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Indian Banking System: Journey from Traditional to Digital

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Abstract

For the economy, banking sector represents its heart. If the heart is clogged, the economy can't return to vitality. As seen in last years, bank's ability to support growth itself was limited because of their bad loans and private sector was not being able to bring in kind of investment that was required amid a slowing global economic situation. However, for banks to be successful, it is imperative to increase their customer base, retain their existing customer, and offer customers the products and services which are most beneficial to them. In today's tech-savvy era, it is difficult to escape the word 'digital' in any conversation, or strategy or discourse necessitating banks to follow the route. With the Central Government's move to declare the high currency notes of value worth Rs.1,000 and Rs. 500 (being 85% of total money in circulation; in value terms - Rs. 14 lakh) to be non-legal tender from November 8, 2016, PM Modi has done for Indian banks what would have taken them more than a decade to do, i.e. push the ordinary citizen to use digital modes for payment.

Banking sector in India embraced technology right from 1980's through mechanisation of cheque processing to evolution of ATMs, NEFTs, computerisation of branches (in 1990s) to adopting online and tele-banking post-2000, but witnessed a very slow progress on digital adoption by customers. The present research paper aims to focus on technological trends in Indian banking and its future challenges to meet customer's financial needs.

Keywords: Plastic Money, Demonetisation, Data Protection, Cyber Attacks, Cashless Phase

Introduction

"I dream of a Digital India where mobile and e-banking ensures financial inclusion". - By Narendra Modi

Indian banks have been growing steadily over the past few years in terms of technology upgradation, transiting from a mere manual banking to a digital era, however, a very slow progress on digital adoption by customers can be noticed. The common man was not really bothered with digital payments. An analysis by a consulting firm, BCG, revealed that digital mode of any type was used by only 13% of banking customers in India which was just about 23% of the people with Internet access. The pace with which telecom and device costs are coming down, it is anticipated that only 2% of more number of people would use Internet by 2020. But Indian banks had never launched any digital payment application nor encouraged customers for usage of online mode at the same pace. However, in the remonetised era, it is entirely *per se* on banks to adapt and restructure the system so as the percentage of people using online banking could go in range of 50-70%.

In terms of 'narrow money', which includes coins and notes in circulation and other currency equivalents easily convertible to cash, India has a higher cash-to-GDP ratio around 12% than all its BRICS counterparts.

Because of this, India lagged behind in credit to people and small businesses though big ones have been reaping benefits of growth. This cash has allowed emergence of high informal economy containing around 92.40% informal workers contributing 53.90% of informal jobs in gross value added. Informal cash economy is giving rise to high level of corruption, lower taxes, low wages, and worker exploitation.

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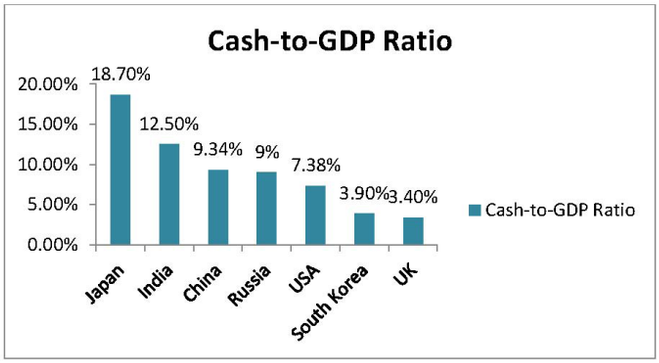

Fig. 1: Cash-to-GDP Ratio

Source: Economic Times

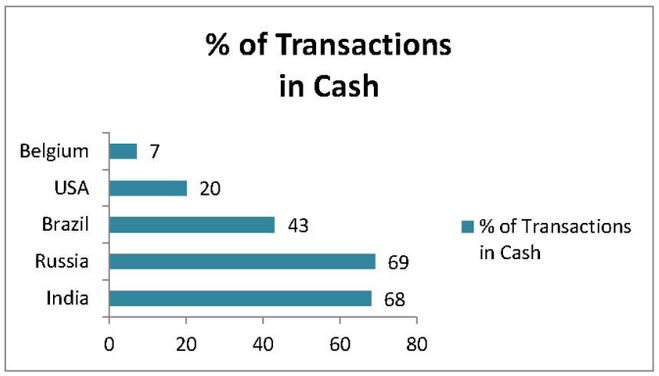

Fig. 2: Percentage of Transactions in Cash

Source: Economic Times

In view of this, surgical attack, as the Central Government called demonetisation, led to severe crisis. More than 80% of cash in the form of Rs. 500 and Rs. 1,000 (of which 20-25% is in the form of black money kept as wealth) was recently declared a non-legal tender in India. In this scenario, it is relevant to study the situation and find whether Indian banking is digital ready to transform India into a cashless economy and specify the importance of technological innovations.

