Fin-Tech Issues for Banking in India

KALPANA SINGH[1], PROF. (DR.) R. P. SINGH[2]
[1] *Research Scholar, Department of Commerce*
[2] *Professor, Department of Commerce, DDU Gorakhpur University*

Abstract- ***The overall financial services market in India is witnessing a great transition leveraging new and cutting-edge technologies, such as blockchain, AI, ML, and cloud infrastructure. A number of segments have developed in the FinTech: PayTech, LendTech, Digital banking, InsurTech, WealthTech, FinanceTech, RegulationTech, etc. The banks are now aggressively encroaching into the fields of insurance, share market, trading construction and so on. These activities are bound to have impact on their asset quality. Though, traditionally, NPAs are direct quantitative reflection of their overall performance as well as government policies related to banking, their entry into these diverse activities have led to behavioural and technological implications on their asset quality also.***

Indexed Terms- ***Convenience Banking, FinTech startups, Fintech revolution, Fintech unicorns, E-Cheque Structure, AI, Special Mention Account, Distributed Ledger Technology.***

I. INTRODUCTION

The impact of technology seems to be the most visible in the financial sector—banks in particular. The innovative use of technology in the design and delivery of financial services is called Financial Technology, in short, FinTech. In India, banking continues to be an industry of unparalleled opportunity and core importance for a vibrant, developing economy.

FinTech is a term used to describe emerging digital technology that aims to improve and automate the delivery and usage of financial services. The term FinTech was first coined in the 21st century to describe the technology used in the back-end systems of established financial organizations. Today, however, FinTech spans various sectors and industries, including education, retail banking, non-profit fundraising, investment management, and much more. [1]

As with all developing economies, India's banking industry needs to balance its dual responsibilities of economic growth and social development in equal measure — a task made difficult by international pressures and internal demands. Yet the country's banking sector has come a long way from its post-Independence role of a nation-builder to a dynamic industry that attracts global attention.

With the rise of technology, banking customers are living in a connected world with their experience from other industries influencing their expectations from their financial services provider. This has led to an evolving customer-bank relationship necessitating banks to be more customer-centric by embedding themselves in customers' lives to meet rising customer experience expectations. However, banks have been facing challenges in meeting customer expectations, as they are troubled with legacy challenges both in terms of technology and culture.

The prior experience of the 1997-98 Asian financial crisis and the 2007-08 global financial crisis has highlighted the importance of a stable, sound and an efficient banking system in ensuring macroeconomic stability in the country. Owing to increased liberalization and a globally integrated financial system only robust and efficient banks can ensure their sustainability.

The objective of this paper is:

- to have an overview of the technology issues and linkages (direct & indirect) relating to Indian commercial banking and
- to assess the challenges relating to FinTech before the commercial banking sector in India.

This qualitative study is based on in-depth-document analysis of the trends observed in published literature and internet source during September 2019-October 2022. Due to the Covid impact, this sector has

witnessed revolutionary technological changes oriented towards contactless, cashless and branchless banking. This paper focuses on these changes. This paper is divided into five parts.

II. REVIEW OF LITERATURE

Today, the Indian banking sector consists of 12 public sector banks and 22 private sector banks holding total assets of US$2.48 trillion. In FY 2018, the total assets of the banks across all the sectors increased remarkably to US $ 2.48 trillion. Its credit has also increased at a CAGR of 0.29 percent and was expected to hit 10 percent in FY 2022-23. [2]

In recent times, the Banking Sector has been making rapid straights by using information technology as a platform and endeavouring to scale higher heights.[3] The increasing internet penetration and mobile subscribers in rural as well as urban areas have created a huge opportunity for banking institutions to look beyond traditional form of brick and mortar branch banking. [4]

