

Digital Banking: Future & Prospects

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Abstract: “Digital Banking is the application of technology to ensure seamless end-to-end processing of banking transactions/operations; initiated by the client, ensuring maximum utility to the client in terms of availability, usefulness and cost; to the bank in terms of reduced operating costs, zero errors and enhanced services. Financial technologies e.g. Internet of Things, Blockchain Technology, Augmented reality (AR), virtual reality (VR), mixed reality (MR) and Extended reality (ER or XR), Open APIs, Big Data, Machine Learning, Robo advice, Smart contracts and Cloud computing etc. brings Numerous benefits to the financial system as well as to consumers e.g. New business models, Faster and more efficient service, Personalization offerings, Innovative product and distribution channels, Operational efficiency etc.. High proliferation of digital banking also fought with certain associated risk e.g. Security Risks, Breach of Privacy, Disparity in Services, Cybercrime, Systemic risks etc. However, In markets like in India, where access to banking is widespread and beyond basic services, consumers set to look the benefits of Improved consumer experience; reduced costs, greater transparency; Richer insights into own financial well-being, along with actionable advice on steps.

Keywords: Digital Banking, Indian Banking, Prospects of digital banking, Open APIs, IoT

1. Introduction

The term “digital banking”, just like any new buzzword, means different things to different stakeholders in a service organization. For instance, for customers, it can mean myriad new services and products resulting in a pleasurable buying/spending experience. For the decision-making team in the organization, it could mean setting up of state-of-the-art ICT infrastructure coupled with a good dose of analytics in order to provide an excellent customer experience, which is a precursor to having sustained and profitable customer relationships. For the regulator or third party, it could mean the ability to provide accurate and reliable information on the fly.

“Digital Banking is the application of technology to ensure seamless end-to-end processing of banking transactions/operations; initiated by the client, ensuring maximum utility to the client in terms of availability, usefulness and cost; to the bank in terms of reduced operating costs, zero errors and enhanced services.” Further, digital banking may be viewed as adoption of various existing and emerging technologies by the banks, in concert with associated changes in internal operations as well as external relationships for providing superior customer services and experiences effectively and efficiently. However, any definition of digital banking is only centered on

enhanced customer service and user experience based on their engagement, expectations and experience.

2. Need for digital banking India

Digital Banking is dramatically changing how banks interact with their customers. Two major trends are at the heart of this transformation. One is the growing incursion of new, non-bank players (e.g. telecom, e-retailers, Big Techs) into the industry. The second trend is the emergence of customer experience as a central consideration for banks as they create and execute their competitive strategies. Customers now evaluate their banking experience in the context of their interactions and relationships with retailers, travel companies and other service providers. They want digital banking to be as easy and seamless as ordering an item online or booking a flight with a mobile app.

Further, with changing behavior of customers, People are going online to buy products and services, conduct pre-purchase research, interact through social media, watch videos and listen to music, and yes, do their banking. Recent and still-to-come various innovations in mobile communications and commerce are further transforming how people live, work, play and shop, as anyone who’s fallen under the spell of a smartphone or tablet will testify. These trends point to a future of unprecedented convenience and exciting new services for consumers.

Retailers of every stripe are providing mobile apps for customers to compare prices, get deals and make purchases e.g. Target, Wal-Mart, Shell and a dozen other market giants have joined forces to create the Merchant Customer Exchange (MCX), a new platform for Smartphone-based transactions. Google Wallet, Square Wallet and Isis Mobile Wallet™ are competing for share in the mobile checkout market, offering payment solutions that allow customers to complete transactions by pushing a Smartphone button, swiping a barcode or tapping a near-field-communication (NFC) reader. These diverse initiatives have one thing in common: They all are taking place and potentially taking share in the banking value chain.

In this context, traditional banks understand both the growing customer demand for digital access and convenience along with the emergence of new competition within and outside the banking industry, also recognize the need to expand their own digital services and capabilities in order to meet the growing expectation of customers from their banks.