The transition has forced all payment banks, whether banking sector or technology financial institutions, either large or small, to action. A big jump in systematic digital payment adoption by customers can prove to be a big boon to Indian banks in following ways:

It ensures an immediate revenue benefit. In view of demonetisation, customers started depositing bigger amounts in their CASA accounts to transact digitally which basically is an important source of revenue and profitability for banks.

Second, cost reduction can accrue over a period of one or two years. Over 40% of banks' establishment costs are related to cash. Customers going digital will ensure reduced cash handling, storage and security costs, thereby less human capital and reduced bank branches, less calibration of ATMs, which can be passed onto customers in the form of better quality service.

Third could be the market expansion that could pay out in next two or three years. We all know that there is a huge banking market at the bottom of pyramid but is being unviable due to the costs of each transaction. The cost reduction due to customers adopting digi-payment will ensure opening of a huge viable market for banks to expand.

Lastly, as customers do transactions digitally, they create a digital footprint which can be used for better marketing and hence improved profitability.

Research Objectives

The present research is undertaken with following objectives:

i. To study technological growth trends in Indian banking sector.

ii. To analyse post-demonetised trends in the development of digital banking transactions.

iii. To identify cyber security issues due to growing digital transactions and ways to curb the menace.

iv. To peep into the future challenges requiring Indian banks to restructure.

Evolution of E-Banking

Indian banking sector introduced technology straightaway in 1980s which witnessed the introduction of encoders, standard cheques, and mechanisation of cheque processing post the implementation of MICR, thereby, eliminating the manual way of processing negotiable instruments.

All bank branches were at first time computerised in 1990s facilitating cross-branch transactions, high productivity improvements, and initiation of electronic funds transfer (ETF), thereby ensuring seamless transfer of funds between customers, branches, banks, and other institutions. Also, implementation of core banking solutions is another milestone achievement in technological era allowing

seamless transaction processing between different departments within the bank processing various products and services resulting in improved efficiency of banking operations and productivity of bank employees. This era saw the introduction of ATM as well, ensuring customer's experience to cash transaction and services like ordering cheque book, account statement, etc.

New technology savvy banks, i.e. private sector banks emerged as a result of New Economic Reforms of 1991 which brought in new technology and compelled the existing banks too to focus on adapting technology in their firms.

The good old manual system on which Indian banking depended for centuries seems to have no place today. All facets of banking sector changed in the year 2000 when Internet was adopted by banks brining in all new experiences of banking. The credit of launching Internet banking in India goes to ICICI Bank. Citibank and HDFC Bank followed with Internet banking services in 1999. Several initiatives have been taken by the Government of India as well as Reserve Bank to facilitate the development of e-banking in India. Government of India enacted the IT Act, 2000 with effect from October 17, 2000 which provided legal recognition to electronic transactions and other means of electronic commerce. To examine different aspects of Internet banking, RBI set up a committee on Internet banking. The committee had focused on three major areas of Internet banking, technology and security issues, legal issues, and regulatory and supervisory issues. RBI had accepted the suggestions and recommendations of the working committee and accordingly issued guidelines to banks to implement internet banking in India

Customers were not required to visit branches for many transactions; also, the introduction of ECS, NEFT, and RTGS facilitated quick transfer of funds anywhere irrespective of branch, bank and location. Cross location funds transfer, which took days then, was transformed to be completed in hours and in some cases minutes. All these were the first few big steps in digitalising the payment and fund transmission in banking. Advent of Aadhaar Card and its linking with the accounts of customer was the next step in further digitalising banking in India. The introduction of Payment and Settlement Systems Act, 2007, gave necessary legal backup. The Bharat Bill Systems and Unified Payments Interface have taken the digitalising transformation further. The Prime Minister Dhan Jan Yojana which aims to provide a RuPay debit card to all households (166.7 million RuPay debit cards have been issued under PMJDY). This initiative will take digital banking to those people who were not been part of the banking system.

The Indian government as a part of its Digital India initiative, in August 2014, announced a planned investment of Rs. 1,330 billion in the Digital India project, which aims to provide universal mobile phone access, rural broadband in 250,000 villages, wi-fi hotspots in every city with a population of 1 million plus, and a smartphone in hands of every citizen by 2020. The impact of this initiative is already significantly felt in the progress of digital banking in India as per the data of RBI Financial Stability Report of 2015-16 where share of electronic transactions as part of total transactions in system has climbed to 84.4% in volume terms up from 74% and almost 95.2% of total value is now paid digitally.

