

TRANSFORMATION OF DIGITIZATION AND INNOVATION IN ELECTRONIC BANKING CHANNEL OVER A DECADE IN INDIA

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Abstract

Information Technology in India was a turnaround in late 1990s and mainly IT Industry played a vital role in building an electronic banking ecosystem since 1990s. In late 90s banks in India placed a foot step in electronic banking channel and introduced internet banking or online banking mode of transaction which sustained a competitive advantage, scope, new scale and service delivery. It has undergone a massive transformation through digital advancements over a decade in Indian banking. From this research paper, knowledge gained about how digitization emerged innovatively and transformed in banks by electronic and online banking system, transformation of technology into this platform over a decade. Scope for technology rebuilding based on current trend, customer expectation, enhanced customer acquisition, ease on banking accessibility through digitization, digital payments and transactions, latest innovative development, future milestone & trend in Indian banking digital ecosystem to be set in this channel. This study is predominantly based on secondary data which are mainly referred and extracted from various data sources like research papers, articles published by corporates and Government of India, authentic websites of RBI, NPCI and bulletins published by them. The findings of the study indicate that electronic banking channel is a much needed platform in Indian banking system and the same has to be penetrated and implemented more into rural territories of the country.

Key Words- Electronic banking, Digitization, Transformation, Rural Banking, Financial inclusion and Innovative technology.

Introduction

Banking in India has transformed from a method of traditional banking to digital over the last ten years. Through the established Online banking system, banks have reached a milestone steadily in India, reduced costs, speed of execution, improved service delivery and enhanced customer satisfaction. Technology has a major influence on how customer interacts and what a customer expects from bank. There is major difference in electronic banking utility among developed countries and developing countries. Developed countries have established an eco-system of giving a fully structured electronic banking system whereas 90% of the customers transact through this platform but developing countries are ranging between 11% to 25% only. India is one among the developing country which would want to build a cashless eco-system and build a digital economy. In early 90s banks started adopting to the technology and gradually there was a change in the way transactions were made in banks. Introduction of internet was one of the major advantages for banks to establish a platform to transact digitally. Internet in India has undergone various stages of development and reached a level where a common man can access the facility at a lesser cost. Taking the advantage of internet banks in India has made a huge investment in it. A move on this eco-system has reached various levels with the support of government. The efficiency of a banks in India started getting determined only based on the technology they adopt, best electronic banking system, how competitive the bank offers electronic banking facility to the customers, control mechanism, cyber security system established, data mining and data warehousing techniques, how efficient a bank manages the online portfolio without compromising the cyber threats etc.

Objective of the study

The objective of this research paper is to understand how digitization evolved in Indian banking system through Online banking. How electronic banking channel transformed right from the period of introducing internet banking, mobile banking, tele banking and process involved in it. It also

explains various competitive features of electronic banking channel evolved and transformed over a period of time.

Research Methodology

This research paper is primarily based on exploratory method. Secondary data collection from various sources have been adopted for this study. Mainly data have been extracted from various data sources like research papers, articles published by Government of India and corporates, authentic websites of RBI, NPCI and bulletins published related to this study.

Literature Review

Evolution of Electronic Banking in India

Dhananjay and Suresh¹ Strengthening the banking sector is strengthening the life line of the economy as the prevailing and future of the economy is based on the successful development in banking industry of the country. Information and technology play a vital role to achieve a sustainable growth in banking of India from traditional methods of banking. Automation in banking has become a key element to develop a growing economy like India. Online banking / electronic banking in India originated by 1980's as there was a popular spread of online concept across the country. It is a process of enriching banking services with the use of telephone, internet and mobile phones. This primarily because of the rapid growth of worldwide communication called internet. Usage of internet was increased widely and this has incorporated the people based, internet based banking. Major countries like USA, UK, France started it by year of 1981 and 1983 respectively.

Sanjay Kanti Das² Before introducing electronic banking when computers and internet was not well established, a different concept called home banking was introduced in European countries. The concept of home banking is availing banking services through telephonic and fax services. Later with a help of a key board, a big monitor and an internet connection through a telephone line banking gradually turned electronic. Traditional banking started transforming from the use of Automatic teller machines, electronic fund transfers and bill payments precisely. Online banking has become a revolution and due to major awareness, education and intellectual capability people started adapting the changes and avail these services.