3. Evolution of digital banking

Moving towards digital banking, banks initially introduce standalone PCs and migrated to Local Area Network (LAN) connectivity to digitize the records, back office processes. With further advancement, banks adopted Core Banking Solution (CBS), thus branch banking changed to bank banking as a promising step towards enhancing customer convenience through Anywhere and Anytime Banking. Different Core banking platforms such as Finacle designed by Infosys, BaNCS by TCS, FLEXCUBE by i-flex, gained popularity. A major driver for this change was propelled by rising competition from private and foreign banks. Several commercial banks started moving towards digital customer services to remain competitive and relevant in the race.

RBI has been a guiding force for the banks in forming regulations and giving recommendations to achieve various objectives under digital banking preview. Commercial Banks in India have moved towards technology by way of bank mechanization and Automation with the introduction to MICR based cheque processing, Electronic Funds transfer, Inter-connectivity among bank Branches and ATM (Automated Teller Machine) Channel have resulted in the convenience of anytime banking. Also, Strong initiatives have been taken by the Reserve Bank of India in strengthening the Payment and Settlement systems in banks and by introducing UPI, BHIM, QR Code based payment, Aadhar Enabled Payment System, MBS etc. Following figure shows the digital journey of Indian Banks.

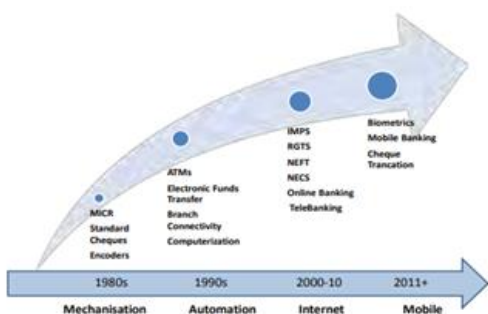


Fig. 1. Digital journey of Indian banking sector

4. Digital India and Indian banking industry

The transition to digital banking has been happening over the last decade. Building of infrastructure for RTGS (Real Time Gross Settlement), NEFT (National Electronic Fund Transfer), ECS (Electric Clearing System for both debits and credits) and National Clearing House were the first few big steps in digitalizing the payment and fund transmission in banking which forms a great part of transactional banking. With the advent of Aadhar Card and its linking with the accounts of customer was the next step in further digitalizing banking in India. The introduction of Payment and Settlement Systems Act, 2007, gave the necessary legal backup; the Bharat Bill Systems and Unified Payments Interface have taken the

digitalizing transformation further. Two very important developments have the potential to herald a new age of digital payments - the rapidly growing Smartphone penetration and the proliferation of bank accounts. India has over a billion mobile connections with around 240 million Smartphone users and is expected to grow to 520 million by 2020 as per a report on Digital Payments by BCG and Google. Secondly, The Indian government as a part of its “Digital India” initiative aims to provide universal mobile phone access, National Optical Fiber Network initiative under Digital India will connect 250,000 Gram Panchayats across rural India, wi-fi hotspots in every city with a population of 1 million plus and a smart phone in the hands of every citizen by 2020. Added to it, Prime Minister Jan Dhan Yojana (PMJDY) through 33.30 Crores and 26.34 Crores RuPay debit cards (as on 21.11.2018) has provided the infrastructure for universal access to banking. The impact of this initiative is already significantly felt in the progress of Digital Banking in India.

As per PWC India and Assocham, India report dated April 29, 2015 electronic transaction in the Indian economy is still less than 10 % (which means it has immense scope to grow) which constitutes of 11.2 billion annual electronic transactions out of which 74 per cent is by debit and credit cards. The figures for net banking transactions, viz. NEFT, RTGS, issuance of FDs, deposits in PPF accounts, online tax payments, various other online payments are not available, however, the fall in number of transaction vouchers compared to the rise in business in bank branches gives an account of falling footsteps which means more and more customers are opting for digital banking. Banks, themselves, are coming out with attractive products in mobile banking and credit and debit cards are also helping the spread of digital banking.

