingerprinting is a low cost and popular example of biometric technology widely used in banks, passports and physical access. Less obtrusive biometric identification is currently available through the use of “electronic signature” equipment. Customers are asked to sign paper documents against a flat pad that senses the pattern, speed and pressure of the electronic pen used to produce the signature.

In the view of Bansal (2007), Plastic Cards also known as plastic currency involves electronic device in their functioning and is gaining popularity as a convenient mode of payment. Andhra Bank is the first nationalized bank to introduce Credit Cards along with Vijaya Bank. Canara Bank made later entry into the credit card business in 1987 and Bank of India issued its India card in 1988. Among the foreign banks, the ANZ Grindlays Bank came with Visa Classic Cards by 1989. Citibank’s Master and Visa Cards appeared in 1990 along with the ATM card.

Kalpana (2007) opined that Real Time Gross Settlement (RTGS) is a large value funds transfer system whereby financial intermediaries can settle inter-bank transfers for their own account as well as for their customers. Real Time Gross Settlement is provided by 96 banks at over 21916 branches in 2793 centres in 469 districts. The average daily transactions in Real Time Gross Settlement is in excess of Rs.50000 crore of rupees. The benefits of Real Time Gross Settlement are payments are settled transaction by transaction, it is a fully secure system which uses digital signatures and public key encryption for safe and secure message transmission, and there is a facility for intra day collateralized liquidity support for the member banks to smoothen temporary mismatch of fund flows and thereby ensures smooth settlement of funds.

According to Kaza Sudhakar (2007) Electronic Clearing Service (Credit Clearing) is a mode of payment whereby an institution makes a large number of payments like interest, dividend, salary, pension to a large number of investors/share holders/employees/ex-employees and can make the payments electronically instead of issuing paper warrants. Electronic Clearing System scheme became operational by Reserve Bank of India from 1996-1997. Electronic Clearing Service is available at 15 centres facilitated by Reserve Bank of India and 31 centres facilitated by State Bank of India. It has been introduced by Reserve Bank of India to help banks offering their customers, money transfer service from one account of any bank (including same banks) branch, to both inter-city and intra-city. The scheme is available across the banks at 15 centres where RBI manages its clearing house. National Electronic Funds Transfer System (NEFT) is an account to account funds transfer facility on the secure Structured Financial Messaging Solution (SFMS) platform available for the networked branches of the banks. NEFT at present is available in nearly 40 banks and over 3000 branches of banks. With the implementation of the NEFT, the special EFT system in operation has been discontinued from January 2006.

In the view of Bhasin (2007), Cheque Truncation means that the physical cheque is scanned at the bank of first deposit (presenting bank) and thereafter the electronic image of the cheque is used by the paying bank to make payment. Many countries like USA, Singapore, Botswana, Nigeria, Srilanka, Thailand, Malaysia, Taiwan and most of Europe countries have adopted Cheque truncation system. The New Delhi clearing house has 82 direct bank members and nearly 2500 bank branches spread across Delhi, Gurgaon, Noida, Faridabad and other cities in the region.

Nagesh (2007) analysed the use of internet as a remote delivery channel for banking services, including traditional services, such as opening a deposit account or obtaining account balance, as well as new banking services. Sweden has the highest rate of internet banking usage in the world. The Swedbank was the first to introduce Electronic bill payment. According to a report by Finansinspektionen titled 'Criminal attacks on internet banking' released in 2007, large banks in Sweden conduct 20 million internet transactions a month.

Finland was the first country in the world to offer internet banking services in 1996. It has one of the highest proportion of internet banking users in the World and the percentage of adult population using internet banking in 2007 is over 70 percent. There is an increase in the number of customers using the internet to carry out their banking services in Norway. According to the annual report on payment systems by Norges bank released in May 2007, retail customers paid 82 percent of their bills electronically.

Germany has one of the highest number of internet banking users in the World. According to a Data Monitor report on Online Banking strategies in Europe released in 2006, the number of consumers using internet banking rose from 8.6 million in 2002 to 15.4 million in 2005. Increasing number of internet users in Canada are availing themselves of internet banking services. According to a study conducted by Transaction Network Service (TNS) in

2006, six out of ten Canadians with internet access were using internet banking services. The study also revealed that over 50 percent of all bill payments, account transfers and account enquiries were being conducted online.