On IT in Banking Tiwari (2012) opines: The banking today is redefined and re-engineered with the use of IT and it is sure that the future of banking will offer more sophisticated services to customers with the continuous product and process innovations. Thus there is a paradigm shift from seller's market to buyer's market. So banks also change their approach from "Conventional Banking to Convenience Banking" and "Mass banking to Class Banking". [5] Gavrilova (2022) mentions at FinExtra: While traditional banking faces a lot of strict regulations and criticisms for their unwieldy bureaucracy, Fintech provides for higher flexibility and offers a variety of cutting-edge credit and payment solutions including blockchain, peer-to-peer lending, decentralized crowdfunding platforms, etc. [6]

Malini (2017) in the study 'Technological innovations in the banking sector in India: An analysis' metion: Technology-based innovations will be the key determinant in offering diversified and customized banking services to their varied customer portfolios, at a reduced cost. [7]

Jaksic and Marine (2014) on 'The future of banking : The role of information technology' analyze: Even though the basic economics of banking have not changed, IT developments may lure banks into transaction banking (due to IT-driven cost efficiencies). However, banks should not give up on relationship banking. [8]

Negi (2015) mentions on 'E-Cheque Structure in India': Now-a-days we are hearing about e-governance, e-mail, e-commerce, e-tail etc. In the same manner, as a new technology E-cheques are already operational in the US, Australia has put them on trial since November 2001 and now they are here in India. It is to eventually replace the conventional paper cheque. India, as harbinger to the introduction of e-cheque, the Negotiable Instruments Act has already been amended to include; Truncated cheque and E-cheque instruments. [9]

Regarding AI and finance, Christy (2019) mentions: The use of AI in banking can be traced back to 1987 when Security Pacific National Bank in US set-up a Fraud Prevention Task force to counter the unauthorized use of debit cards. Programs like Kasisto and Moneystream are using AI in financial services. [10]

Banks use artificial intelligence systems today to organize operations, maintain book-keeping, invest in stocks, and manage properties. AI can react to changes overnight or when business is not taking place. [11]

On AI and audit Chang (2017) writes: For financial statements audit, AI makes continuous audit possible. AI tools could analyze many sets of different information immediately. The potential benefit would be the overall audit risk will be reduced, the level of assurance will be increased and the time duration of audit will be reduced. [12]

Banks are obviously worried about the large tech firms as they not only have many existing touchpoints with customers like yourselves every day, but also have to a certain extent your trust and confidence. What also worries banks, is that there are thousands of new and dynamic FinTech startups that

now offer products that used to be dominated by traditional financial players. [13]

In the same vein, Money 2.0 Conference (2021) writes: Consumers are the biggest beneficiaries of the great FinTech revolution. From convenience, ease of use, costeffectiveness, and time savings, the benefits are endless. However, one should also consider the other side of FinTech and growing concerns around cybersecurity and scams when it comes to transactions. [14]

On 'The Rise of FinTech in India' The Economic Times (2022) mentions: India is well-positioned to achieve a FinTech sector valuation of USD 150-160 billion by 2025, implying a USD 100 billion in incremental value creation potential. With the advent of breakthrough platforms such as PayTM, PhonePe, MobiKwik, etc., digital payment systems have undeniably been the flag bearers of the Indian FinTech market. Additionally, Facebook and Reliance Jio's global partnership is expected to significantly change India's digital payments sector, with a particular focus on hyper local digital commerce that will reach tier 2 and 3 cities and rural areas. [1]

India has the highest Fintech adoption rate in the world – at 87 percent – and significantly higher than the global average rate of 64 percent. At present, globally, there are 187 Fintech unicorns of which 21 unicorns are in India: Acko, BharatPe, BillDesk, Chargebee, Paytm, Mobiwik, Oxyzo, PhonePe, PineLabs, Coin DCX, Coinswitch Kuber, CRED, Slice, Razorpay, Cred Avenue, DIGIT, Groww,Policy Bazaar, Zerodha, Zeta, Open. In 2022, Open (Fintech – neo bank) and Oxyzo(FIntech – marketplace – SME lending platform) became the newest entrants in the unicorn club. [15]

Kagan (2022) lists the many areas of finance where Fintech has been applied as many apps and platforms like:
Roboadvisors that optimally invest your money automatically, often for little cost.

