



# Fin Tech – A game changer, risks and return

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## ABSTRACT

*Fin Tech revolution can be traced to the global financial crisis. In the Indian context, the Fin Tech revolution has been primarily in the field of payment systems and there has been a quantum increase in the last decade. Regulators have taken a number of regulatory initiatives for the development of Fin Tech landscape. The digital advancement is also fraught with risks pertaining to mis-selling, data privacy and online fraud. Therefore, in order to harness the potential of digital innovations, it is important there is need for spreading awareness among regarding risks associated with online/cyber transactions, there is also need for bolstering up the digital infrastructure and also cost effective technology to reach the under privileged sections of the society.*

## Introduction

Fin Tech (Financial Technology) can be defined as the usage of technological innovation with reference to the design and delivery of the financial services e.g. online loan applications which enable customers to avail of loan through online credit appraisal and disbursement of loan. As per the Financial Stability Board of BIS, Fin Tech is defined as “Fin tech is technologically enabled financial innovation that could result in new business models, applications, processes or products with an associated material effect on financial markets and

institutions in the provision of financial services”. The current fin tech revolution can trace its origin from the global financial crisis of 2007-08. The historical background of technological innovation in case of financial services can be traced to 1950s-1970s with the advent of main frame computer systems. The 1980s saw emergence of digital technology companies include core banking system providers. The current trend/wave of fin tech revolution has been characterized by greater interaction between the fin tech companies and customers without physical presence of the customers, through digital medium.

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Fin tech Innovations can be categorized in to the following categories:

- i. Payments, Clearing and Settlement: This is associated with Mobile and Web based payments and digital currencies distributed ledger.
- ii. Deposits, Lending and Capital raising: which includes Crowd-funding Peer-to-Peer lending digital currencies distributed ledger.
- iii. Market Provisioning: Smart contracts cloud computing e-aggregators.
- iv. Investment Management: Robo Advice smart contracts e-trading.
- v. Data Analytics and Risk Management: which includes Big Data Artificial Intelligence and Risk Management.

## Fin Tech and Payments Systems

The total value of fin tech investments rose from \$ 10 billion in 2013 to \$ 122 billion in 2020 globally. An Industry analysis has forecasted that global fin tech lending would increase to \$ 4.9 trillion by 2030. Global Fin Tech Sector which generates \$ 245 billion currently amounting to 2% of global financial revenue is expected to reach a level of \$ 1.5 trillion by 2030. The pandemic gave push to the volume of digital transactions globally, as per World Bank data, at least 58 governments had used digital payments to remit relief related payments to the general public. The global Findex database 2021 has also reported a significant jump in financial inclusion. In case of Emerging Market/Developing countries/economies, 71% of general populace have bank account which have risen from 42% in previous decade. The pandemic gave a push to digital payments in the Indian context grew by 64 per cent and 23 per cent respectively in 2021-22 respectively (in volume and value terms) and correspondingly it increased to 58 per cent and 19 per cent in 2022-23 respectively (both in volume and value terms). There has been expansion in the underling payment infrastructure in tune with the increasing demand, in the form of increased number and density of point of sale terminals and quick response codes. This increased adoption of the digital payment methods on account of growing digital awareness, increased access to smart phones and debit cards and directed welfare schemes.

Fast Payment Services (FPS) have been implemented in more than 100 countries, FPS is characterized by 24X7X365 transfer of funds and immediate availability of funds to the payee. In Brazil, fast payment service which is known as Pix was launched by Central Bank of Brazil in Nov 2020, the system allowed funds transfer between all type of transaction accounts, this platform also used QR code. Since Dec 2021, approx. 109 million consumers and 7.6 million consumers have been active users of this platform. TARGET Instant Payment Settlement (TIPS) was an FPS introduced by Euro System in 2018. TIPS was developed to be an extension of TARGET 2 of RTGS and it in turns ensures settlement of transactions within 10 seconds. This has enabled Euro citizens to make and receive transfers using internet, mobile banking or using QR codes. India's UPI has also emerged as a very effective FPS which can map payment accounts to a single payment identifier. Initially UPI had interface with bank accounts however subsequently payment could be made from wallets even credit cards. UPI now supports payment made through various modes such as UPI Lite, UPI 123 Pay, UPI credit. In fact, in value terms UPI transactions have increased from Rs. 0.0038 billion in July 2016 to Rs. 17,158 billion in Oct 2023. In case of Indonesia, an FPS known as BI Fast was introduced in Dec 2021 for making payments on 24X7X365 basis for bank and non-bank customers. The methods subsumed under BI Fast includes bank transfers, mobile payment apps and also digital wallets. Since it's introduction, BI Fast participants have reached a total of 122 constituting 94% of the national retail system.