The New Zealand Banking Association released a banking code of conduct in July 2007, covering provisions on internet banking. The code assures customers of providing adequate information regarding safe use of internet banking. The Hong Kong Monetary Authority (HKMA) has issued a guidance note on managing the security risks involved in internet banking and other electronic banking transactions. It advises on the implementation of adequate security control for web servers, usage of database servers for confidential data, installation of firewalls, covers risks which results from agreements with third parties etc.

The Administration of Online Banking Services announced in 2001 allows all financial institutions authorized by the People's Bank of China to offer banking services through the internet. The China Regulatory Commission has issued guidelines for security measures and require the banks to adopt adequate internal control and authorization control mechanisms to monitor and control various risks involved in the internet and electronic banking.

In India, the Reserve Bank of India has issued guidelines on internet banking. It suggests various security measures to be adopted by the banks while delivering products through internet. It has suggested the use of firewalls, audit trail, proper back-up facilities, customer education etc. The Reserve Bank of India, through its notification on July 20, 2005 has allowed banks to provide internet banking services without prior approval from it. Banks in India are permitted to offer internet based foreign exchange services in addition to local currency products. Internet banking usage has been increasing gradually in India. The ICICI bank is the pioneer and leading provider of internet banking services in India. It provides internet banking

facility to customers by name of infinity. Most of the banks in India are presently providing internet banking to their customers.

IV) Merits of E-Banking

According to Rupa Rege Nitsure (2006), E-Banking has the potential to transform the banking business as it significantly lowers transaction and delivery costs. It is a new delivery channel for both customers and banks. For customers, the internet offers faster access, is more convenient and available round the clock irrespective of the customer's location. For banks, it is a much more efficient and cost saving channel. E-Banking has enabled banks to scale borders, change strategic behavior and thus bring about new possibilities.

In the view of Anand (2006) internet banking is the latest in the series of technological wonders in the recent past involving use of internet for delivering of banking products and services. Internet Banking is changing the banking industry and is having the major effects on banking relationships. Internet Banking is increasingly becoming a "need to have" than a "nice to have" service. The net banking, thus, now is more of a norm due to the fact that it is the cheapest way of providing banking services. As more banks succeed online and more customers use their sites, fully functional online banking will become like a common place just as Automated Teller Machines.

Aravindan (2006) pointed out that in the last couple of decades the banking industry has undergone a deep change in its services. One of the major strides was the introduction of the ATMs, and this facility helps people to carry out their banking transaction, irrespective of the place and also removes fear of robbery among customers.

Chopra (2006) states that the payment infrastructure in our country has been undergoing continuous and significant transformation in the recent years, which paved way for introduction of several electronic payment systems. Information and Network Technologies have ushered in capabilities to operate

in a scenario where one can affect an instantaneous remittance/payment and settlement therefore. The Income Tax Department introduced the novel system for payment of taxes called Online Tax Accounting System (OLTAS) effective from 1st June 2004. This system has not only simplified the procedure for payment of taxes by the common tax-payer but also brought about several breakthroughs in accounting and monitoring mechanism of direct tax payments in the country. Online Tax Accounting System is a totally technology driven payment mechanism devised consequent to painstaking efforts by Income Tax Department, Finance Ministry and the Banking fraternity.

Gupta (2007) remarked that the internet banking involves use of internet as a medium of communication for accessing and utilizing host of banking and financial service. The customer's demand for personalized service and the concept of "Anywhere and Anytime banking" has made "Internet Banking" as one of the primary delivery channel available to present day customers. Internet banking has enhanced capabilities like providing Online Utility Payment System, Online Share Trading, Demat and Broking Services, Online Purchases etc. The advantages of Internet banking for a customer include convenience, round the clock accessibility, instantaneous transactions etc.

According to Mann (2007) internet banking is set to revolutionize the way banking is undertaken by facilitating efficient online customer transactions. The customers have access to internet banking twenty four hours a day and seven days a week. Internet banking provides customized information to suit the needs of the user. The use of internet banking by the bankers reduces the cost of operation resulting in savings in expenditure and increasing the revenue. Providing different products and services in time, to its potential users not only increases the customer base but also makes them more committed towards the bank.