However, 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 11.2 billion annual electronic transactions out of which 74 percent is through debit and credit cards.

The digital innovations in Indian banking are briefed below.

Electronic Funds Transfer (EFT)

EFT allows transferring money from one place to other electronically on a real-time basis where any transaction in form of deposit, withdrawal, payment, receipts can be performed. The process also automatically calculates currency and exchange rates in case of funds being transferred from one country to other. Transferring amount from buyer to vendor's account, money depositing through cash vending machines are some examples of the electronic transfer.

Net Electronic Funds Transfer (NEFT)

The mechanism assists fund transfer from one bank to other (having core banking solution enabled) through RBI server and settlements occurs on net basis. Electronic clearing completed in three sessions conducted by RBI where the end of each session is followed by settling of

net amount among banks through their current accounts maintained with RBI.

Real Time Gross Settlement (RTGS)

RTGS is a payment mechanism for interbank payments where one bank makes payment electronically to another bank through RBI through core banking-enabled servers. RBI, on receiving message from paying bank, debits the paying bank's current account and credits the receiving bank's current account without a time lag where both banks are necessitated to maintain a current account with RBI. Transaction or remittance made through RTGS can never be cancelled or modified. The transaction limit under RTGS is minimum 100000 rupees.

Immediate Payment Services (IMPS)

IMPS is a real time interbank electronic funds transfer system through mobile phones which was introduced by National Payments Corporation of India (NPCI) in 2010. It is on 24*7*365 basis.

Unified Payment Interface (UPI)

Unified Payment Interface (UPI) interconnects banks to help transfer funds where both sender and receiver need a UPI identity. Currently, 30 banks in India offer this facility.

Unstructured Supplementary Service Data (USSD)

It helps link mobile numbers and bank accounts to make payment and is developed by NPCI which is a technology based service for feature phones through which customers needed to dial *99# and enter short messages for basic banking activities.

Mobile Banking

A service which allows customers to conduct banking transactions through the bank application or browser of a mobile phone. The services consist of updates on bank balances, banking transactions summary, download bank statements, etc. The facility is available on a 24*7 basis, however, some banks limits the amount of transaction to be assessed.

Mobile Wallets

Mobile wallet is a digital payment mechanism which helps users transact upto Rs. 20,000 per month with minimum Know Your Customers' norms (KYC need just phone number and govt. identity like Aadhaar, driving License, etc. to get started). With full KYC (have to submit documents like identity proof, residence proof, etc.) customers can transact upto Rs. 1 lakh per month. A user loads wallet by linking to debit or credit cards and if he wants it back in his account, wallet company charges 1%. A merchant can't withdraw more than Rs. 25,000 per month from wallet sales. So, if he sells goods worth Rs. 5 lacs a month via wallet, he can withdraw only Rs. 25,000 per month. It appears a dampener for large merchants but good for small shops. SBI Buddy, HDFC PayZapp, ICICI Pocket, Paytm, Mobikwik are some of the wallets. In all, 40 companies have mobile wallet licenses of which 25 are operational.

2016 will be remembered in the history of India as a path breaking decisive period that sought to reinitialise the country towards a digital economy. Cashless payments rose to 22% in pre-demonetised period as compared to January in same year, a signal of behavioural change in Indian consumer.

Money transfers using mobile banking and IMPS wherein money is transferred using text messaging represent the highest rise ending October'2016. Money transactions through mobile phones grew 144% from January' 16 to October' 16. IMPS transactions grew 87% while IMPS transfers grew 107% over month ending October 2016.

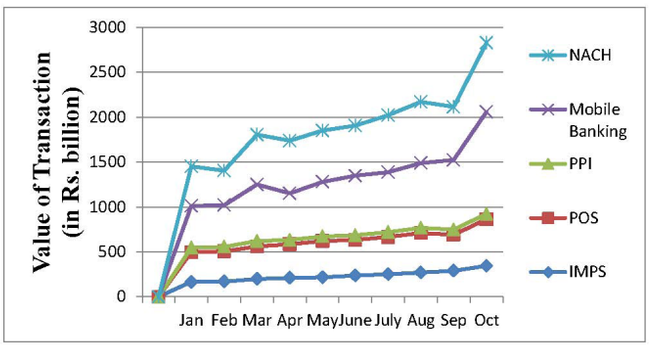

Fig. 3: Mobile Banking Fastest Growing Digital Platform in 2016

Source: Monthly Bulletins for 2016: RBI

Transactions using prepaid payment instruments (including mobile wallets) showed almost 100% jump in the period under review.