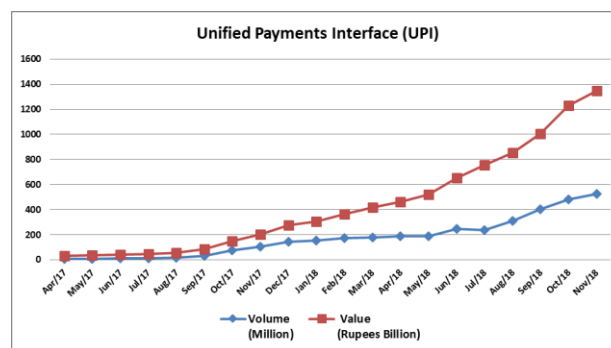


Fig. 2. Unified Payments Interface (UPI) (Source: NPCI)

Digital banking will help financial inclusion in the same way as the reach of mobile has done in the area of communication. It is said that mobile phones have enabled India to leap frog by 50 years in reaching out to every nook and corner of this country along with reaching out to all strata of people, from the common people on the street to those in high rises. The mobile phones have expanded giving tremendous boost to financial inclusion.

According to the RBI Report there are 205665 Automated Teller Machines (ATMs) and 33, 32,487 Point of Sale devices (POS) as on August, 2018 along with Implementation of

electronic payment system such as NEFT (National Electronic Fund Transfer), ECS (Electronic Clearing Service), RTGS (Real Time Gross Settlement), Cheque Truncation System, Mobile banking system, Debit cards, Credit Cards, Prepaid cards have all gained wide acceptance in Indian banks. These are all remarkable landmarks in the digital revolution in the banking sector. Online banking has changed the face of banking and brought about a noteworthy transformation in the banking operations. The followings graph shows the steady increase in adaptation of digital mode of payments in India.

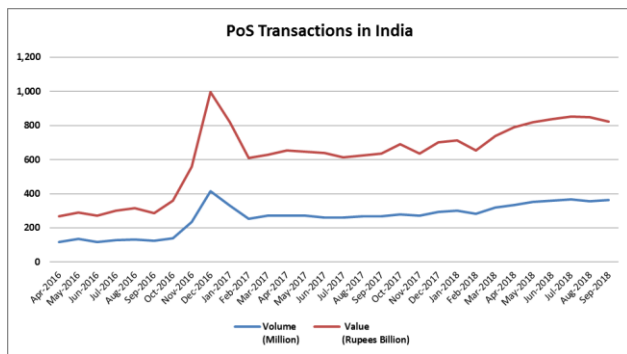


Fig. 3. PoS transactions in India (Source: RBI)

5. Future of digital banking

Demand for innovation has caused financial institutions to seek out better solutions to digitize their offerings while optimizing their workflow and lowering operational costs. Banks are moving from the digitization process of their products & services to towards a better digital experience and customer centric approach. Bandwagons of financial technology (Fintech) firms are ever challenging the traditional incumbents in terms of delivery of products and services coupled with improved ease and delightful experience. Leveraging the latest technologies. New technology can more easily be integrated by Fintech firms that tend to leverage best practices from technology players in other industries that are known for superior customer experience. Most of the Fintech companies' success is based on addressing the gaps left by traditional financial institutions along with new product development and innovating existing products and services. The agility to adopt the latest technologies, combined with best practices from other industries has enabled Fintechs to develop these competitive advantages. Some of the new technologies which would shape the future of digital banking landscape from transforming digitization of products and services to more enriching customer experience and intuitive banking. Some of the most promising forms of financial technology and their impact on digital banking are described as under:

A. Mobile and web-based payment applications

The majority of developments in the areas of payments are based on mobile technology (e.g. Apple Pay, Samsung Pay, and Android Pay etc.). There are also mobile payments built on new payment infrastructure, such as M-Pesa in Kenya and IMPS,

BHIM in India, which provide payment services. There are number of web-based and mobile-based payment applications that primarily focus on the customer experience and often aim to better integrate payment transactions within the commerce value chain. With the increase in mobile penetration & strong internet connectivity, payment system going to take the major share of payment business space.