Murali (2007) stated that the ATM machine has brought innovations in the banking sector all over the world. The advent of the ATM has made the concept of “24*7-365 Days Banking” a reality. ATM is also known as ‘Automated Banking Machine’, ‘Cash Machine’, ‘Cash Dispenser’, ‘Automatic Teller’ or ‘Money Machine’. It is a device that allows customers who have an ATM card to perform routine banking transaction without interacting with a human teller. The ATM allows a customer to withdraw cash up to specified amount by operating the machine via a magnetic card to a host computer.

In the opinion of Paulraj (2007), mobile banking technology enables the customers to pay the bill, to make account balance, account statement enquiries, cheque book requests, to transfer funds between accounts, to check credit/debit and minimum balance, to get minimum balance alerts, to request for recent transaction history and interest rates/exchange rate, and to new product announcements on their mobile itself.

Rajeev Kumar (2008) states that internet banking offers multi-dimensional advantages over traditional banking channels. Some studies done earlier substantiated that the cost of service per customer reduces drastically when bank uses technology. Internet banking makes work less labour intensive and reduces the wage bill of the bank. Banks feel that internet banking customer keeps 2.5 times higher bank balance and has 4 to 5 times lower attrition rates as compared to branch banking customer.

Susha (2008) remarked that cheque clearing process is more efficient through electronic transmission of cheque images. This reduces the time to complete the clearing cycle of cheque presenting, returning as well as cheque realization time. Cheque imaging will result in cost savings due to the lower cost involved in the physical transportation of cheques. It facilitates speed and accurate customer service resulting in customer delight. This system increases the efficiency, reduces the operational cost and expedites the clearing process.

V) Demerits of E-Banking

Karen Tandy (2006) stated that the prepaid ATM banking cards are increasingly being used to launder profits from crime out of the US. He analyzed the security weakness using input from sixteen federal agencies, and said smuggling cash in bulk remains the most popular method of money laundering. Further he noted that the increasing use of prepaid cash cards can be purchased anonymously at retail and check-cashing stores across the nation has further aggravated such money.

Hilmi Yahaya (2006) noted that the uses of ATM card were good if not for the misuse of the card by friends who knew the cardholder's personal identification number (PIN). When cards with magnetic tape were used between 2001 and 2003, there were 11,800 ATM thefts involving losses amounting to Rs.16.8 million. So he suggested the Smart card to eliminate ATM fraud in Malaysia.

Srinivasan (2007) stated that the ATMs operating in a few banks and also mainly in metropolitan cities are not going to make much of an impact. Further ATMs are mainly confined to the foreign bank branches, which pioneered the ATM revolution in the country in the first place. The main idea of joint ownership of the ATM was to make it more public by installing the machines at public places like railway platforms, bazaars, hospital, airports, gardens etc.

Shacklett and Mary (2007) has presented the information on the brochure of ATM safety and security for America's community bankers and dangers of ATM. It also considered for purchasing purpose used ATM as an option for community bankers that find the costs of obtaining and maintaining ATM machines daunting, price range of an ATM, and providers of refurbished ATMs.

Nagesh (2007) states that there are several risks that is inherent in internet banking. The highly unregulated internet makes banking vulnerable to

various types of risks. The risk involved poses a threat not only to the bankers but also to the customers. It poses threat to fraud and privacy violation to the customers. It is a threat to earnings of the bank and can be caused by the lapses in data integrity, system malfunction, privacy violation, fraudulent transactions etc.

Anand (2007) states that the costing has become an area of crucial significance as never before in today's fast changing banking scenario. The cost to income ratio should be kept at minimum possible levels reducing overheads on an on-going basis but without adversely affecting the quality of services.

VI) Specific studies relating to the topic

Manoharan (2007) analysed bank groups and Automated Teller machines of scheduled commercial banks. It was found that the total number of Automated Teller machines installed in the country was 17,000 at the end of March 2005. Private sector banks constituted large share of Automated Teller machines followed by State Bank of India group (26.9 percent), nationalized bank (4.7 percent) and old Private sector banks (9.8 percent) while Nationalized banks and old Private sector banks had more On-Site ATMs than Off-Site ATMs. Off-Site ATMs as percentage of total branches was the highest in the case of foreign banks, followed by new private sector banks, State Bank of India group, old private sector banks and nationalized banks.