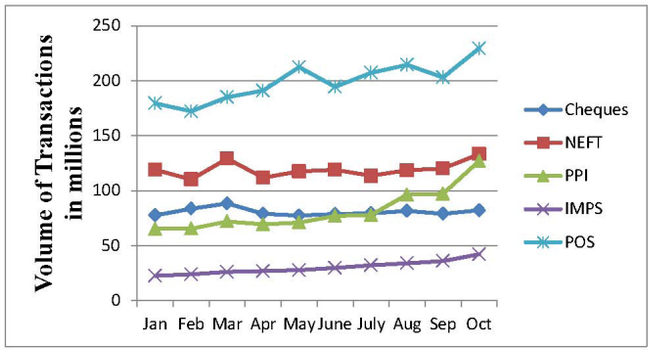

Fig. 4: Digital Transactions on Rising Trend in 2016

Source: Monthly Bulletins for 2016: RBI

The share of debit card transactions over point of sale (POS) terminals grew 28% in October' 2016 as compared to mobile payment platforms. Over the same period, non-cash payment made through NACH (National Automated Clearing House) rose to 74% in value, basically used for making bulk payments.

Fig. 5: Cheque Payments & NEFT in 2016

Source: Monthly Bulletins for 2016: RBI

While cheque transactions and payments remained stable over 2016, payment through national electronic funds transfer (NEFT) grew 34% ending Oct'16. This suggests that cash transactions have been reducing since Jan'16 in view of significant measures of Central Govt towards promoting digital India.

Further, the two key initiatives under the Digital India scheme, DigiLockers and e-signatures will give further boost to the digital environment. People opting to participate in these two initiatives will help them become more digital savvy and they, in turn, will become more inclined to use the various digital products introduced by the banks. Through DigiLockers, citizens can maintain their certificates and official documents, including birth certificates, university degrees and income tax documents, in a digital format online and saving via Aadhaar numbers as password. Further, online documents will receive additional security through Aadhaar linked e-signatures project which will allow an individual to digitally sign electronic versions of documents which would otherwise require dongles for authentication.

Digital Banking in Remonetising India

Continuing with its efforts to change over cash-based economy to a cashless one, the government has moved to outlaw billions of Rs. 500 and Rs. 1,000 denominated notes overnight on 8th Nov'16. A cashless economy consists of an economy with cash-free transactions where coins and notes are replaced by bits and bytes and spending, earning, investments gets updated in real time through smartphones, computers, or other electronic devices. In a move to hasten India's shift towards a cashless economy, a slew of measures to encourage digital transactions has been announced by the government. The government through its cashless push drive, is seeking to reduce the cost of handling cash and bring in more transparency. A 5 October 2016 report by Visa pegged the cost of cash at 1.7% of India's GDP. It is estimated that even a 0.4 percentage point reduction in this proportion over the next five years could lead to savings of Rs.4.7 trillion. Reducing the usage of cash and encouraging more electronic transactions will help create a paper trail for all transactions and can be passed on to customers in form of better rates.

Policy Measures to Encourage Electronic Payments

i. 0.75% discount on digital purchases of petrol and diesel from state-owned outlets. The move is expected to reduce cash requirement by Rs. 2 trillion.

ii. 0.5% discount for digital purchase of monthly and seasonal tickets for suburban rail travel. This is projected to bring cash requirement down from Rs. 2,000 crore to Rs. 1,000 crore.

iii. Monthly rental on 6,50,000 point of service (POS) terminals provided by state-owned banks capped at Rs. 100.

iv. Online purchases of rail tickets to come with a free accident insurance cover of Rs. 10 lakh. The share of online transactions is expected to increase to 78% from 58%.

v. Kisan credit card holders to get RuPayKisan Cards.

vi. Villages with population of less than 10,000 to get two POS machines each. There are one lakh such villages, with a total population of 750 million.

vii. No service tax on digital transaction charges for transactions upto Rs. 2,000.

viii. Customers not to bear burden of transaction fee and MDR for payments made to central government departments, public sector firms.

ix. State-owned insurers to give 10% discount on online purchase of general insurance policy; 8% discount for life insurance policy.

x. 10% discount on toll payments using RFID card and fast tags.

xi. 5% off on digital payments to railways for catering, accommodation, etc.

