

Digitization of Banking System in India: Opportunities and Challenges

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Abstract

In the present day digital economy digitization of banking services is no longer an option. Banks are exploiting information technology not just for enhancing employee productivity and efficiency but for a variety of reasons like improving their market share, reducing non-performing assets, promoting cross selling of products etc. Apart from this, for the present day Gen-Y customer population, availing themselves of services digitally makes them feel more contemporary and gives them a reason to stick to the banks as customers. This paper studies various opportunities that a bank can use while promoting digitization and also enumerates the challenges involved in this process. The paper is the result of extensive field research carried out by the author at the State Bank of India, the second largest bank in the world and of a study of several published materials on the subject.

Key Words: Digitization, Banking System, Initiatives, Strategy, India

Introduction

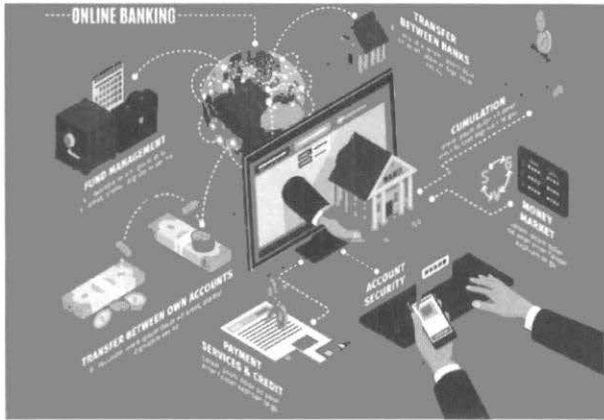
Digitization is basically converting all the processes, operations and data into an electronic format by using information technology. Through digitization, banks can offer enhanced and efficient services to its customers. It helps in reducing human errors and builds customer loyalty. Banks in India started going digital over the last two decades. Introduction of core banking services was a major step towards digitization of banks which gives round-the-clock access to banking services to their customers through online banking.

But going digital is not just introducing internet banking or providing 24x7 services. It is a very powerful modular and open digital engagement platform that allows both the service providers and the customers to drive agility and speed. It is also an opportunity to facilitate business transformation to fit into the digital era. It helps the banks to reimagine the business processes and user experiences by breaking down barriers and combining extensive

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knowledge of business. Fig 1 is an illustration of the digitization process in banking.

Figure 1: Digitization Process in Banking



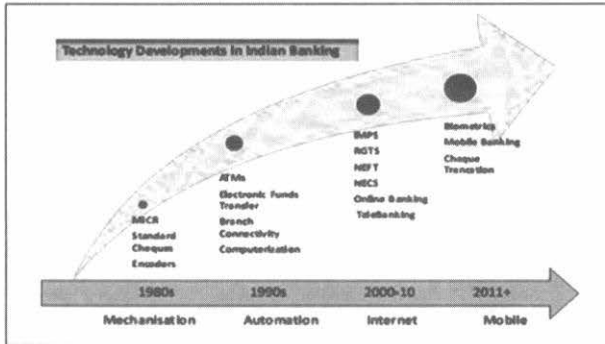
Source: Weschool, 2017

As on today, every bank has adopted its own unique approach to digitization. While digitization helps the banks to exploit several business opportunities, it has also opened up a Pandora's box of challenges, which the banks are struggling to grapple with.

Genesis of Digital Banking in India

The Indian banking sector had felt the need for computerization in the late 1980s essentially to improve the quality of customer services, to have a better accounting system, and to introduce verifiable checks and balances. A committee on computerization in banks was set up by the Reserve Bank of India in 1998 under the chairmanship of Dr. C. Rangarajan. The committee recommended computerization of clearing services among various banks and introduction of on-line banking with rigorous security features to ensure efficient and risk-free online banking transactions. The committee also, for the first time, recommended introduction of Automated Teller Machine (ATM) in Mumbai. Thereafter another committee headed by Smt K.S. Shere (then Principal Legal Advisor, RBI) recommended legislation on Electronic Fund Transfer (EFT) and other electronic payments in 1995 under sec 58 of the RBI Act. Fig 2 gives a snapshot of the chronological sequence of events in digitization in Indian Banks.

Figure 2: Snapshot of Chronological Sequence of Events in Digitization in Indian Banks.