Nagesh (2007) analysed the pros and cons of internet banking. In his view, internet banking has gained popularity among various banks and their customers because it is cost-effective, promotes anytime-anywhere banking, facilitates the expansion of customer-base through increased geographical reach and helps to serve millions of customers at the same time. It also adds the choice of customers, as they would prefer to use multiple channels of banking depending upon their need and urgency.

The study noted the following risks:

- When the internet is used as a medium to facilitate banking, it poses a threat to the privacy of individual transactions, security of the data and account information.
- Transaction risk is one of the most prominent form of risks related to internet banking. It is a threat to the earnings of the bank and can be caused by the lapses in data integrity, system malfunction, unauthorized access, privacy violation, fraudulent transactions and erroneous processing of transactions.
- Moreover technology risk is caused by wrong choice of technology, inadequate internal control systems, use of obsolete technology, improper system architecture, use of single authentication for access, misuse of system and technical information by third party service providers. This in turn, may result in transaction and security risks.

Manoharan (2007) attempted to assess the Indian E-Payment system and performance of E-Payment system in India. The performance is evaluated by various Payment System Automation (PSA), attributes of payment system and performance of E-Payment system. The study found that RTGS clearly emerges as the principal payment system in India for wholesale payments. In the short span of three years of its existence, it has bypassed the cheque based clearing volume in terms of amounts and accounts for over 50 percent of the payment volume in India grew by 183 percent in 2004-05. RTGS has about 50.33 percent of the overall payments in 2005-06. However, the EFT and ECS put together has only contributed to less than 0.5 percent of the total payments in India. In the ECS, the ECS credit volumes are much higher than the ECS debit volumes. During the year 2005-06, ECS debit had 359.58 lakhs transactions for Rs.12, 986 crores; the ECS credit volumes were higher at 442 lakhs and the amount even higher at Rs.32, 324 cr. The study of payment systems in different countries suggest that innovation with a strong business case, convenience, incentive and proper legal framework are the factors that

drive the usage of payment systems and their expansion. Providing a reliable legal framework for E-Payments and dispute resolutions process; consolidation of retail payment systems are some of the steps that can be taken to accelerate the usage of E-Payment systems in India.

Murali and Murali (2007) explored the security aspects of E-Banking technology. For ATM transaction, the essential security aspect is – making PIN a combination of letters or numbers that can be easily remembered; use knuckles instead of fingers to key in the PIN, after the transaction take back the receipt, money and card; use ATMs that are located in well-lit public places. For net banking the required security measures are: while browsing bank sites for the purpose of carrying out any financial/non-financial transactions, always access through “Direct entry of the website address”; always look for “security sign” in the status bar before we input our personal details at the time of effecting any bank transaction; clean up the “Internet temporary files” immediately after visiting bank sites; and always updating anti-virus software in the system and also ensure regular scanning of computer files.

Paulraj (2007) noted down the difficulties related to online banking. In India, there are only 40 million internet users which is a mere 0.4 percent in total population. The reasons that can be attributed to this situation are high cost of computer peripherals, less awareness about the internet and its usages and a load of mistrust on online banking. More than that, the internet banking has widened the gap between haves and have-nots, rich and poor as poor cannot afford even to go to cyber cafes. Hence, banks have to look for an alternate as well as cheaper technology. In his view, mobile banking is a right call for financial inclusion. The wireless banking (mobile banking) is a time saving and cost effective technology unlike online banking. Wireless Application Protocol (WAP), SMS, SIM toolkit, Interactive Voice Response (IVR) and stand-alone mobile application clients are the common standards in mobile banking. Mobile banking will certainly enable banks to realize the

dream of full financial inclusion and empower the poor and women. Though mobile banking offers a wonderful cost-effective technological platform, the banks adopting mobile banking technology have to tread cautiously as expensive technology implementation may not yield expected return or investment.

The perusal of existing literature on E-Banking system indicated that there has been limited research efforts focused on analyzing the performance of E-Banking in Coimbatore city. Hence, the current study on 'An Analytical study on E-Banking Systems and their Performance in Coimbatore city' is expected to fill up this research gap.