International Journal of Future Generation Communication and Networking
Vol. 14, No. 1, (2021), pp. 01–09

Indian Banking: Digital Transformation Of Automated Teller Machine Channel Over A Decade

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Abstract:

Banking and financial services have undergone massive transformation in digitization and digital payments over a decade. Indian banking is transforming from traditional banking to digital over the last ten years and this vital change makes the overall banking industry to get elevated to the next level in the global economy. The objective of this research paper is to study how digitization evolved in ATM cards and ATM Machines of Indian banking over a period of time. This study is based on secondary data which are mainly 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. From this research paper, knowledge gained about how digitization emerged in banks by introducing ATM cards and machines, transformation of technology into this platform over a decade. Scope for customer acquisition & accessibility through digitization, future milestone & trend to be set in this channel based on advancement in technology.

Keywords: ATM Cards, ATM Machines, Digitization, Transformation, Technology innovation.

Introduction:

Present banking demand and choice are for robust highly secured technology anywhere and anywhere, which meet the needs of tech-savvy customers. By knowing the habits, the customer's banks' tastes, requirements and aspirations have changed from product-centric to customer-centric. Digital transactions seem to be the new generation customer's most favoured option and Indian banks' ambition to introduce a world-class e-banking outreach is strong. Indian banking has undergone numerous innovations, and the way customers communicate with banks is most affected by technology among those innovations.

In addition to conventional branch networks, they provide electronic banking platforms and products such as ATMs, wallets, online banking and mobile banking. Evidences indicate a change from the conventional system to the online networks. This also offers a platform for digital innovation to leverage on a broad unbanked region, and ensures financial inclusion. Banks in India have begun competing with each other by upgrading their products digitally creative and user friendly by exploiting cost-effectively the use of the new technology. Banks have taken numerous measures over a decade to develop technology in this sense.

Objective of the Study:

The primary objective of the study is to find out how banks have introduced alternate banking channels that replaces physical human intervention like ATM cards, ATM machines, their development through digital innovation and transformation over a decade, various level of milestones achieved by banks in India to facilitate user friendly ATM access and enhanced future development in this segment.

Research Methodology

This research paper is framed primarily based on exploratory method. Secondary data collection from various sources have been adopted for the study. Data have been mainly extracted from various data

ISSN: 2233-7857 IJFGCN

sources like research papers, articles published by Government of India and corporates, authentic websites of RBI, NPCI and bulletins published by them.

Literature Review

Aggarwal, Vani, Nidhi Ahuja, and Varsha Yadav **[1]** In their research paper they have mentioned that Digitization is not treated as an option in the Indian banking sector, rather it is unavoidable. Post demonetisation, Government has taken numerous digital initiatives to make India digitally engaged. It is the way to turn knowledge into advanced software, which has a significant hike in the operational cost of the banks. In India, banking has come up with technological advancements offered to their customers with high quality services at a competitive edge by making huge investments in various digital initiatives. Digital payments are the key to success for all banks in the digital economy

Cuesta, Carmen, et al. **[2]** have identified three phases, the first involves the introduction of new platforms and goods, while the second involves the transformation of technology infrastructure and the third includes significant organizational adjustments for strategic positioning in the digital world. Many organizations that have embarked on this transition earlier, and are now at a more advanced level, are better placed to satisfy emerging consumer expectations and be competitive relative to the latest digital financial service providers.

Dara, Sonia **[3]** in the paper discussed about Current cash payments are replaced with Digitization by "Instant Wallets." Many other facets of banks change or develop into something different. So the major question that needs to be addressed here is that "to what degree will banks be able to take advantage of the substantial opportunities emerging from digitization?" The effective use of digitization is of great importance in India.

Fathima, J. Shifa [4] discussed that, Banking and financial services have been very formal in nature, and given the current circumstances. Trends are, in any case, fast changing in the digital age. It is equally critical that the banks remain as honest as their customers remain authentic. The main goal behind the coordination of banking services with innovation is undoubtedly accommodation. Most people now consider creativity normal, to the degree that it impacts their way of life.

Goel, Manjusha **[5]** has discussed that, Technology has helped transform banking into paperless communication from bulk paper and waste and forms of moving funds. The technology established includes mobile banking (mobile technology), credit cards, debit cards (money transfer technology), electronic money, and automated teller machines. These technologies have created efficiencies and time-saving ways for people to do business. Importantly, technology has led to tighter protection and better business practices for everyone.