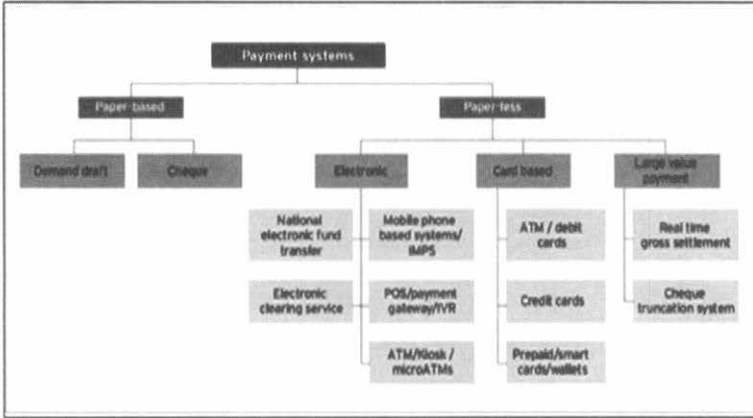
Source: ICMAI, Jan 2007 as cited in Weschool, 2017

Use of information technology by the banks initially commenced with introduction of standalone desktop computers which were later provided interconnectivity through a Local Area Network (LAN). As the technology advanced, banks decided to go for domain specific ERP called Core Banking System (CBS) Platform. Core banking solutions enabled banks to provide a higher degree of convenience in banking to its customers by promising anywhere and anytime banking. Most of the tier-1 software companies in India made their presence felt in the field of Core Banking Platforms E.g. BaNCS by TCS, Finacle by Infosys and Flexcube by i-flex (now renamed by Oracle Financial Solutions). The process of computerization gained momentum with economic liberalization 1991 to 1996. Entry of private and foreign banks with robust digital platforms pushed the public sector banks of India towards enhanced digital customer services in order to stay relevant in the race with their foreign and private counterparts. It started with digitization of routine processes through introduction of MICR based cheque processing, EFT, ATM services and interconnection of branches and banks (Bhargava, 2014). The strong regulatory framework introduced by RBI has helped in strengthening the payment and settlement system across the banks. Fig 3 demonstrates the perspectives of technology-based banking in India.

The present Indian government is aggressively pushing towards a complete digital economy. Launching of the United Payment Interface (UPI) and Bharat Interface for Money (BHIM) by the National Payment Corporation of India (NPCI) is a significant step in this direction. Today almost all banks in India have set digitization as their number one priority with the ultimate objective

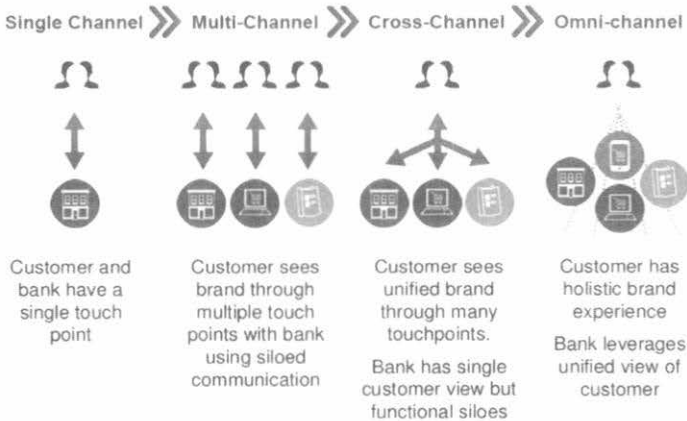
to provide secure, fast, accurate and all too new banking experience to their customers. Figure 4 shows how digital initiatives were promoted by SBI over the last few years.

Figure 3: Perspectives of Technology Based Banking in India



Source: *Banking on Technology, Perspectives on Indian banking Industry as cited in Weschool, 2017*

Figure 4: SBI’s Digital Initiatives



Source: SBI

Opportunities

Digitization in banking system offers several opportunities. They are discussed under the following headings namely; Cross Selling, Business Model Innovation, Stressed Assets Management Convenience Banking, Analytics / Fraudulent Transaction Detection, Reports and Document

Management, Compliance Services, Loyalty Management, Direct Benefit Transfer (DBT), Environmental Benefits, Employee Productivity, Wealth Management, and Risk Management.