In the Indian context, there has been massive increase in digital payments from 4.98 billion transactions amounting to Rs. 9,600 billion in 2010-11 to 16.23 billion transactions amounting to Rs. 3,435 billion in 2019-20. As per Global Data, which is data and analytics company in it's 2017 survey had mentioned that India is one of the leading global markets with reference to digital adoption with 55.4% survey respondents having indicated usage of digital cash<sup>1</sup>. Indian Fin Tech Industry is expected to generate \$ 200 billion revenue by 2030 and will generate approx. 13% of global fintech revenue.

<sup>1</sup>Digital Cash is any currency, money or money like asset that is primarily managed, stored or exchanged on computer systems. It is different from CBDCs since CBDCs are digital currencies which are issued by Central Banks and it is the liability of Central Banks (Source : Wikipedia)

Fin Tech has had far reaching consequences for the consumers of financial services, it has led to unbundling of financial services since the consumer can choose different service providers for different financial products. Digital consumer interface has enabled new entities to directly reach their customers. The advent/proliferation of technology has led to the streamlining of back and middle office, it has led revamping of back office for lowering costs. New entrants are building new platforms for handling their core banking activities. Cloud based platforms are allowing smaller banks for outsourcing technological operations.

The expansion/growth in fintech industry would have profound impact on the regulatory landscape. When financial services value chain is spread across different entities, customer relationship, customer funds, data analytics, etc., it will pose supervisory challenges and in case of any wrongdoing it would be difficult to pin point the source of the same. Multiple entities would also create a larger surface for attack by cyber criminals which would require stronger regulatory approach towards cyber security. The reliance of ATM, cash transport and payments related infrastructure on small number of cloud service provider can lead to concentration risk. Therefore, the issues related to disaggregation can be addressed through regulatory dispensation on outsourcing and clear allocation of duties and responsibilities on outsourcing e.g. RBI had issued in 2017 guidelines on managing risks and code of conduct of outsourcing of financial services by NBFCs. While FinTech offer innovative financial solutions, their reliance on data raises concerns about privacy and security<sup>2</sup>, reputational damage, etc., RBI had issued digital lending guidelines in Sept 2022, laying down guidelines regarding collection, usage of data obtained from borrowers undertaking digital loans. It can also be mentioned that technological innovations such as Robo Advisors and trading platforms have also exposed customers to market risks from new instruments with reference to which customers are not well aware.

<sup>2</sup>Payment aspects of financial inclusion in the fintech era, Committee on Payments and Market Infrastructures World Bank Group, 2020

## Regulatory Initiatives

A number of regulatory initiatives have been undertaken for the development of Fin Tech landscape globally. A number of these initiatives are enumerated as under :

1. Basel Committee on Banking Supervision had set up a Task Force on Fin Tech for identification and also assessing the risks arising from digitalization of finance with a focus area of studying the impact of financial technology on banks' business models. The work of the Task Force will involve mapping of the Fintech Industry and technologies with the objective to gain a greater understanding of the major innovations and also the adoption by banks of such technologies.
2. Financial Stability Board (FSB) had set up a Task Force which was named Financial Innovations Network for the assessing Fin Tech. FSB had identified three important promises pertaining Fin Tech innovations, greater access to and convenience of financial services; greater efficiency of financial services and a push towards a more decentralized financial system.
3. Committee on Payments and Market Infrastructures (CPMI) is monitoring the developments and evolution of digital currency schemes. CPMI has established a dedicated Working Group for looking in to the impact digital innovations and for analyzing the impact of such digital innovations.
4. The Committee on Payments and Settlement Systems and International Organisation of Securities Commissions had in April 2012 had issued 24 principles, these principles in turn apply to all systemically important payment systems, central securities depositories, securities settlement processes.
5. European Commission in Nov 2016 had set up a Task Force on Financial Technology for assessing and also developing strategies for addressing challenges posed by such Fin Tech innovations.
6. World Bank Group interfaces with national authorities/regulators for laying down frameworks for adoption of technology.
7. BIS had issued instructions for setting up BIS Innovation Hub in June 2019 for fostering international collaboration within the central