Shubhara Jindal³ In India, 1990s – 2000 is a transformation period where electronic banking has got introduced and transformed crossing various milestone. Many started moving towards electronic banking as it has more advantage of convenience, comfort and nominal cost. Banks also started focusing on a technology driven platform to reduce cost, increase efficiency, speed of execution, privacy, security comforts. Today over a period of 30 years in 2020 customers are generation next predominantly want to utilize only electronic banking channel which is a key success for the information technology innovation and development in banking industry in India.

Development of Electronic Banking in India

Monisha et.al⁴ The Principal regulator of banks in India has laid a key mission to ensure that the electronic payment settlement frameworks are highly secure, productive, interoperable, authorized authority, available for all, comprehensive and compliant with international standards. The vision is to proactively energize electronic payment system and a less cash society in India. This direction is very keen in advanced development and highly competitive, which helped to accomplish it in mid-eighties and early-nineties by the regulator to bring an outcome of about offering innovative arrangements in technology driven banking.

Suhas and Ramesh⁵ In India electronic banking faced up during early 1990s with the help of internet facility. Electronic banking is a platform which refers to banking transaction performed by the customers at their home, office and anywhere banking through a secured network. Since inception electronic banking has a wide spread of facilities enabled to their customers. Many features got geared up through this facility right from the usage of internet banking, mobile banking, telebanking, phone banking till the virtual payment services. It is also called as cyber banking as customers can perform their online fund transfers, bill payments, loan payments, electronic clearances, cheque process, credit card, debit card transactions etc. Due to the upgradation in technology, high speed network, wide usage of internet, social media usage, e-commerce usage

electronic banking has subsequently upgraded its efficiency and developed wide to connect with all these industries and offer various service that fulfil the requirements of the customers.

Mari Anand ⁶ Today in India any payment service has gone digital through a payment gateway and intensively the cash transactions have reduced. This is the range of development Indian economy expect and have succeeded during the period of 2 decades that is between 1990 to 2020.

Research Gap

Researchers have generally explained on transformation of digitization in electronic banking in India and few have discussed on the evolution made in this platform but they have not discussed in detail on the periodical process of digitization transformed in electronic banking channel. Various step by step process of transformation of digitization especially in electronic banking has not been discussed for better understanding. In this research paper, its clearly elaborated on how digitization in electronic banking channel in India transformed over a decade stage by stage according to the preferences of the banking customers keeping safety and security on top priority.

Discussions:

Transformation of Electronic Banking in India

Electronic banking channel in India is an innovative development during the period of 1990s with the primary help of development in wide spread internet facility. Internet has become a back bone for banks to think about digitizing banks in India. Banks started behaving autonomous and move ahead from traditional to digital based. It also helped to segmentize banking based on the requirement, few are retail banking, corporate banking, retail assets, investment banking, retail forex, corporate forex, rural banking, rural lending, commercial banking, emerging banking, wealth management and bancassurance. Banks have also started investing in digitizing operations as well as administration ad well by introducing core banking, anywhere banking, HRM ERP tools, risk management, fraud control units, cyber security unit and virtual banking etc. This has given a greater comfort to customers to opt out the appropriate requirement and utilize banking services in the right way. Right from introduction of internet banking, electronic banking channel has travelled various milestones and today it has transformed to a level of Artificial Intelligent BOTs which is a neuro linguistic platform.