Cross Selling

Every bank has several products both in the fields of banking and credit and of insurance. Digitization has helped banks to exploit the relationship with the existing customers by selling more number of products to them. For example, banks could pick up customers who maintain huge balances in their accounts and could offer higher interest paying term deposits to them. Similarly, they could profile their customers into High Networth Individuals (HNI) and Medium Networth Individuals (MNI), etc. and offer them products of wealth management, investment advisory services, etc. suiting their respective segments. Specialized analytics of the accounts help banks in identifying target customers for each type of product and even help them in designing new and customized products to suit individual requirements. In the case of SBI, the bank took strategic initiatives to move into the seller financing space which in turn helped them to leverage for more cross selling business. A brief snapshot of the business strategy adopted by SBI to promote Cross Selling is represented in Fig 5.

Figure. 5: Strategy Adopted by SBI for Promoting Cross Selling Opportunities



Source: State Bank of India, 2015; The Hindu BusinessLine, 2018

Business Model Innovation

The business model plays a very critical role in all types of business today, including banking. Digitization helped banks to come out with innovative business models to expand their business. In the wake of the growth of e-commerce segment in India with multiple e-commerce platforms like Flipkart, Snapdeal, etc., banks have been collaborating with these platforms to create new business models so as to increase their customer base. This has helped SBI to significantly up-sell and cross-sell its products.

Stressed Assets Management

The most complex challenge in today's banking system is accumulation of stressed assets. Digitization has helped banks to identify stressed assets in their budding stage through careful analysis of the business performance of the debtors and the missed repayment of instalments. This has enabled them to handhold the failing customers and help them overcome the business pressures and prevent their accounts from becoming Non-Performing Assets (NPA).

Convenience Banking

The greatest advantage of digitization to all ranges of customers is seamless and convenient banking using the Core Banking Platform. CBS helps faster clearance of outstation instruments, instantaneous transfer of funds across customers and online payment of taxes and duties. Table 1 shows the volume of convenience banking transactions carried out by Indian citizens from 2011 to 2016.

Table 1: Volume of Convenience Banking Transactions from 2011-2016

Volume (Million)					
Year	RTGS	Retail Electronic Clearing (ECS, NEFT, IMPS)	Cards (Credit, Debit)	Prepaid payment instruments (m-wallets, PPI cards, Paper Vouchers)	Mobile Banking
2015-16	98.4	3141.5	10038.7	748.0	389.5
2014-15	92.8	1687.4	8424.0	314.5	171.9
2013-14	81.1	1108.3	7219.1	133.6	94.7
2012-13	68.5	694.1	6174.5	66.9	53.3
2011-12	55.1	512.4	5731.6	30.6	25.6

Source: www.sbi.co.in

In the specific case of SBI, the bank has provided a variety of convenience banking services to its customers through several alternative channels like

Mobile Banking, E Corners, and SBIINTOUCH etc. Figure 6 shows the breadth of services extended by SBIINTOUCH outlets which are set up in business malls with high footfalls and kept open 24X7 (The Hindu BusinessLine, 2018).

Figure 6: Facilitation of Various Services Provided by Digital Outlets (SBIINTOUCH)

Digital Banking Outlets offer following services primarily in a self-serving mode through state-of-the-art gadgets and kiosks:

- (i) SB account opening
- (ii) Instant issuance of debit card
- (iii) Internet banking
- (iv) Mobile banking
- (v) Pass book printing
- (vi) Stop payment of cheque
- (vii) Registration of SMS alert
- (viii) Account balance enquiry
- (ix) Withdrawal and deposit of cash in Smart ATM
- (x) Generation of Business leads through Interactive walls and Smart Table based on customer interaction with the gadgets on display
- (xi) Tie-up with Automobile and Education content aggregator portals
- (xii) Instant in-principle approval for Housing loan, Car loan, and Education loan followed by fast-track processing and disbursal
- (xiii) Selling Bank's JV products, viz., Mutual Funds, Life and non-life insurances, Credit cards and Demat account

Source: NDTV Profit, 2015; The Hindu BusinessLine, 2018

Analytics / Fraudulent Transaction Detection

Digitization helps banks in creating a variety of analytics which will be useful in identifying abnormal transactions, thereby leading to detection of

fraudulent transactions. With close to 300 million transaction accounts, it is virtually impossible for a bank to identify such abnormalities in a manual and non-digitized environment. Using specialized software tools such as Hadoop² and Big R³ along with Big Insights and Brandwatch⁴, banks have started analyzing unstructured databases not only from within the bank but also from various sources like social media, newspaper reports and other internet sources thus creating descriptive, predictive and prescriptive analytics. This enables the banks to generate social media leads for business expansion and complaint resolution on the one hand and on the other to carry out sentiment analysis and customer requirement analysis out of available data which runs into several Peta bytes (1 Peta byte = 1000 Tera bytes). Analytics also helps banks to critically analyze financial reports of their corporate customers to identify possible non-performing assets of the future.