Investment apps like Robinhood make it easy to buy and sell stocks, ETFs, and crypto from your mobile device, often with little or no commission.

Payments apps like Paypal, Venmo, Block (Square), Zelle, and CashApp make it easy to pay individuals or businesses online.

Personal finance apps such as Mint, YNAB, and Quicken SimpliFi let you see all of your finances in one place, set budgets, pay bills, and so on.

P2P lending platforms like Prosper, Lending Club, and Upstart allow individuals and small business owners to receive microloans loans.

Crypto apps, including wallets, exchanges, and payments applications to hold and transact in cryptocurrencies and digital tokens like Bitcoin and NFTs. [16]

HT Brand Studio (2021) remarks: FinTech is reimagining the entire banking space, with banks moving to digitization. [17]

Dhanwani (2022) mentions in his analysis on recent trends in indian banking industry: The fruits of technology will certainly taste a lot sweeter when the returns can be measured, but it needs precautions and the safety nets. The increasing use of technology in banks has also brought up 'security' concerns. [18]

III. THE ANALYSIS

The banking sector reforms under Narasimham Committee-I & Narasimham Committee-II started with the objective to improve the overall performance of the banks, to place the banking system at par with international standards and to make Indian banks.

Despite all the reforms the banks are going through the problem of the rising NPAs as is evident in Table 1/Figure 1. The rising NPAs is something which reduces the faith of the general masses on the significant sector of the country and also jeopardizes the image of the country at the global level.

GROSS AND NET NPAs OF SCHEDULED COMMERCIAL BANKS

Year (End-March)	Non-Performing Assets			
	Gross		Net	
	As Percentage of Gross Advances	As Percentage of Total Assets	As Percentage of Net Advances	As Percentage of Total Assets
2020-21	7.3	4.3	2.4	1.3
2019-20	8.2	5.0	2.8	1.6
2018-19	9.1	5.6	3.7	2.1
2017-18	11.2	6.8	6.0	3.4
2016-17	9.3	5.6	5.3	3.1
2015-16	7.5	4.7	4.4	2.7
2014-15	4.3	2.7	2.4	1.5
2013-14	3.8	2.4	2.1	1.3
2012-13	3.2	2.0	1.7	1.0
2011-12	2.8	1.7	1.3	0.8
2010-11	2.2	1.4	1.0	0.6

Source: HBS Table No. 55 _ Gross and Net NPAs of Scheduled Commercial Banks - Bank Group-Wise, https://dbie.rbi.org.in/DBIE/dbie.rbi?site=home

Table 1

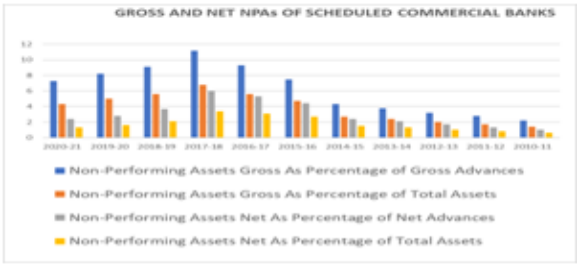


Figure 1

Gross NPA as mentioned in table 1 consists of Substandard, Doubtful and Loss Assets.

1. Substandard Assets– If a loan account remains NPA for a period less than or equal to 12 months.
2. Doubtful Assets– An asset is doubtful if it has remained in the sub-standard category for 12 months.
3. Loss Asset– A loan account is declared as loss asset when the bank's internal or external auditors declare it so or RBI inspection declares it as one.

Gross NPA Ratio = total gross NPA/total advances (loans) of the bank.