B. Distributed ledgers Technology/ Blockchain Technology

Distributed ledger technologies (DLT) provide complete and secure transaction records, updated and verified by users, removing the need for a central authority. These technologies allow for direct peer-to-peer transactions, which might offer benefits, in terms of efficiency and security, over existing technological solutions. The major benefits of this technology are reduced cost; faster settlement time; reduction in counterparty risk; reduced need for third party intermediation; reduced collateral demand and latency; better fraud prevention; greater resiliency; simplification of reporting, data collection, and systemic risk monitoring; increased interconnectedness; and privacy. One of the best-known applications of Blockchain technology at the present time is bitcoin.

C. Smart contracts

Smart contracts are computer protocols that can self-execute, self-enforce, self-verify and self-constrain the performance of a contract. Development of smart contracts in relation to financial services could have a large impact on the structure of trade finance or derivatives trading, especially more bespoke contracts, and could also be integrated into Robo-advice wealth management services.

D. E-Aggregators

E-Aggregators provide internet-based venues for retail customers to compare the prices and features of a range of financial (and non-financial) products such as standardized insurance, mortgages and deposit account products. They can also provide services that allow users to aggregate and analyze their data on their payment patterns, across separate accounts and products. E-Aggregators also provide an easy way to switch between providers and may become a major distributor for a variety of financial products (e.g. PolicyBazaar, Bankbazaar, Paisabazaar, lendingkart, bestloanddeal etc.)

E. Cloud computing

Cloud-based IT services can deliver internet-based access to a shared pool of Computing resources that can be quickly and easily deployed. Infrastructure, Platform, Service and Mobile backend as a service is offered under cloud based services. The use of these services is an important enabler for new entrants to the financial services arena to set up quickly and with low start-up cost, with easy options to expand their capability as the firm grows.

F. Wearables

Wearable, such as smart watches are poised to become the

future of the retail banking experience. Overall, consumer behavior and smart device trends are steering banking technology advances in the direction of convenience. An increasing number of remote technologies will allow customers to interact with the bank right from the palm of a hand and from email inbox to visiting an actual branch; customer can expect to encounter a whole new customer experience, perhaps even sooner than thinking.

G. Robo advice

“Robo-advice” is the provision of financial advice by automated, money management providers, thereby disintermediating human financial advisors and reducing costs. It can offer more investor choice, especially for low and middle income investors who do not have access to the wealth management divisions of the banks.

H. M-Wallets

The emergence of e-wallets (e.g. Citi MasterPass, ICICI Pockets, HDFC PayZaap) and non-bank e-wallets (i.e. Paytm, Mobikwik, Oxigen, Citrus Pay, etc.). Payment wallets in India have changed the landscape of payments as a substitute to the traditional payment channels i.e. Cheque, NEFT and RTGS. These e-wallets facilitate non-bank customers to use electronic modes of payments and give existing bank customers a safeguard measure that limits the extent to which they are exposed to financial risk. Many start-ups have entered the space to simplify mobile money transfer, such as Chirra application, which provides peer-to-peer money transfer without using bank account details. Several leading banks have launched their own digital wallets leveraging NPCI’s IMPS platform even some of them are integrated with social media features as well.

I. Open APIs, Big Data and Machine Learning

Application programming interfaces (APIs) enable third party developers to build applications and services around a financial institution (FI). It facilitates greater financial transparency and helps FIs to innovate and create new revenue models.