To encourage digi-transactions, two schemes for those consumers and merchants using digital payment options, i.e. RuPay cards, USSD, UPI, and Aadhaar-enabled payment systems, have been announced by NITI Aayog, namely the Lucky GrahakYojana and the Digi-DhanVyapariYojana. Also, only those transactions which are less than Rs. 3,000 and more than Rs 50 and do not include payments made between two persons and also B2B would be eligible for the award.

Table 1: Award Schemes to Encourage Digital Transactions

Lucky Grahak Yojana (For Consumers)	**Digi-Dhan Vyapari Yojana (For Merchants)**
• Daily award of Rs. 1,000 to be given to 15,000 lucky customers for a period of 100 days. • Weekly awards worth Rs. 1 lakh, Rs. 10,000 and Rs. 5,000 • Consumers can win prize worth Rs. 1 crore, Rs. 50 lakh and Rs. 25 lakh.	• Prizes for all merchants for all digital transactions conducted at merchant establishments. • Weekly prizes worth Rs. 50,000, Rs. 5,000 and Rs. 2,500 for more than 7,000 merchants. • Merchants can win prize upto Rs. 50 lakh, Rs. 25 lakh and Rs. 5 lakh.

Merchant discount rate (MDR) charges on debit card transactions have also been waived by SBI for one year for all small merchants consisting of turnover of upto Rs. 20 lakh encouraging them to install point-of-sale terminals, thereby pushing more class into cashless world. Generally, an MDR of 25 basis points would be paid on debit card transactions of less than Rs. 1,000; transactions between Rs. 1,000 and Rs. 2,000 attract 50 basis points whereas 1% is charged for transactions above Rs. 2,000.

Government's eye on promoting digital banking through incentivising digital transactions and measures to discourage usage of cash is visible in the data as per RBI which says digital transactions in Dec'16 were 43% higher as compared to those in Nov'16, totaling to an amount of Rs. 958 million.

Analysis till Oct'16 is based on data for all banks, however, to analyse post-demonetisation scenario, figures are limited to those of plastic transactions for 4 banks, m-banking figures for 5, and PPI transactions for 8 banks.

Steep jump in digital transactions is a result of incentive programmes being introduced for merchants and customers towards promoting digital banking. USSD transactions rose to 13 times from 7,000 in Nov'16 to 94,300 by Dec'16 while money transacted shows rise by 14 times from Rs. 73 lakh to Rs. 10 crore. Also, the usage of UPI, NPCI's flagship product has surged where almost 20 lakh transactions took place in December, up from 3 lakh in the previous month. Transaction value jumped to Rs. 670 crore from Rs. 90 crore.

Joining of major banks like HDFC and State Bank of India on UPI and launching of BHIM (Bharat Interface for Money) payment app boosted e-payments from only 4,100 transactions worth Rs 2.5 crore on 2 Nov'16 to 1.32 lakh transactions worth Rs. 43 crore on 2 Jan'17.

Table 2: Surge in Digital Banking post Demonetisation

Mode of Transaction	*November-16*		*December-16*	
	Volume (Rs. billion)	*Value (Rs. million)*	*Volume (Rs. billion)*	*Value (Rs. million)*
USSD	7000	73 lakh	94,300	9.73 cr
UPI	3 lakh	90 cr	19 lakh	670 cr
IMPS	3.62 cr	32,480 cr	5.09 cr	41,520 cr
PPI	5.9 cr	1,320 cr	8.37 cr	2,040 cr
Credit/Debit Cards	20.55 cr	35,240 cr	28.59 cr	47,820 cr

Source: Collated by Author

- Some digital data transactions recorded post-demonetisation period as per the RBI documents and NPCI website are briefed below:
  i. 138.09 million m-wallet transactions occur in Nov'16 which is 39% more than in Oct'16; higher than October growth of 32%.
  ii. 234.79 million debit card usage volume recorded at POS terminals in Nov'16 which is 67% more than in October the same year.
  iii. 47.27 million RuPay card transaction volume at point-of-sale (POS) terminals logged in Dec'16, nearly 610% more than the average volume in preceding eight months.
  iv. 197 million RuPay card transactions registered on ecommerce sites in Dec'16, which is 157% more than the average volume in previous eight months.
  v. 49.28 million mobile banking (excl. IMPS) usage volume in Nov'16 which is 36.8% more than in October the same year.
  vi. 52.86 million immediate payment service (IMPS) volumes in Dec'16 being 46% more than that in Nov'16.

The 'digital economy', meaning thereby, all things that use digital computing technology, including m-commerce, digital payment banks, or Internet startups is set to double in three years from around $80 billion and is expected to expand to $0.5 trillion ($500 billion) in less than a decade. This digitisation drive will save over Rs. 21,000 crore annually for the banks in cash handling, storage and transfer, thereby increasing profitability.