Reports and Document Management

Digitization helps banks to generate a variety of MIS reports suitable for each level of operations. These reports can help banks to identify the key result areas and to fish out the vital few from the trivial many. Digitization also helps banks to create and maintain a robust Knowledge Management System where banks find it convenient to store and retrieve documents of importance (Vicisoft, 2015; Parmar, 2015).

Compliance Services

With the advent of digitization banks could help its customers to schedule and perform a host of compliance requirements prescribed by regulatory agencies. This could prove a win-win situation where banks can charge and benefit by getting relief from a huge compliance requirement and concentrate on their core business. Digitization also helps banks to take care of their own compliance requirement prescribed by RBI.

² Hadoop is an open-source framework that allows to store and process big data in a distributed environment across clusters of computers using simple programming models. It is designed to scale up from single servers to thousands of machines, each offering local computation and storage.

³ Big R BigInsights is a library of functions that provides end-to-end integration with the R language and InfoSphere BigInsights. Big R provides an end-to-end integration of R within IBM InfoSphere BigInsights. This makes it easy to write and execute R programs that operate on big data. Using Big R, an R user can explore, transform, and analyze big data hosted in a BigInsights cluster using familiar R syntax and paradigm.

⁴ Brandwatch is a leading provider of social media monitoring and analytics.

Loyalty Management

Rewarding customers for their loyalty is a very commonly adopted customer retention strategy these days. Loyalty points are awarded to customers for a variety of transactions, meeting certain conditions. Digitization helps banks to keep track of all types of transactions of every customer and to check if they are eligible for award of loyalty points. It also gives the customers an opportunity to redeem their reward points. Digitization helps by interconnecting customers to the online market places through its reward redemption platforms.

Direct Benefit Transfer (DBT)

Central and various state governments provide several subsidies to various classes of citizens and to some socially disadvantaged groups. In the earlier days, such benefits used to be passed on through government officials as middlemen. In most cases, middlemen used to swallow a lion's share of the benefits and only a small percentage used to actually reach the intended beneficiary. Pradhan Mantri Jan Dhan Yojna has helped a large section of population to come under the banking system of the country. With most of the citizens having their own bank accounts, banks could directly transfer all government benefits to the intended beneficiaries, completely avoiding all middlemen. Table 2 shows the number of DBT transactions carried out by SBI in just 3 months of the financial year 2015-16. This could be possible only through digitization.

Table 2: DBTL Transactions

Month-Year	No. of Transactions (in MN)
Apr-15	92
May-15	91
Jun-15	91.3

Source: www.sbi.co.in

Environmental Benefits

With all the data being handled digitally and all reports and statements being transmitted to customers electronically, the use of paper has come down significantly. Online banking has further helped customers in completing most of their transactions without actually visiting the banks thus indirectly bringing down fuel consumption and the resultant harmful emissions.

Employee Productivity

Before digitization, most of the bank employees were busy handling cash which is the least value adding activity. Digitization has helped banks in empowering its customers to use alternative channels of banking thereby freeing their employees from monotonous cash handling. They could now devote their time to more productive activities like going out and meeting customers, and promoting various products of the bank, all of which tremendously helps business development.

Wealth Management

Most of the present day customers have resources in excess of their requirement but suffer from the disadvantage of not being familiar with the nitty gritty of rightly investing them. Banks through their digitization initiative could provide appropriate investment platforms. They could take the responsibility of wealth management and investment advisory services for their HNI customers. This gives relief to the customers and helps them to generate more wealth through their core competencies. Figure 7 explains the model adopted by SBI for Wealth Management through Digital Banking:

Figure 7: Wealth Management Model Adopted by SBI Through Digital Banking Outfits

Segment	Financial Needs	Services	Plans
Smart Affluent/ Young Professionals	Build Wealth	Financial Planning & Advisory Services	Children's education Real Estate Planning Children's marriage Retirement Planning Tax Planning
High Networth Individuals	Preserve Wealth	Wealth Management	Capital Preservation Estate Planning Creation of Trust Preparation of Wills
Mass Affluent	Invest wisely when surplus funds available	Up/Cross-Sell	Life Insurance General Insurance Mutual Funds Credit Cards Demat & Trading A/C

Source: www.sbi.co.in

Risk Management

Risk Management is an inherent activity in banking. Before digitization, banks used to carry out risk management manually which could not give them comprehensive conclusions. With the advent of digitization, banks could develop complex mathematical models for risk assessment and appraisal thereby making it possible for them to take more informed decisions in advancing credit facilities to customers.