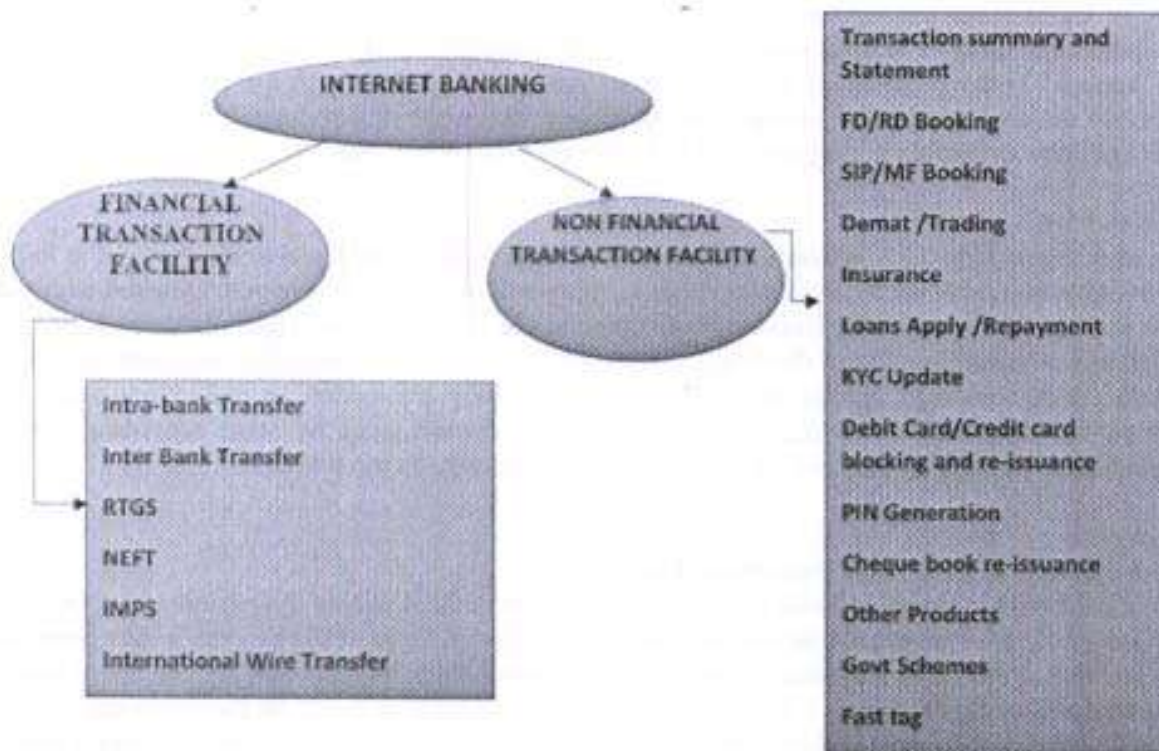
Internet Banking – Retail Customers

Internet banking is the first milestone achieved in electronic banking channel during the period of 1990-2000 in India. ICICI bank is the first bank in India took steps to invest huge in technology. Utilizing the proper channel, bank introduced a facility called internet banking which was name as “Infinity” in the year 1997 and have shown a way to others in the Industry. Reserve bank constituted a work group on implementing Internet banking product which granted access to internet banking at three various levels.

- Information only system,
- Electronic information transfer system and
- Fully electronic transactional system.

When internet banking was introduced in India, it was primarily focusing on two parameters which was banks own website and secondly synchronizing personal internet banking in it. Banks designed websites which exhibits the banks vision, mission, key milestones achieved, board member details and mainly various products features and benefits offered by the bank. The websites get periodically maintained and upgraded as and when needed. Updates of information also get added to it on a daily basis so that the customers get adequate information of the bank. Later the personal customer internet banking facility also got synchronized to the banks website.

Originally when internet banking was started it provided all banking financial transaction facility only and later it has got upgraded with non-financial transaction facility also under single login to the customers so that customers can perform both at a single window with operational ease and comfort.



Financial Transaction Facility

Initially when net banking was introduced in banks, it was not offered to all the customer in general and only customers who request for internet banking has been offered a unique user id and password on request. That too on the basis of information only system banks offered internet banking view facility which facilitate customers to view their balances, transactions made through bank branches. The access level of view only facility later developed to full access mode as well by upgrade and downgrade facility to customers on placing a request to bank branch.

Upgrade Access Level
Downgrade Access Level

Select the account number in which you want to downgrade the Access Level.

Account Number	Current Access Level
* 0000 [icon] 7	Full Transaction Only

Downgrade Access Level to: View Only

Submit
Cancel

Banks started generating a platform where customers can upgrade their access level to full transaction grand and the same will be approved by the system of the bank within 24hours of the request placed.

It was also to be noted that the transaction access was also restricted with intra-bank and inter-bank originally. When customer would want to do fulfilledged transactions they have to place a request to the branch to enable third party transfer and the system gets upgraded to grand access for fulfilledged transactions.

Upgrade Access Level

Select the account number in which you want to upgrade the Access Level.

Account Number	Current Access Level
* 20101	View Only
Upgrade Access Level to Full Transaction Rights	
Submit	Cancel

Post receiving full-fledged access to the internet banking, customers can transact third party fund transactions on limited access. Beneficiary bank details can be added and the same will get activated within 24 hours to utilize the full transaction limits.