banking community. The role of the Hub was envisaged as identifying critical trends in technology, developing public goods in technology space and also to serve as a focal point for network of central banks for cooperation with reference to innovation. It was envisaged that the innovation Hub will be set up initially in Basel, Hong Kong and Singapore.

Innovation Hubs provide support, guidance to regulated or unregulated entities for navigating the regulatory framework or identifying the supervisory, policy or legal issues. Some of the advantages of setting up Innovation Hub includes reducing regulatory uncertainty, reducing the time it takes for bringing an innovative product, supporting innovators by providing them services and improving access to regulatory institutions.

Testing of innovations can be expensive or could have adverse implications for the market, therefore Regulatory Sand Box refers to live or virtual testing of new products or services. Regulatory Institutions provide regulatory support by relaxing regulatory stipulations for the testing of a new product or service.

Regulatory/Sand Box innovations hubs have been created by a number of countries, which are mentioned as under:

- i. Australia : Australian Securities and Investments Commission had issued a regulatory framework in 2016 on innovation hub/sand box for allowing the eligible Fin Tech companies. This allows the eligible businesses for notifying regulator and for commencing testing.
- ii. U.K. : Financial Conduct Authority, U.K. had implemented a regulatory sandbox in June 2016 and the objective of setting up sandbox was to create a safe environment where businesses can test their innovative products, services and business models.
- iii. Singapore : Monetary Authority of Singapore (MAS) had implemented a regulatory sandbox in June 2016 had published its regulatory guidelines with reference to regulatory sandbox testing during Nov 2016, thereby encouraging and enabling experimentation of innovations which utilize technology for delivery of financial products

and services, this in turn is done by undertaking relaxation of legal and regulatory requirements.

- iv. Netherlands : Dutch Central Bank and Netherlands Authority for the Financial Markets had set up a pilot Fin Tech Innovation Hub in June 2016 for providing support to market participants who seek introduce innovative financial services and products. The main objective of the Hub is to provide support to new participants at an early stage of developing and introducing innovative product or financial service, the Hub in turn also in turn facilitates access to supervisory authorities.
- v. USA: Office of the Comptroller of Currency (OCC), U.S. had in Dec 2016 released a paper titled 'Exploring Special Purpose National Bank Charters for Fin tech Companies' which laid down OCC's plans for allowing Fin Tech companies for applying to become special purpose national banks. Sandboxes have limitations with reference to the test market whereas OCC's special purpose charter does not have any such restrictions. Therefore, national banks having OCC special purpose charter would be subject to same type of regulatory oversight as a national bank.
- vi. Japan: Japan Financial Services Authority had set up "Fin Tech Support Desk" in Dec 2015, the objective of setting up the desk was to be one stop point of contact for inquiries and opinions pertaining to business involving Fin Tech with reference to Japan's financial service environment. Bank of Japan also set up a Fin Tech Center in April 2016 which played a catalytic role for promotion of interaction among financial practices and innovative technologies. One of the important role of the Center was to provide guidance and support to regulated and unregulated entities involved in Fin Tech innovations.

## Initiatives taken in the Indian Context

RBI has taken a number of initiatives for the development of the Fin Tech ecosystem in the country, RBI issued Payments System vision for the first time in Dec 2001 for the period 2001-04 with the mission statement of establishing safe, secure, sound and efficient