Other Benefits

Digitization offers a host of other benefits to banks. In the specific case of SBI, it has helped in administrating 3,50,000 employees spread across 25,000 branches in the country. It has enabled its customers to access a variety of e-commerce platforms for meeting their shopping requirements. It has provided facilities of electronic wallet to its customers, thereby avoiding the need to carry huge amounts of cash with them. It has created a collaboration platform for all the banks to come together and take advantage of information available with each other which helps them to take more informed and less risky decisions.

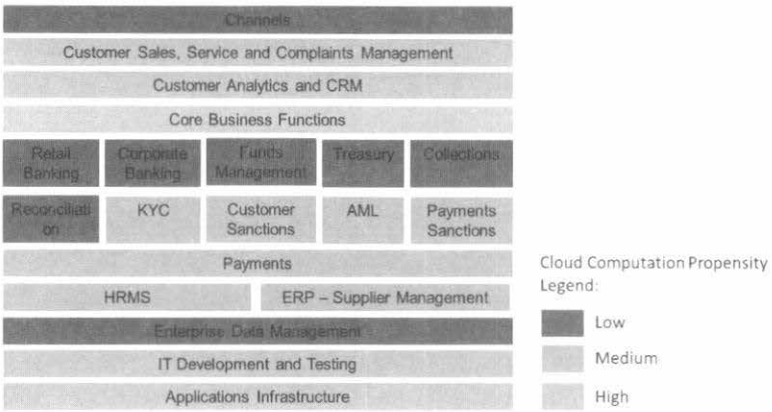
Challenges

Digital Banking also offers several challenges. These include cloud adoption by Indian banks, requirement of agile IT framework, aspects related to cyber security, digital literacy, network performance, obsolescence and also skill-related issues. Each of them is discussed below under separate headings.

Cloud Adoption by Indian Banks

Cloud computing has made its inroads into all sectors of business over the last decade and banking is no exception. Banks are increasingly adopting cloud usage for their services to ensure cost effectiveness and global outreach. However, usage of cloud comes with its own share of security, reliability and availability issues. Most of the banks have migrated their non-critical services to the cloud to avoid any threat to customers operating accounts. In the case of State Bank of India, management of customer complaints, sales and service data, CRM and customer analytics and a few other IT-related services have already been fully migrated to cloud. A few other services like KYC, HRMS, supplier management etc. have been partially migrated to cloud. But all critical activities like retail banking, corporate banking, treasury etc. have been kept away from cloud to ensure the least risk. Figure 8 provides details of cloud adoption by State Bank of India.

Figure 8: Cloud Adoption in SBI



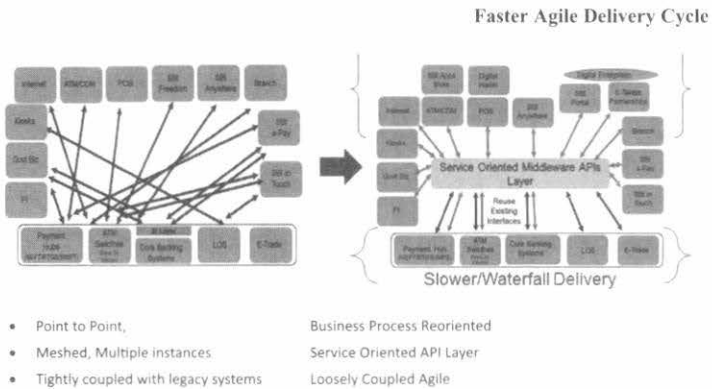
Source: www.sbi.co.in

Requirement of Agile IT Framework:

To transform the bank into a digital enterprise and to ensure that the digital agility is built into application delivery, banks have to embark on a two-speed architecture. In the case of SBI a ‘faster agile delivery cycle’ has been adopted for applications having a direct touch point with the customers and having a shorter delivery period. Longer applications involving business process reorientation have continued on the traditional waterfall delivery model. Figure 9 provides the details of the two-speed architecture adopted by SBI.