Open APIs will enable banking organizations to gather actionable data from various internal and external sources, including buying habits, financial goals, risk tolerance and even social interactions. Insight derived from this data will enable more proactive (and accurate) multi-channel marketing, moving from reactive sales pitches to proactive solutions and advisory services. The ability to apply machine learning and artificial intelligence will respond to the customers desires of “Know me”, “Look out for me” and “Reward me.” This is expected to greatly improve the customer experience which currently lacks personalization and real-time engagement.

J. Augmented reality (AR), virtual reality (VR), mixed reality (MR) and Extended reality (ER or XR)

Augmented reality (AR), virtual reality (VR) and mixed reality (MR) are the foundation of a 4th wave of computing

power that integrates sensors, big data, the cloud, artificial intelligence (AI), and wearables. Artificial reality (in the general sense) includes all of the technologies that bridge physical and digital experiences, including augmented reality, virtual reality, mixed reality, and extended reality.

For the retail banking user, AR will need to strike a different tone. One scenario would be buying a product in a brick and mortar store. Customers look at something they want to buy. Their finance app can recognize the specifications and price and overlay this data on top of the real-world view. The app could then include options for a loan, even illustrating various repayment plans and options. Customers can then complete payment for the product right then and there through their device.

K. Internet of Things (IoT)

The Internet of Things is the way of connecting devices to communicate, share information, anticipate needs, solve problems and improve efficiency. It’s basically inter-networking of physical devices, vehicles, buildings and other objects, embedded with electronics, software, sensors, actuators, and network connectivity that enables these “smart objects” to collect and exchange data.

As per the analysts at “Gartner” predict that, there will be 25 billion Smartphones, Smart watches, Wearables, connected cars and other connected devices by 2020. An amazing forecast that strongly indicates the influence that machine-to-machine (M2M) connectivity is going to have on our society, culture and business. For consumers, the real promise of the ubiquitous connectivity of the IoT era is to help us save time, work smarter, drive safer and live a healthier and more active lifestyle. Benefits of IoT in Banking and Finance Industry can be listed as; Management and Product Planning, Personalized Marketing, Cyber Security, Customer Relationship Management, Proactive Services, Data Analysis.

6. Future prospects of digital banking

With the widespread use of financial technologies by the Banks and Financial Institutions and the emergence of new FinTech companies coupled with increasing use of Smartphone users and availability cheap internet data packages from the service providers, the impact and benefits of digital banking can be enumerated as under:

- *New business models:* Introduction of new business models such as peer-to-peer (P2P) lending, which may have a significant impact on the lending sector.
- *Faster and more efficient service:* Use of variety of technologies to increase the accessibility and speed of their services (real-time updates, mobile connectivity) that appreciably enhance customer experience.
- *Personalization:* Offers personalized customer service and products by using customer data. Personalized financial advice based on the risk appetite, lifestyle and life-stage needs and social affiliations/ preferences

of customers. Leveraging innovation to offer better product with advanced underwriting and risk assessing capabilities.

- *Lower-priced services:* Use of Financial Technologies helps to reduce operating costs thereby provide comparatively lower-priced services.
- *Predictive modeling:* Using predictive and analytical tools that allow financial institutes to find “people like you” or with similar profile for customers and prospects, allowing them to target and tailor offerings based on customer profile and behavior.
- *Innovative distribution channels:* Help in innovative distribution channels to have wider reach of customers with low operational and acquisition cost.
- *Access to unserved/underserved segments:* With improved distribution and innovative low-cost solutions such as robo-advisors, firms can now tap into these segments as well as with convenient and affordable services.
- *Operational efficiency:* Innovative technology with low investment is lowering entry barriers and spurring competition, which is forcing large traditional financial services firms to increase efficiency through process automation and business-model transformation.
- *Advanced data analytics:* Advanced analytics, combined with broader pool of data sources give better risk management and underwriting capability, which is leading to lower costs and higher efficiency.