Gupta, Nishu **[6]** has mentioned that, by adopting business intelligence, the Indian Banking Sector is evolving and remaining in a competitive environment. Because of technology millions of people are now accessible to financial services due to wider scope and low cost of delivery. For financial inclusion, the Indian Banking Sector is developing new banking and payment networks, digital platforms and as digital is improved there is a negative impact as well as account hacking etc. Indian banking has a paradigm change from paper to digital electronic payment system for payment.

Sharma, Priyanka **[7]** Digital transformation in transaction banking is capable of reducing operational costs and overheads leading to increased revenues, improved performance, stronger regulatory controls with lower risks and collaboration opportunities for emerging economy partners such as India to benefit from their tech talent to achieve desired results.

Research Gap:

Researchers have done a general study on transformation of digitization preferably in Indian banking but not discussed in detail about how digital products got introduced into Indian banking system and step by step process of transformation of digitization especially in ATM machines and card products over a decade. In this research paper, its clearly elaborated on how ATM and Card products transformed over a decade stage by stage according to the needs of the banking customers, considering safety and security aspects as well.

Digital transformation of ATM Cards in Indian Banking system:

Introduction of ATMs and card services in Indian banking created a big revolution in terms of cash transactions in banking operations and ease of customer operations. Originally when ATM cards were introduced in Indian banks it was a card made of close architecture only customers of the same bank

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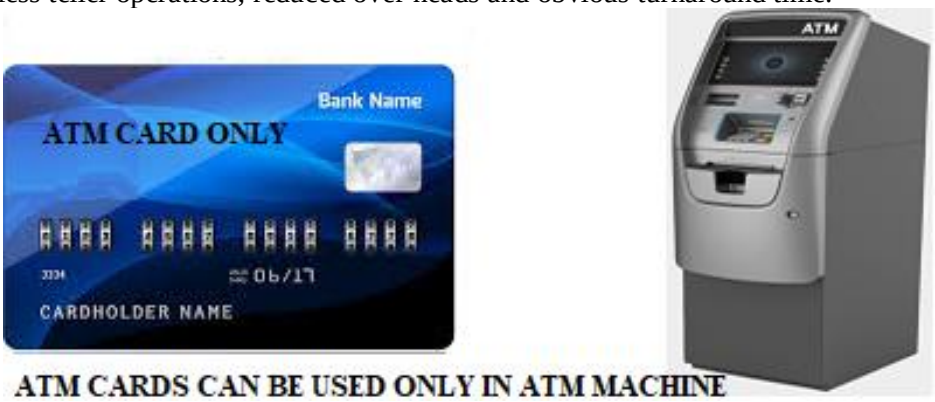
are allowed use their own bank ATMs which was an intra bank operational architecture. Most of the banking customers were reluctant to utilize the services as they were scared and started ignoring the cards issued by the banks. Later banks decided to make ATM access as inter-operational with a limited open architecture. In this process banks enrolled themselves in National Financial switch formed by IDRBT – Institute for Development and Research in Banking Technology. Originally there were 37 member banks connecting 50000 ATMs and due to this development in ATM access all the member banks registered in NFS gave an inter-operable ATM access facility among those member bank ATMs. The ATM cards which was introduced earlier was only a platform with unique magnetic strip behind the card which can be used in Automated Teller machines and since cash transactions involved most of the customers were afraid to adapt the change in technology. Gradually the momentum of cash transactions through ATM machines increased among youngsters and aged people continued travelling to the bank branches even when the volume was less. ATM card was a unique transformation for banks as most of their cash operations moved to ATM based and high value at bank branches. It increased cost efficiency, less teller operations, reduced over heads and obvious turnaround time.



ATM CARDS CAN BE USED ONLY IN ATM MACHINE

At the next level of transformation ATM cards were issued and linked through VISA/Master international platform and banks started issuing cards to its customer co-branded by VISA or MASTER. By this ATM cards were also converted as debit cards which gave access to use the card at merchant establishments by introducing a new machine called POS (Point of Sale) machines. By this ATM cards were converted as ATM cum Debit cards so that the same card can be used in ATM machines to withdraw physical cash and as debit card at merchant point of sale through POS machines where the cash gets debited and credited directly to the merchant current account linked to the POS machine. This type of transactions involves a unique Personal Identification Number (PIN) for every user.