Few electronic fund transfer modes have been implemented by Reserve bank of India under electronic fund transfer system of RBI post 2000. They are RTGS and NEFT respectively

RTGS – Real Time Gross Settlement was introduced by RBI in the year March 2004 under electronic fund transfer system which allows customers to transfer funds from one bank to another on a “real-time” basis. It focuses on a swift fund settlement process with minimum scope of waiting period 30 minutes for settlement. This system has become popular among banking customers as the funds get transferred immediately. RTGS service can be availed through self-mode performed with the help of internet banking or assisted mode by visiting the bank. This mode of transaction can be performed only when the minimum value of transaction is Inr.2 lakhs and above. There is no charge levied if the RTGS transaction performed through self-mode and charged when performed through assisted mode available at bank branch. This service can now be availed for 24/7/365days round the clock. Previously the window remained open from 9:00 am to 4:30 pm from Monday to Friday and on Saturdays the duration ranged from 9.00 hours to 14:00 hours.

NEFT – National Electronic Fund Transfer is also an electronic fund transfer system started by RBI in the year November 2005. It allows customers to transfer funds between any two banks enabled with NEFT facility. This type of transfers is settled on hourly batches with a maximum value of Inr.2 lakhs. There is no charge levied if the NEFT transaction performed through self-mode and charged when performed through assisted mode available at bank branch. This service can now be availed for 24/7/365 days round the clock. Previously the window remained open from 9:00 am to 4:30 pm from Monday to Friday and on Saturdays the duration ranged from 9.00 hours to 14:00 hours.

IMPS- Immediate Payment Service is a money transfer mechanism, initiated by RBI and NPCI (National Payments Corporation of India) in the year 2010 in India. The main feature is that it is available at all times for usage. It transfers funds spontaneously and the settlement happened immediate which helps on emergencies predominantly. Since this is a special platform designed for instant payments a nominal charge is applicable on both Self-service mode and assisted mode with a limit of minimum 1 lakh to maximum 2 lakhs per day.

Regulation and Supervision of Payment and Settlement System: Both NEFT and RTGS are governed and regulated by Reserve Bank of India under Payment and Settlement Act 2007 which acts as a Board for Regulation and Supervision of Payment and Settlement Systems. It has multiple payments and settlement systems, both gross and net settlement systems. For gross settlement real-time gross settlement (RTGS) system called by the same name and net settlement systems includes Electronic Clearing Services (ECS Credit), Electronic Clearing Services (ECS Debit), credit cards, debit cards, the National Electronic Fund Transfer (NEFT) system, Immediate Payment Service and Unified Payments Interface (UPI)

Transformed to a Simplified Login Process

Initially only the financial transaction facility was available, later the process got transformed and customers were allowed to perform both financial and non-financial transactions by incorporating various features in the internet banking facility. Customer to undergo very tedious process to register

their net banking was later made much easy and convenient. Every customer was given a unique identification number called customer id and the same was allowed to use it as a login user id and customer were asked to collect their internet banking password by visiting the bank branch in person. Later the password was allowed to get despatched through postal network the customer's registered address. Today the complete process has been changed by introducing GREEN PIN as customer can register his or her net banking using their debit card number and debit card pin number with a OTP transaction and the physical PIN dispatch got suspended.

Customers can perform third-party transaction from day one and the addition of beneficiary has become instant. Today any customer who open an account in a bank can register their internet banking hassle free, register beneficiaries immediately and perform online transaction instant which is how the electronic banking channel has transformed.

Internet Banking – Corporate Customers

Further internet banking facility has got extended to Corporate customers mainly to business owners and self-employed. The corporate customers are categorized as Proprietorship, partnership, Pvt Ltd and Public Ltd in India. Corporate customers mainly SMEs, MMEs, MSMEs who operate current accounts with banks for their business transactions were also extended with same facilities which was offered to retail customers, in addition to that Trade and forex has been added additionally to it.

Non-Financial Transaction Facility:

Apart from payment systems, banks started incorporating various facilities in internet banking which gives a thorough access to customers on various banking requirement on their personalised computers. It provides facility to access different accounts, payment services, other services, investment services, personal credentials, to apply other services.



Other non-financial transaction facilities like access to fixed deposit, recurring deposit, loans to apply and also access, bank account transaction summary, personalized statements, cheque book, credit card, debit card to block and re-issue, locker booking, digital bank account opening, demand draft to apply, government schemes, investment products like mutual funds, systematic investment

plans, kyc updates, bill payments are the few non-financial transactions incorporated along with internet banking.