Cyber-Security Risks in Digital Banking

Information technology has acted as a facilitator for the transformation of Indian banking system in terms of creating digital infrastructure as well as connecting world economy owing to evolution of widely available internet network, smartphones, and mobile banking. The trends above are an additional proof of how going online has become a critical part in our day-to-day working. However, transition from conventional to digital banking will depend on how much safe the data is from the heists of hackers. This new birth of banking era has emerged as an opportunity for cyber criminals to harm the ones unaware of handling digital payments via mobile and unified payment options, highlighting the need for immediate attention to create higher levels of data security.

The amount of suspected crime by attackers is transparent in a sudden switch to digital payment platforms post-demonetisation which is seeing more than 85% are unaware how to safely use this new option, coupled with a lack of legal framework and speed of investigation. Data is the prime facilitator in very digi-transaction, actually an often repeated debate in nearly every technology related conversation that comes up anywhere in India today. However, the protection of this data, much of which carries our personal financial credential consists of no quick legal framework if it is misused by a private or government entity.

A research revealed that some startups and fintech, in order to determine the creditworthiness of individuals

for small loans, peeps every data in your phone, right from how many texts you receive for non-payment of dues to how you fulfill out your loan application while also mapping the area of your residence and office. For instance, more than three dozen local governments across China are compiling digital records of social and financial behaviour to rate credit worthiness where a person gets a score deduction for violations such as fare cheating, jaywalking and violating family-planning rules.

A similar scenario could rise in India with the jump in online transactions where an e-wallet use your details and transaction's history even after the app is deleted and combine it to assess your credit score. The biggest danger in future is the growth of large data intermediaries which are similar to Visa and Mastercard networks, which purchase big databases and further sell this data and build their services or product on top of that. There have also been instances of government entities making sensitive and personal information public, example being, Bengaluru Police released 13,000 call data records of potential on-going investigations during a hackathon with focus on solving problems of cities.

Bankers, on immediate basis, necessitated to build a strong legal framework for privacy and protection of data shared by individuals and corporate entities as hackers attempt to find innovative opportunities to pinch funds from banks or steal credit/debit card details of retail customers daily. If suddenly it is the ease in using innovative ways to make payments, the easiest it will be for attackers to target credentials of customers to rob their money.

India is the fastest growing when it comes to growth of digital channels use in financial services, but is lacking in innovative legislative reforms resulting in millions losing their money in seconds. A single hack can ensure millions of accounts being compromised, as it happened in October 2016 when 3.2 million card details of customers of SBI, HDFC bank, ICICI bank, Axis bank were stolen in a malware related security breach and were used in China. The heist is still under investigation, but is almost forgotten in the scramble for a digital payments future.

About 50 leading banks in India lost Rs. 485 crore between April 2013 and November 2016 because of cyber fraud, as per Ministry of Finance data. About 56% of this money lost was due to net banking thefts, credit and debit card cloning. Also, at least 15 'ransomware' attacks occur every hour in India.

RBI recorded 13,083 and 11,997 cases related to ATM, credit, debit card, and net banking fraud in 2014-15 and 2015-16 (upto December 2015). Globally, Juniper Research says value of online fraud transactions is expected to reach $25.6 billion by 2020 up from $10.7 billion last year. This means by the end of decade $4 in every $1,000 of online payments will be fraudulent.

Cybercrimes registered under IT Act, 2000 rose to about 350% from 2011 and 2014 due to the risk of user unknowingly using e-payment options.

Types of Fraud

There are three kinds of risks unique to e-payments:

i. **Risk arising from devices:** Using the mobile phone or app not secured by passwords, not logging-off from accounts used for making payments, can pose a threat to money in an e-wallet.

ii. **A risk of data leakage** could result while connecting the e-wallets or other fintech apps with other apps like social networks.

iii. **Sharing passwords or OTPs** (One-Time Passwords), negligently or knowingly, with others especially when using these modes publicly, could pose a threat to personal data.

Transition to digital banking involves the following risks where the security of your transactions could be compromised:

Point-of-Sale (POS) Machines

- Unauthorised POS devices can copy the details of credit and debit cards while swiping them in the machines.
- Compromised devices can replicate cards.
- The Internet network that POS devices use can be hacked to get details.

ATMs

- Hackers can use malware-infected debit and credit cards to take control of an ATM network, causing

the ATM to split out cash.

- Installation of fake micro ATMs can be used to capture card details for use later.
- Crooks can take advantage of first-time ATM users under the pretext of helping them transact at ATMs.