DEBIT CARDS CAN BE USED IN ATM AND POS MACHINES

Simultaneously many ATM frauds were also registered by using skimming machines and phishing methods in the ATM and many cyber-criminal cases were filed. Visa/ Master Plastic ATM cum debit cards are internationally access enabled cards originated from United States. These cards are issued to the customers with an issuance fee and also annual maintenance fee.

To avoid fee and other overhead charges Indian Government has introduced a new card called Rupay card on 26March 2012 by National Payments Corporation of India(NPCI). Rupay is the first domestic Debit and Credit Card payment network of India, with wide acceptance at ATMs, POS devices and e-commerce websites across India. It is a highly secure network that protects against anti-phishing. The

ISSN: 2233-7857 IJFGCN

name, derived from the words 'Rupee and 'Payment', emphasises that it is India's very own initiative for Debit and Credit Card payments. It is our answer to international payment networks, expressing pride over our nationality. Rupay cards comes with a lesser cost and expanded to 56 banks in the year of 2016. Rupay fulfils RBI's vision of initiating a 'less cash' economy.

To have an increased standard of security, based on R & D and various case studies banks started introducing a new form of debit card with an embedded microchip. This cards mainly controls skimming method of data hacking and also maintains customer data secrecy with high security standards.

Micro Chip based Card:

It is a standard-size plastic debit card which contains an embedded microchip as well as a traditional magnetic stripe. The chip encrypts information to increase data security when making transactions at stores, terminals, or automated teller machines.

Further transformation of digitization banks started services like debit card based online transaction using card number and the CVV. It is the acronym for Card Verification Value. It is required to complete transactions using cards, but along with that, it also provides added security against scams. Many type of cards were introduced later based on digital transformation they are Prepaid Cards, Gift Cards, Forex Cards, Credit Cards and so on.

Latest development in the card category is Contact less card where the transaction can be utilized without swiping the card in the POS machines at the merchant establishment and only a touch of card can perform a debit transaction based on wireless platform enabled.

Also banks in India started developing many pre-paid and post-paid cards and issue to the customers of the banks.

Prepaid cards are Food plus cards, Gift Cards and forex cards issued to customers and these cards comes with a validity and are re-loadable. Food plus cards are loaded and issued to customers after ensuring proper kyc and compliance as per banks policy. This food plus card can be used in the prescribed pre-

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listed hotel, bars and restaurants, cash withdrawal is not allowed in this card. Gift cards are another mode of making gifts to the kin and kith by avoiding cash payments. These gift cards also come with a validity and the same can be loaded and used in any merchant establishments only. Again cash withdrawal is not allowed in this card.

Forex cards are utilized for overseas travellers who travel abroad for tour, education and work. This card also has a validity and loaded in multicurrency optional access. Customers can load this card with the prescribed currency for which the customer tend to travel for a purpose and utilize cash withdrawal and direct debits in the particular country of travel.

Post Paid Cards are predominantly called as credit cards issued by banks to its eligible customers. A pre-approved limit will be set by banks to its eligible customer and issue this card with a validity. Customers are allowed to utilize the pre-approved credit limit set by the banks and repay within a time frame without interest and after the due date with interest. Digitization in ATM cards gradually transformed from an ordinary card to a pre-paid/post-paid card services over a decade of years and still competitive digital products are getting enabled time and again.

Next venture of digitization is QR card or Quick response card, this card carries a unique water mark for each customer and the card comes with an option called scan and pay. Merchants will be enabled with a scanner in their hand held device connected with a biometric device and customers QR card can be scanned and make payment based on OTP or
biometric authentication.

This QR card based transactions are highly secured whereas the transaction gets executed with either a biometric authentication or OTP based authentication. It cannot be hacked or mis used by any other source. More than that this type of cards and transaction platform are provided to its customers almost at a zero cost and the maintenance cost of this QR based transactions for banks are also very minimal. The turnaround time for this type of transactions are lesser than that of the other mode. This biometric based digital banking transaction will be a revolution and need of the hour. Most of the banks have started adapting this facility. This is how the cards transformed over a decade due to digitization.