payment and settlement systems of the country. Board of Payments and Settlements (BPSS) was constituted as a Committee of the Central Board of RBI in terms of BPSS Regulations 2005 and it is highest policy making body in the country with reference to payment systems. National Payments Corporation of India (NPCI) was set up in 2008, with the objective of increasing retail electronic payments in the economy. NPCI has introduced a variety of innovative retail products in the system such as IMPS, RuPay Card scheme, UPI, NACH, Aadhar enabled Payments system, Aadhar Payments bridge system, NETC, \*99#, etc. The volume of UPI transactions was more than 9.41 billion transactions valuing about Rs. 14.89 trillion were transacted in May 2023 and for the year 2022-23 the total value of UPI transactions was nearly 50% of India's nominal GDP. The digital payments have seen a massive increase from 4.98 billion in 2010-11 to 16.23 billion in 2019-20, in value terms the total value of payments increased from Rs. 96,000 billion in 2010-11 to Rs. 34,35,000 billion in 2019-20. As per Consumer Payments Insight Survey conducted Global Data, a data and analytics company, it was observed that India is one of top markets globally with reference to digital cash adoption of 55.4%, India is followed by China and Denmark, compared to adoption level in India, it is much higher compared to US and UK. RBI had also issued guidelines pertaining to Account Aggregators in 2016 and also regarding Peer to Peer Lending in 2017. The Regulatory Sandbox framework was issued by RBI in Aug 2019, since then five theme based cohorts pertaining to retail payments, cross border payments, SME lending and prevention and mitigation of financial frauds, which were undertaken and fifth cohort is theme neutral. Some of the successful initiatives which have originated from the Regulatory Sandbox include UPI 123 Pay. RBI had also organized Global Hackathon titled HarBIInger 2021 for bringing more innovation in retail payments, 363 proposals from 22 countries were received. RBI has set up Reserve Bank Innovation Hub (RBIH). For enabling frictionless credit, in Aug 2023 RBI had announced the launch of Digital Public Tech Platform, which had been conceptualized in coordination with RBIH. RBI has also launched Central Bank Digital Currency pilot project and currently 9 banks are participating in whole sale pilot and 13 banks are participating in retail pilot project. Some of the features that are planned to be

introduced in the pilot project include offline functionality, programmability and cross border transactions.

It can also be mentioned that in the G 20 declaration in New Delhi, it has been resolved that access to digital payments and digital infrastructure will be improved and also to leverage digital transformation opportunities for boosting sustainable and inclusive growth. G-20 Policy Recommendations for Advancing Financial Inclusion through Digital Infrastructure were to enable and foster use of DPIS for accelerating financial inclusion, to develop well-designed DPIS through widely accepted good practices and also encouraging risk based regulation, supervision and oversight arrangements for financial sector DPIS and also taking care of consumer interests. It has also been mentioned in the G-20 declaration that G-20 forum welcomes the BIS Innovation Hub report on lessons learnt on CBDCs. One of the key learning which has emerged from the report is that CBDCs with off-line payment functionality could emerge as a powerful payment instrument. This is in consonance with RBI's initiative of allowing off-line payments through UPI 123 Pay which is ultimately beneficial to large segment of population which still does not have access to smart phones.

## Digital Lending

As per BIS data, global credit (Fin Tech and Big Tech) amounted to \$ 795 billion in 2019. China, US and UK have emerged as the largest markets for Fin Tech credit, whereas Asia (China, Japan, Korea and Southeast Asia) have emerged as the major center for Big Tech. Digital Lending has shown CAGR of 39.5% over a decade in India. Indian digital lending has received investments in excess of \$ 1 billion which is expected to increase to \$ 515 billion by 2030. As per an RBI Working Group Report, out of 1,100 digital lending Apps, approx. 600 were illegal loan apps. If a user uses such apps it could collect user's personally identifiable information, financial data and other sensitive details. Subsequently RBI had issued digital lending guidelines in Sept 2022, whereby guidelines regarding customer protection especially from the perspective of data collection were laid down.

## Cyber Security and Fin Tech

With increase in technical innovation, the risks to the financial institutions has increased manifold. Companies in the financial sector and banking sector are prime targets for cyber attacks. In order to address cyber security issues in the banking system, guidelines were issued by RBI in June 2016. Banks were advised to set up a Security Operations Centre for monitoring and managing cyber risks on a real time basis. Banks were further advised to put in place a Cyber Crisis Management Plan. Indian Computer Emergency Response Team (CERT IN) was set up in Jan 2004, as per the IT Amendment Act 2008, CERT-IN was in turn designated as national agency, which is responsible for collection, analysis and dissemination of information on cyber threats. Indian Cyber Crime Coordination Center was set up in 2020 for tackling cyber crimes and also for undertaking effective coordination between Law Enforcement Agencies. Use of personal and sensitive information by FinTechs raises confidentiality concern<sup>3</sup>. In this regard, as per IT Act 2000, guidelines were laid down for compensating a body corporate in case of negligence in handling sensitive personal information or data.