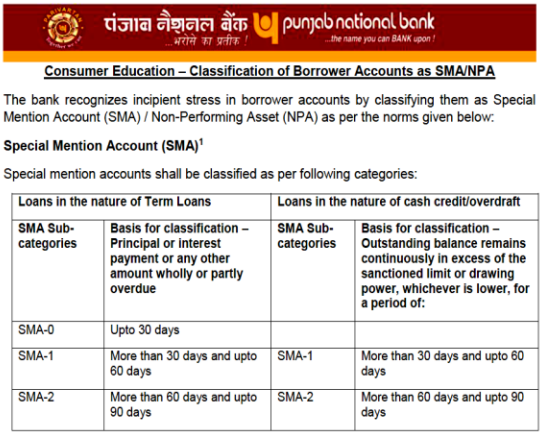
Gross NPA (GNPA) denotes the total of all the loan assets that haven't been repaid by the borrowers within the ninety-day period.

Whereas,

Net NPA (NNPA) is the amount remaining after deducting doubtful and unpaid debts from the GNPA. It is the actual loss suffered by the bank.

Net NPA = (Total Gross NPA) – (Provision for Unpaid Debts)/Gross Advances [19]

NPAs, also called Special Mention Account as mentioned in Figure 2, are the assets on which the principal and the interest remains overdue for the period of 90 days or more. They can be classified as the dues which are in arrear and generally arise because the debtors make default in the payments. NPAs are classified into three major categories- substandard assets, doubtful assets & loss assets. This classification is done on the basis of the duration of the overdue. However, the rising NPAs question the viability of the banks.



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Consumer Education – Classification of Borrower Accounts as SMA/NPA

The bank recognizes incipient stress in borrower accounts by classifying them as Special Mention Account (SMA) / Non-Performing Asset (NPA) as per the norms given below:

Special Mention Account (SMA)[1]

Special mention accounts shall be classified as per following categories:

Loans in the nature of Term Loans		Loans in the nature of cash credit/overdraft	
SMA Sub-categories	Basis for classification – Principal or interest payment or any other amount wholly or partly overdue	SMA Sub-categories	Basis for classification – Outstanding balance remains continuously in excess of the sanctioned limit or drawing power, whichever is lower, for a period of:
SMA-0	Upto 30 days		
SMA-1	More than 30 days and upto 60 days	SMA-1	More than 30 days and upto 60 days
SMA-2	More than 60 days and upto 90 days	SMA-2	More than 60 days and upto 90 days

Courtesy: Consumer education Document, PNB (https://www.pnbindia.in/downloadprocess.aspx?fid=dOajYzLAWISp84yF1avnxg== as accessed on 21.08.2022.)

Figure 2

When a LOAN OR ADVANCE IS NPA? [20]

- Interest and/ or installment of principal remain overdue for a period of more than 90 days in respect of a term loan.
- The account remains out of order i.e. exceeds sanctioned limit in respect of an Overdraft/Cash Credit (OD/CC).
- The bill remains overdue for a period of more than 90 days in the case of bills purchased and discounted.

- The installment of principal or interest thereon remains overdue for two crop seasons for short duration crops.
- The installment of principal or interest thereon remains overdue for one crop season for long duration crops.

However, for reducing the problem of rising NPA, the Narsimham Committee brought the several reforms in 1991 to deal with the challenges of the NPA. Some of the bodies and laws in this direction are the Debt Recovery Tribunal (DRT), Securitization Act 2002, Lok Adalat, Compromise settlements and recent and the most apt one is the Insolvency and Bankruptcy Code, 2016.

Though, traditionally, NPAs are direct quantitative reflection of their overall performance as well as government policies related to banking, their entry into these diverse activities have led to behavioural and technological implications on their asset quality also.