Transformation of Digitization in ATM Machines:

Remarkable transformation has happened in ATM teller machines over a decade due to digitization and technological development in Indian banking. Introduction of ATM machines have drastically reduced the human involvement in cash dispensing activity at bank branches. Teller activities for lesser volume of cash has been replaced by introducing Automated Teller Machines. Only larger volume of cash transactions is performed in bank branch teller counters. But originally when ATM Machines were introduced it was only a cash dispenser with closed architecture and the pre-limits set in the ATM machine for every customer was also less. Only customers of same bank were allowed to use their ATM machines and that was a discomfort to the banking customers as they hardly find their bank owned ATMs across the territory. Later this was liberalized due to the formation of NFS unit (National Financial Switch) and the member banks signed an MOU that all the member banks can have an inter-bank ATM withdrawal access. Hence due to digital penetration the ATM access was converted as an

ISSN: 2233-7857 IJFGCN

open architecture and the member bank customers were allowed to withdraw cash from any bank ATM with a prescribed limit. Gradually due to development in the network and cabling of ATMs all the ATM Platforms were made to be synchronized under VISA/MASTER platform and there was an undue increase in the ATM counters across the banks in the country. Every bank in India started focussing more in increasing the ATM counters which was used as an USP for customer acquisition and capitalizing the territory as well. All these developments were made by NFS National Financial Switch which has an ATM network of member banks owned by Institute for Development and Research in Banking Technology (IDRBT). Later in the year of December 14, 2009 NPCI (National Payment Corporation of India) took over NFS from IDBRT and started developing the fold of ATMs incrementally. Over a span of years NFS ATM network has grown into many folds and they are the leading multilateral ATM network in the country. As on 31st July' 19, there were 1,140 members that includes 110 Direct, 966 Sub members, 56 RRBs and 8 WLAOs using NFS network connected to more than 2.41 Lac ATMs in the country. This also added a featured ATM card service provisioned to bank customers based on utility. Banks started introducing cards at multiple variant and the same is issued to the customer based on their utilization limits. Limits are predominantly set on cash withdrawal and debit transactions in merchant establishments. Cash withdrawal limits are set between INR 10000 to INR 500000 and debit access in POS machines too.

It has established a strong and sustainable operational model with in-house capabilities and it can be compared at par with other major and well-established switch networks. Their operational functions and other services rendered are at par with most of the ATM networks across the globe. Few salient developments made in the ATM network due to advanced digital penetration are. Sub-membership model was introduced which enabled access to smaller, regional banks including RRBs and local co-operative banks to participate in the ATM networks in the country. High standards of application is maintained and network uptime of above 99.50% which has helped the member banks to ensure enhanced customer experience and customer satisfaction. Dispute Management System (DMS) was introduced and it has benefitted members with high operational efficiency and ease of online transaction eco-system management (chargeback, re-presentment, etc.) in the network apart from being compliant with local regulatory requirements. It has also tied up with International card schemes like Discover Financial Service (DFS), Japan Credit Bureau (JCB) and China Union Pay International (CUPI) which allows their cardholders to use ATMs connected to NFS network globally. Fraud Risk Management (FRM) solution is offered as a value added service to monitor transactions on a real time basis and to alert or decline the transaction in the NFS network lively basis.

In addition to the regular banking services, digitization paved a way to enhance ATM machines to offer a value added services as well.

Basic transactions performed in an ATM Machine are:

- Cash Withdrawal,
- Balance Enquiry,
- PIN Change and
- Mini Statement etc

In addition to that many value added services are digitally enabled over a period of time, few services are listed below.

- Mobile Banking Registration,
- Card-to-Card Fund Transfer,
- Cheque Book Request,
- Statement Request,
- Aadhaar Number Seeding,
- Credit Card Payments,
- Insta-money transfer,
- Preferential withdrawal limits,
- Account opening alerts for other bank customers,
- Insta pre-approved loan applying alerts,
- Fixed Deposit Interest rates flash,
- FasTag apply flash,
- Express FD flash,

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- Gold Loan / Car Loan / Home Loan flash,
- Trade and forex flash,
- ATM/Mobile Security instructions flash,
- Tax payments facility available flash and
- Mobile recharge and top up are the major value added services enabled over a period of time in ATM machined of banks.