Marketplace Transactions

- Saving card details on marketplaces can expose customer info in case of a breach.
- Cyber attacks on marketplaces can give hackers access to customers' personal info as well as details such as on merchant and vendor payments.

Digital Wallets

- Online wallets are easy targets for attackers. Since wallet transactions are of smaller amount, many wallets do not use very advanced security measures, making them vulnerable to attacks.
- Many wallet apps keep their users signed in on their wallet accounts, leaving just a single layer of authorisation for a hacker to get through.

Security Tips to secure use of Digital Transactions

Online Transactions

- Avoid saving card data online.
- Pay online using OTPs.
- Keep your operating systems, apps and antivirus up to date.
- Before entering details on any website, ensure it is a secure link. Web address should begin with 'https'.
- Enable two-factor authentication wherever available (particularly for email and financial sites).
- Avoid links or attachments sent from unidentified sources.
- Click the lock in your browser to ensure your connection is secure and that you are connecting to the correct organisations.
- Typing out links in address bars of web browser instead of clicking on links.
- Avoid exchanging sensitive information (even your birthday) over e-mail.
- Avoid using personal info such as birthdate/ names for passwords.
- Avoid using card-on-delivery option with new online retailers. It is safer to use digital wallets for payment at delivery.
- Monitor your accounts for unauthorised transactions.
- Avoid clicking links or entering personal information on pop-up windows.

Mobile Security

- Use password manager apps that generate random passwords.
- Do not use the same password for digital wallets and net-banking.
- Log out of digital wallets once a transaction is completed.
- Avoid installing third-party apps on your phone that pop up during ads.
- Activate mobile tracking to wipe out data remotely in case of device theft.

Besides, downloading unverified apps and software can compromise security. Users should download apps with high ratings. While using "HTTPs" (the small's' for secure) was always thought to be safe but hackers can get here as well. It is advisable, to counteraction attackers, that updated software and fraud detection systems be applied by banks and users to save accounts with unique passwords rather than same for crucial net banking, twitter and facebook accounts while also frequently changing them.

Additionally, hardware can also be exposed to threat by attackers while downloading a mobile banking app. It is advisable that Payment Card Industry (PCI) standards, which are a set of instructions to store, process and transmit plastic transactions with details about firewalls configuration, storing passwords, information of users and so on, to be adhered to for users to use credit and debit cards, ensuring protection from attackers. Banks act as a major role player to control customer information while card companies like Visa, Mastercard, Amex can do this. As per security experts, users should use their phone as its bank in this electronic era.

Considering the increasing dependence of customers on digital money, controlling cyber security risks occurs as a foremost challenge before the Indian economy. This also holds true in view of recent attack on digital accounts of prominent Indians where hacker group Legion assumed responsibility and called Indian banking system as deeply flawed. While IT legislative reforms are not as fast as innovations in technology, the existing Sections 43A, 69 & 72A of the IT Act, 2000 are inadequate to address growing concern over rising data thefts and crimes.

To make matters worse, they also lack a strict enforcement mechanism. We don't know what are the data practices adopted by apps. There are no comprehensive data protection laws or any central authority, resulting in difficulty in analysing the true implementation of user's data in unethical ways. Actually, there has been very little talk about data ethics and data practices in India, but cases of misuse of data are frequent.

Future Challenges in E-Banking

Although progressing steadily in technological developments, banks have been losing their relevance in a world getting disrupted rapidly by non-banking companies who are expected to snatch around one-third of revenues of traditional banking by 2020. Rather credit cards, PayPal, mobile, and e-wallets are becoming words of everyday discussion for customers instead of conventional banks.

Banks v/s Fintech

The biggest competition lies in a quarter of revenues of traditional banks are fast acquired by payment banks (fintech). PayPal is the No. 1 online payment method in many countries already. Airtel, Jio, and India Post, the non-banks in India, are quickly adopting the major payment banking business while also entering into providing CASA services. The competitive disadvantages for financial institutions are disappearing fast. If they do not disrupt themselves, they will end up as cash handling and storage institutions.

By simply being more digital, banks cannot shrug off competition. Closing branches, adding more ATMs, and mobile and web banking alone won't help. With the rapidly emerging cashless economy, customers visiting bank premises for dealing accounts will be an age-old concept, thereby, conventional banking services exiting altogether. Indian banks need to restructure their systems so as to be of significant value to customers, delivering customised products, thereby benefiting in terms of their profitability.