IV. EVALUATING FINTECH SOLUTIONS: ROLE OF FINANCIAL TECHNOLOGY IN INDIAN BANKING SECTOR

In recent times, the banking sector has been making rapid strides by using information technology as a platform and endeavouring to scale higher heights. An attempt has been made in this paper to examine latest developments in FinTech applications in banking alongwith the various innovative instruments that have been introduced by Banks after second generation reforms.

FinTech is nowadays transforming finance through a broad range of applications and technologies, ranging from artificial intelligence and blockchain to digital payments and roboadvisors as is described further:

1) Mobile Banking
During the global financial crisis of 2008, there was a series of game changing technological innovations that transformed the way we live and became part of our daily lives - the iPhone, Airbnb, Uber, WhatsApp, WeChat - for example. This created a big gap in what banks were able to offer compared to what their customers had come to expect -- particularly when it came to convenience and user experience. That gap was so big that non-traditional banking players, like the large technology firms like Facebook and Alibaba decided to jump in and capture the opportunity.

2) Revised ATM Mechanisms for Safe and Secure Transactions
With effect from January 1, 2019, ATM cards without chips were unacceptable, and the chip-based magnetic striped card was brought to effect. This changed the way the ATM cards operated. Earlier the card needed to be swiped once for verification; however, now the card remains inserted in the ATM machine until the transaction completes.

3) Cloud services
It's a hybrid technology of computing various services like servers, software, networking, storage, databases, analytics and many more over the internet. Cloud computing has three main types that are commonly referred to as Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS).https://www.shanlax.com/wp-content/uploads/SIJ_Commerce_V8_N1_009.pdf

4) Biometric authentication tool
Biometrics are automated methods of recognizing customers through their biological characteristics and traits such as fingerprints, finger vein patterns, iris, and voice recognition.

5) Robotic process automation
Robotic process automation is being applied to highly repetitive tasks normally performed by humans. RPA uses artificial intelligence to train and teach software robots to process transactions, monitor compliance and audit processes automatically. Machine learning algorithms are being integrated into analytics and CRM platforms to uncover information on how to better serve customers. Chatbots have been incorporated into websites to provide immediate service to customers. [21]

6) Cyber security system
As more people go cashless, activities are done through online checkout pages and physical credit scanners. Cyber security helps decrease malicious activities via MFA (Multi Factor Authentication),

One-Time Passwords (OTP), Single Sign-On (SSO) and SSH-based File Transfer Protocol (SFTP).

7) AI and Cognitive banking
It harnesses the power of artificial intelligence (AI) to transform how bank services are manufactured, delivered and managed, opening the door to new and more profitable opportunities beyond the current banking landscape.

8) Distributed Ledger Technology
As real-time, open-source and trusted platforms that securely transmit data and value, it can help banks not only reduce the cost of processing payments, but also create new products and services that can generate important new revenue streams.

Key Advantages of Using Blockchain in Banking:
a) Decentralised Trust
b) Enhanced Security
c) Decreased Costs—e.g., elimination of the middle man in cross-border payments
d) Increased Efficiency--eliminates the risk of errors and duplication

The overall financial services market in India is witnessing a great transition leveraging new and cutting-edge technologies, such as blockchain, AI, ML, and cloud infrastructure. A number of segments have developed in the FinTech: PayTech, LendTech, Digital banking, InsurTech, WealthTech, FinanceTech, RegulationTech, etc.

CONCLUSION

These days banks are not just banks dealing in deposits and lending. They are undergoing vast business transformation. They are now aggressively encroaching into the fields of insurance, share market, trading construction and so on.

These activities are bound to have impact on their asset quality. The asset quality of banks can be determined mainly by three factors:

1) NPAs as quantitative reflection
2) Behavioural finance
3) Technological sophistication (in terms of FinTech)

Despite being a highly diversified and populated nation, a sizable chunk of India continues to be underbanked, underserved, and subject to a regulatory framework that is always changing. India's financial environment and unresolved problems are obstacles difficult to overcome. This is where fintech enters the picture, with its potential to revolutionise the country's banking and financial services.

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