Figure 9: Two Speed Architecture Adopted by SBI

- Expose maintenance and enquiry services for key entities – Customer, Products - Accounts, Funds Transfer and Payments to bring delivery agility for building a digital eco-system.



Source: www.sbi.co.in

Cyber Security

Cyber-attacks are one of the most serious challenges faced by banks across the globe as per the information reported to and tracked by the Indian Computer Emergency Response Team (CERT-IN). The number of cyber securities incidents reported in India on an average is 50,000 per year from 2014 to 2016. In 2017 till June 27,482 cyber security incidents have been reported. Coming to the banks, they suffer an average of 85 attempted serious cyber-attacks in a year out of which at least one third have been successful in stealing data and syphoning of funds belonging to customers. Such challenges are so serious that banks are spending huge amounts of funds to prevent or to mitigate cyber-attacks. This will continue to be the most serious challenge even in the future, calling for sustained prevention efforts. In 2016 Indian banks faced a major security attack in which as many as 3.2 million debit cards belonging to various Indian banks were compromised resulting in a loss of Rs 13 million in fraudulent transactions. The hacks went undetected for months and the investigation revealed that ATMs operated by Japanese Hitachi payments were infected with malicious software leading to the loss. Similarly, in February 2016, USD 81 million of Bangladesh money was siphoned off by hackers to Philippines, Sri Lanka and parts of Asia.

Digital Literacy

Most of the emerging counties including India have a majority of their populations staying in rural areas where general literacy levels are low and digital literacy levels are even lower. These people always believe in physical visits to banks for their banking needs and suffer from a phobia of extreme insecurity while carrying out banking operations digitally. A huge cultural shift is required to drive away such fears and to educate them to bank in a digital mode. SBI for its part has set up several financial literacy centres to work in this direction and it will take some more time for the bank to achieve tangible results.

Network Performance

Internet connectivity is an essential part of digital banking and in India 50% of the population is still deprived of internet facility. Even where internet connectivity is available the network speed is so low and unreliable that people are frustrated to use. This challenge is larger and cannot be just confined to the responsibility of the banks. The government and private bodies have to be involved to mitigate the gravity of this issue. However, SBI has been continuously liaising with state owned and private telecom

companies to improve the internet reach and performance across the country. With several regions of the country like Himachal Pradesh, Jammu & Kashmir and the north east covered with mountains and high forest density, it will take some time to find a viable answer to this challenge. Indian Space Research Organizations (ISRO) has notably been roped in to handle it.

Obsolescence

Digitization needs a large amount of IT hardware. With continuous advancement of technology this hardware equipment becomes obsolete and outdated very soon. Continuous replacement of these equipment calls for huge expenditure and also technical effort. However, there is no other option but to replace them and banks need to cater for the same in their financial planning.

HR/ Skill Related Issues

Digitization involves services of a sizeable number of hardware and software specialists. Since the core activity of banks is banking, it is a big challenge to recruit IT experts into such environment and provide an attractive career path for them. Outsourcing of digitization activities to external specialist is also a challenge in view of data security and confidentiality requirements. SBI has initiated a number of steps to ensure that IT personnel feel comfortable to work along with core banking specialists. Setting up of a Global Information Technology Centre (GITC) away from the main banking operation centre is a step in this direction (CNBC TV, 2014).

Conclusion

Digitization in banking is the need of the hour and an inescapable necessity to derive higher levels of productivity, operational excellence and business performance. The advantages of digitization far outweigh the challenges. SBI has set up a living example as to how a large state-owned bank can successfully convert itself to a digitized entity overcoming many challenges described above. The SBI model can serve as a guideline for many other smaller banks across the globe in achieving the objective of full digitization.

Note: This article is based on interviews with (a) the then Chairman of SBI, Ms. Arundhati Bhattacharya in July 2015. (b) the present Chairman of SBI, Mr. Rajneesh Kumar in July 2015. (c) with the Chief Information Officer, SBI Mr. M. Mahapatra dated on July 2015 (d) SBI's Chief Technology Officer Mr. SK Bhasin dated on July 2015

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