Safe and Secured transaction access

Originally when internet banking was introduced among banks in India, login access has happened through user id and password authentication. Later due to secured access threats a VASCO token has been given to users who in turn generate secure access codes to access internet banking every time.



Later VASCO token system has been disabled and the secure access code was generated by the bank and sent to customers registered mobile number to access the account, similarly, login passwords, transaction passwords were added to the system to access the account. Every transaction made by the customer will get a transaction authentication OTP and the same gives a highly secure transaction result. Periodic password change trigger gets initiated and customers have to change their passwords as and when required. Similarly, customers are asked to answer three personal security questions so that whenever there is a cyber-threat customer can retrieve passwords by answering the security questions. Also password regeneration can be done through authentication of individual ATM cards.

Mobile Banking and Application

In the year 2002 Mobile banking has started its first operation on SMS based channel. Due to the benefits offered through SMS channel, many banks started offering mobile banking services through the SMS channel. This includes non-financial services such as Balance Enquiry, Mini statement, Cheque Book Request, Transaction Alerts and financial services such as funds transfer, mobile recharge, DTH recharge and Bill payments. Due to lesser facilities available on qwerty type phones only limited mobile banking services were offered in India. Later in the year of 2008 first android phone got introduced with touch screen facility by Google in India and general customers buying an android phone has become a nightmare due to the rates of those mobiles in the market. Gradually many mobile manufacturing players started competing to design an android mobile at a lesser cost and usage of these mobiles reached a new height. This effort turned into a very big success as many companies started designing their own manufacturing pattern since year 2010 with lot of inbuilt facilities in the mobile. Increased network usage, increased speed of internet banks started developing mobile banking applications in India. A mobile application has a login password and a transaction password to have a secured access to that account. All the features available in internet banking was gradually added in mobile application and whatever transaction made through internet banking was made available in mobile banking mainly categorized as financial and non-financial transactions.



Financial Transactions

- Fund Transfer, RTGS, NEFT and IMPS
- Bill payments, Scan and pay through UPI
- FD / RD Booking
- Debit / Credit Cards
- Investments, Demat and Trading
- Retail Loans

Non- Financial Transaction

This gives a new convenience to customers of banks to perform banking transactions anywhere any time provided the internet connection speed of the android supports the transaction made through the mobile app. Whenever there is a change in the features or any addition deletion in the features and benefits offered by the bank through the mobile application, then there will be an updated version which gets updated post permission from the user. For every three months once users will be asked to change the password of the mobile application considering the safety and security.

Other Electronic Banking Channels

Electronic Clearing Service

Electronic Clearing Service or ECS is an electronic clearing service that facilitates funds transfer between accounts of various banks. This service was started by Reserve Bank of India by providing debit and credit facility and the same can be used to pay utility bills as well. Electronic Clearing Service (ECS) was launched in 1990s to make bulk as well as repeated payments. In the month of September 2008 a new form of National Electronic Clearing cell was launched to handle multiple credits to beneficiary accounts. National Electronic Clearing Service (NECS) focuses on core banking solution of member banks. The retail funds transfer system was introduced in 1990s to allow electronic transfer of fund for retail payment. In the year 2017, NPCI released a circular notified as a paperless way for corporates to register NACH mandates for its customers, the same can be later used to debit customer accounts.

API based e-mandate process

In this process customers can authenticate a NACH API e-mandate on the web. The customer gets directed to the NPCI website to choose their bank and then authenticate via one of the two methods, Net banking credentials or debit card. Kotak Mahindra Bank is the first bank to allow customers to choose both methods for authentication followed by 38 banks allow customers to authenticate API based e-mandates. This process is to make the process fast, frictionless and paperless.

Unified Payments Interface (UPI)

UPI is a real time payment system that allows customers to send or receive money from one bank to another. Any UPI app can be used and any number of bank accounts can be linked to single app. Money can be sent or requested with the following methods:

- Virtual Payment Address (VPA) or UPI ID: Send or request money to bank accounts mapped using VPA.
- Mobile number: Send or request money from/to the bank account mapped using mobile number.
- Account number & IFSC: Send money to the bank account.
- Aadhaar: Send money to the bank account mapped using Aadhaar number.
- QR code: Send money by QR code which has enclosed VPA, Account number and IFSC or Mobile number by scan and pay option.