Cash Deposit Machines CDMs are the major transformation of digitization into ATM services. This facility is interoperable and also called as Interoperable Cash Deposit Machines ICDMs. This service enables the cardholders of banks to use Cash Deposit Machines of banks to depositing cash in their own account or third party account. It is beneficial for banks and also for their customers as it will help banks to minimize cash handling cost and at the same time provide convenience to customers by allowing them to use any Cash Deposit Machine to deposit cash into their own account or any third party account. Most of the banks in the country have already deployed more than 30,000 Cash Deposit Machines to cater the financial needs of the customers. Interoperability will further help to optimize cash handling cost and earn higher fee income and increase Return on Investment.

Key features of this service are:

- Real time credit to beneficiary account
- Instant verification of notes by cash deposit machine
- Optimize cash handling cost and reduce idle cash in machines
- 24/7 availability of cash deposit facility
- Limit per transaction is restricted to Rs. 50,000/-
- Paperless Transaction

Recent development in this Interoperable Cash Deposit Machine is Cash Re-cycle option enabled. When CDMs were introduced, the specific machine was performing only cash deposit transactions and for dispensing cash another ATM machine has to be installed. In order to reduce the cost and optimize customer transaction both the CDMs and ATMs were integrated into a single machine and same was installed in a name of Cash Recycler Machine. This machine can perform dual role as both cash deposit and cash dispense happens simultaneously which is a major transformation in ATM services.

Findings:

- Introduction of ATM and Cards have drastically reduced the work load of bank branches.
- Most of the cash transaction of lesser denomination has got migrated to ATM based transactions
- It increased the ease of customers for emergency transaction, reduced cost to banks and increased the operating profit.
- It has reduced customer crowd in banks for small transactions and increased productivity of the banking personnel, primarily it increased more focus on customer acquisition and service to banks rather spending more time in cash operations.
- Deployment of more ATMs across the country paved a way to capitalize the unbanked and under banked territories.
- Still many rural populations to be capitalized and promote financial inclusion bigtime.
- Introduction of ATMs and cards have made customers to use their account as and when required, also reduced cash and carry mode across the country.
- POS machines play a vital role in digital payments, which is a major transformation in Indian Banking, mainly Card access through merchant outlets increased digital payments predominantly.
- Further advancement in technology though this segment enables customer to transact their bank accounts even on a holiday by accessing through standalone Cash Deposit machines and dispensers.
- Safety and security is well addressed, but more control mechanism has to be profound.
- On the whole, introduction of ATMs and Cards have set a new benchmark in Indian Banking and made banks to reach new milestone.

ISSN: 2233-7857 IJFGCN

Suggestions:

- Banks have to focus penetrating more into rural unbanked and underbanked by deploying more ATMs and increase issuance of cards to support mission Financial inclusion and Digital payments.
- Mostly people in under developed rural areas are still reluctant to open a bank account or scared to access ATMs and card based digital transaction, banks should focus in more such areas and give basic awareness of using digital products by conducting various financial literacy programs.
- Easily accessible alternate technology to be established and capitalize this unbanked and underbanked territories very particularly.
- Highly secured platform to be established to increase the customer accessibility of ATMs and Cards.
- Biometric scanning, retina scanning based technology to be incorporated in ATM machines, which can allow all type of customers to access their bank account through their finger prints and eye retina scanning.
- Banks to open up more branches and deploy more ATM machines in the non-capitalized territories to increase customer base of rural segment and support mission Digital India of Government of India

Conclusion:

This transition is mainly from analog to digital, a common example is from a physical branch manual teller to an Automated teller machine. The current shift in consumer attitude and the new competitive landscape mainly forces banks to tackle the digital requirement as a matter of urgency, unless this is addressed then there might be a risk that banks will be left behind in the market which finds it very difficult to change. It became necessary to accommodate digital mobility within a consistent channel experience as it became apparent that a growing proportion of customers relied solely on portable devices.

Many successful banks have built a separate channel for wide-range of research on the technical investment front and quickly adjusting to it. From physical mode to digitally accessible card-based transactions with greater internet speed and human power. Banks to invest huge in upgrading their technology based on continuous research in customer psychology helps them to successfully compete the other players in the Industry. In this paper it is understood how digitization in ATMs and Cards transformed over a decade.

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