Consumers stand to benefit by extensive use of digital banking in the financial world. Chief amongst the benefits they are set to experience, will be (i) increased competition and the gains in choice, service and value that follow; and (ii) increased access and opens up financial services to groups of consumers for whom such services had previously been beyond reach, or sub-optimal.

7. Challenges for digital banking

The followings explore a number of issues and challenges, where excessive use of digital banking by the financial world:

- *Security Risks:* External threats such as hacking, sniffing and spoofing expose banks to security risks. Banks are also exposed to internal risks especially frauds by employees / employees in collusion with customers.
- *Financial Literacy / Customer Awareness:* Lack of knowledge amongst people to use e-banking facilities is the major constraint in India.
- *Fear factor:* One of the biggest hurdle in digital banking is preference to conventional banking method by older generation and mostly people from the rural areas. The fear of losing money in the online transaction is a barrier to usage of e-banking.

- *Training:* Lack of adequate knowledge and skills is a major deterrent for employees to deal with the innovative and changing technologies in banks. Training at all levels on the changing trends in IT is the requirement of the day for the banks.
- *Breach of Privacy:* As per “The Economist” reports an intensifying data arms-race, and points to a situation where banks and insurers move from reliance on credit agencies and volunteered information, and towards mining social-media profiles, web-browsing, loyalty cards and phone-location trackers. It also reports that in a trial: FICO, America’s main credit-scorer, found that the words someone uses in his Facebook status could help predict his creditworthiness. Even facial expressions and tone of voice are being studied for risk assessment.
- *Disparity in Services:* While advocates for mining personal data stand to benefit customer from personalized products and keener pricing, the scope for consumer detriment is significant. Other way such practices could actually increase financial exclusion as consumers seen as risky and those lacking a digital footprint could be priced out. The use of closed, proprietary algorithms could also lead to a situation where consumers are denied access to a service based on an inaccurate correlation, but are unable to determine why or to correct underlying assumptions.
- *Cherry picking and the risk of price discrimination:* Although, digital banking enables affordable financial services, enhanced insights into the behaviors of consumers and prospective consumers. This gives rise to the possibility that some providers may seek to offer services only to the most profitable or least risky segments and shut others out of the market. The data practices outlined above can also give rise to price discrimination, where a provider offers incentives to its preferred segments and charges premier rates to the rest.
- *Cybercrime & vulnerable technologies:* digital banking heavily dependent on the Internet, connectivity ecosystem, as such it is vulnerable to cybercrime. This digitization and consequent vulnerability will remain a major concern for governments, policy-makers, regulators and industry participants, as well as customers. The integrity of the financial sector could be at stake if insecure data use eroded trust, which is fuelled by the recent past breach of cyber security in ATMs, debit cards of various banks in India.
- *When improved access to credit can be problematic:* Digital banking adoption have created platforms that both streamline the application processes and crunch data in ways that enable a rapid decision on whether a loan is to be made. This means qualifying consumers

are able to access loans in minutes. While these can be positive developments, there are instances where easily available credit can result in irresponsible lending.

- *Systemic risks*: Minimal cost distribution and accelerated network effects can result in online services reaching and being used by millions in a much shorter space of time than was possible with analogue services. Innovative new financial technology is widely adopted before any inherent flaws or risks are properly understood, or before regulators can make a proper assessment of whether the service at scale poses a systemic risk, and the safeguards required if it does.

8. Conclusion

With digital banking and mobility, the need is no longer to “leap-frog” but to “deep-dive” into the future. Going digital and mobile for a Bank is no longer an option, it’s a simple bare necessity – to collaborate and flourish. The potential for digital banking to deliver significant benefit to consumers in driving greater choice and competition and in opening up access to core

financial services in parts of the world where consumers have long been denied these. In markets where access to banking is widespread and beyond basic services consumers set to look the benefits of Improved consumer experience; reduced costs, greater transparency; Richer insights into own financial well-being, along with actionable advice on steps. At the same time, excessive use of digital banking may expose the banks and FIs in security breaches & Financial Crime.

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