Till now, most banks were allergic to fintech. Conventionally speaking, bank's human capital serves as a significant aspect of any customer experience. If we were to apply SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis, banks have a lot of human capital, where no one better than an employee can provide expert advice. Here, in form of accepting digital infrastructure, traditional banks should ensure customer interaction with a bank employee through a banking app, thereby facilitating ease in banking. This specific disruption is critical to ensuring quick adaption by banks as well as customers. Also, artificial intelligence allows apps to capably handle natural language queries and connect a multitude of services, like, a Jan Dhan account-holder in a remote UP village talk to his bank's mobile app and check his balance, pay his utility bills and transfer funds to buy fertiliser. Since, non-banks have not gain much expertise in human resource capabilities, banks can gain confidence through this disruption.

Through innovative fintech, customer scan gain personalised banking which can offer customised packages on certain items in tie-up with the vendors. It can also offer rewards on digital payments in form of shopping vouchers, theatre tickets, and much more. Such services could engage the customer in an exciting way combining finances with fun.

Also, the use of fintech's machine learning aspect will aid banks to anticipate customer issues before they occur which can then proactively suggest possible solutions. As an example, banks can, as per customised needs, offer travel packages, reduced airfares, discounted hotels fares, etc. Some banks have a tie-up with travel agencies to offer best negotiated price on behalf of a large customer base.

Mobile Banking

Given that consumers in Asia-Pacific and Africa regularly use their mobile phones to pay on the go, India can lead the phones mobile payment services much faster than any other country away from traditional cash transactions way the banks are performing. Considering the fact that

the uneducated, unbanked, rural poor too have mobile phones, the ability to perform basic financial services over a mobile phone can be the driver to a cashless banking. A case in point is a pilot project of HDFC bank and Vodafone in Rajasthan's Jhalsu village where whole day's earnings of a farmer is lost if he goes to a bank branch a few kilometers away for a simple deposit or withdrawal. Here, Vodafone retailers enable the villagers to send or withdraw cash through them, acting as subagents of HDFC bank.

A recent study involving more than 30,000 consumers in 62 countries shows that the use of mobile payment technology has increased more than three times in the last two years. Mobile e-wallets account for everyday transactions of 20% of those surveyed. The UPI-based Bhim app that was launched recently being the fastest downloaded app on Google Play Store can, in no time, lead the world due to sheer numbers. Here, without entering the card details, account number, wallet passwords or IFSC Code, payment is made directly to vendors, whether online or offline, using the Bhim app.

Though it acts as a great digital payment facilitator, it is not away from consisting of hassles to its usage.

While the Bhim offers great potential to realise the digitisation dream, there are a few barriers to adoption. The illiteracy levels acts as a constraint, where it is not feasible for all types of handsets, basically the low feature phones, due to lack of technology proficiency. An additional version of Bhim to be specifically fit for low-end feature phones is required.

Necessity to Create Functional Legal System

Pushing technology for digital banking can work well only through adding security, particularly cyber security and protection of privacy; a functional legal system, insurance that can cover damage contingencies arising from cyber malfunction, a political system that can hold the executive in check and prevent it from converting the abundant opportunity for digital snooping and monitoring into totalitarian control.

It's better to illustrate citing an example of a person, holding an account with Syndicate Bank in Delhi, whose account and ATM has been blocked by his bank without sending the update, while he was in Hyderabad. He tried contacting national helpdesk and his branch bank to get out of situation but was told that bank was complying with a government order relating to a class of ATM cards and would be eased soon. Also, his one cheque issued got dishonoured on account of his account being credited via NEFT without an associated PAN. Now the transfer has to be another bank working according to RBI regulations. How could that account not have an associated PAN? He was asked to submit the KYC documents again to suspect the issue.

But, in case, he has been sued by the person he had issued cheques to, whether can he sue the bank in turn? Imagine, he had a health emergency at hospital and the costs can't be claimed due to medical insurance gets cancelled in view of bouncing of second cheque as well. Though, he could be saved through alternate means. But in case, he did not, who can be blamed for endangering his life resulting merely by an impersonal failure in the digital payment system of a forcibly cashless world?

The crux lies in not just developing innovative technology, but also in deploying, as quickly as possible, the adequate legal enforcement. A comprehensive data protection law will surely enforce a kind of safe digital infrastructure to the owners of data.

Conclusion

'Banking is necessary-banks are not'

-Bill Gates.

The progress in transitional phase of Indian banking from a mere paper-based traditional form to technology driven is further boosted with the objectives of demonetisation to encourage cashless transactions. The move appears as a critical opportunity for banks to compete with emerging payment banks to offer more personalised services to customers. However, for a real change to happen, it should train the uneducated masses to correctly using mobile and unfed payment options with strict data protection laws and a basic functional legal system.

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