Findings

- Cost involved to set up a system is very less and a very large customer base can be easily handled through these channel
- The Electronic banking channel saves a lot of operational costs; it also offers a wide range of convenient service to the customers.
- It helps to reduce the work load and burden of the retail branches and increase the speed of banking but utilizing these services are very minimal calculating the overall population in India
- It is also an effective medium of promotion and communicating various schemes of bank.
- It reduces the chance to fall prey into fraud and misappropriation.
- This system does not have any operating timings as the same is anytime anywhere without any geographical borders at a minimal cost.
- Transactions can be monitored lively basis at any time of the day, as many times as you want to an any time.

- Transformation of electronic banking has reduced TAT delays, transaction execution speed, massive cost reduction on operations, human cost, easy reconciliation, reduced foot fall.
- Almost all the traditional banking methods have been stopped and all the banking process has become electrified now.
- Many commercial banks are yet to establish electronic banking still, few banks have introduced but not implemented effectively and promote big in India
- Most of the regional rural banks and state owned rural banks are not systemised yet and still continue to follow the old mechanism.
- Many Villages in India are still un-banked or under banked where not banking facility is available for them
- People with high literacy level also reluctant to utilize electronic banking service due to threats, scared to operate due to lack technology competency, inadequate training, cyber threats, lack of knowledge, trust level, confidence in transacting and also lack of awareness.

Suggestions

- Existing electronic banking arrangement has to be promoted big among the public of the country especially Government should focus on establishing it among rural population of the country.
- Wide awareness about the electronic banking products and benefits have to be given to the public through various media sources and increase the utilization of this channels
- When the central government seek a turn around to create a cash less economy, the only alternate channel is electronic banking channels which can support the mission of cash less economy and promote digital payments.
- Banks should think about framing a platform which a common man can understand and make use of the services at anywhere, anytime
- The EBC has to be designed it such a way that any citizen can understand the process and make use of the services.
- Banks should educate their customers to perform digital transactions through electronic banking channels and also the products and service charges at an affordable cost as any common man can avail the service.
- To Formulate an incentive structure to promote digital transactions, since there is a reduction in cash handling charges the similar benefits can be passed on to promote digital transactions.
- Making digital transactions more convenient by upgrading to the latest technology instruments like biometric authentication, UPI Scan and pay options predominantly.
- Many commercial banks have introduced various EBC products but many failed to promote big among their customers and didn't take any steps to increase the digital transactions. Few banks have formulated the products but the same is not upto the industry standards and still continue to follow the existing traditional banking concepts
- Almost all the regional rural banks and co-operative banks still continue to operate in traditional mode which has to be changed and government has to invest more in turning these banks digital as the major part falls on rural population which creates a digital eco-system.
- Similar like Private Banks in India, Public Sector Banks also should promote electronic banking products on a larger scale.
- Security threat of digital transaction is a main reason for people to hesitate performing online transactions and the same has to be removed by conducting awareness programmes
- Government should conduct more digital literacy programmes in rural areas to address people concern, remove their mind blocks and educate people to perform digital transactions
- Young and Middle aged population should be attracted by giving various benefits promoting digital transactions, creating applications / IVR in local languages to educate end users.
- Business correspondents to be appointed across all the areas and promote digital payments, electronic banking products in rural areas with an attractive incentive so that it gets

established in the financially excluded population, it also supports government's mission on Financial inclusion.

Conclusion

Electronic banking in India has got transformed at various levels and today it has reached a level that any payment can be made through online using various payment gateways, UPI facilities. After various studies on consumer behaviour, research and development many updates and upgradations are been made in these digital products to provide a highly competitive line of products in the market at an affordable cost. Government and Banks in India also should take larger steps to effectively promote these electronic banking products among rural public of the county. A separate department has to be formed under cabinet to monitor country's growth in this sector. In today's scenario the performance of a bank in India is certainly decided on how competitive the digital banking products are offered by the banks in the market and how it gets reached among the public. Every bank in the country is getting upgraded themselves based on the innovative trend in technology, highlight is latest innovative development in technology is Artificial Intelligence platform. Utilizing artificial intelligence banks have started designing products which is again going to be a milestone in this electronic banking channel platform. Periodical development in electronic banking channel and introducing innovative products in electronic banking channel takes Indian banking to global standard. Artificial intelligence has a very big scope in Indian banking and its evolution is the scope for future study.

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