The risks associated with Fin Tech are mentioned are that for regulated entities may face legal, reputational, governance and operational risks in addition to the usual credit, market and liquidity risks, from a customer's perspective, key risks involved are mis-selling, discrimination, data privacy and security and from a regulator's point of view, there are risks with reference to financial stability, market integrity and customer protection.

### Fin Tech Experience so far

As per a World Bank Report in May 2019, several central banks both in the advanced economies and emerging economies are experimenting with CBDCs. Central Banks are also undertaking experimentation with CBDCs, some of the reasons for the same are falling use of cash, in some countries with underde-

veloped financial systems, the CBDCs is also seen as a means of furthering financial inclusion. It was also concluded that Fin tech applications and companies are not having a critical mass. Public Authorities especially in EMEs have recognized the constraints such as gaps in legal framework restricting payment systems to only banking sector, infrastructure gaps like limited penetration of broadband and mobile telephony and gaps in digitization of govt. systems e.g. tax records and land records. Fin Tech innovations in the retail sector have combined the features of mobile money with APIs and QR codes. Mobile money has in turn allowed for payment services to be delinked from bank account. There is also increasing trend of third party apps getting access to bank accounts which has led to authentication of consumer details e.g. Aadhar authentication in Indian context. Faster payments have enabled the real time clearing and settlement of payments across different payment providers. A number of countries have implemented faster payments e.g. TIPS in Canada, Euro Area, India, Malaysia, Mexico, Thailand and U.K. and such systems have enabled mobile the money providers, banks and third party applications for providing the real-time payment system services to Individuals, businesses and Govts.

## Fin Tech and Financial Inclusion

It has been estimated that 71% of adults in emerging economies in 2021 compared to 56% in 2011, this increase has been aided by digital push received during the pandemic. Despite this progress, approx. 1.4 billion adults mostly women are financially excluded, MSMEs in emerging market economies face a financing gap of \$ 5 trillion. Digital Payment Infrastructures in the form of Application Programming Interfaces can be configured with appropriate channels for reaching the poor. An example in this regard is the e-KYC or remote authentication services. In the Indian context, Aadhar Biometric has covered 1 billion people and supports Application Programming Interfaces which enables remote identification and authentication. Mobile money systems has bridged the gap between financially included and excluded sections of the society, it has been estimated that approx. 1.2 billion adults have been enabled access to financial services during

<sup>3</sup>INDIA FINANCE REPORT 2023 CONNECTING THE LAST MILE, it has been mentioned that Digital Lending can aggravate consumer safety related risks since customers share a lot of personal data with the digital loan Apps

the past decade, with highest progress recorded in Sub-Saharan Africa. Fin Tech Lenders has also eliminated the information asymmetry by extending credit to poor households who would not have obtained credit from the traditional sources of credit i.e. banking sector. Digital Financial Inclusion was successful in mitigating the economic fall-out of the pandemic by enabling fiscal transfers.

## Inferences/Suggestions/ Conclusion

Technological innovations have revolutionized the payments systems and financial landscape especially in emerging economies where digital innovations are being used to bridge the banking gap in the form of inadequate bank branch network, capital constraints for putting in place necessary infrastructure for enhancing financial inclusion. However, an important requirement in order to facilitate the Fin Tech adoption is that of extensive and robust internet facility. Although the internet penetration has gone up from 4% in 2007 to 48.7% in 2022, approx. 51% of population still remains deprived of the benefits of the digital innovations. Another important constraint is that of the risk associated with online banking/ financial services. As per data, 7,00,000 complaints of online fraud have been reported in April 2023 itself, Rs. 2.76 billion was the amount involved in debt and card related frauds in 2022-23, it has been further reported that 71,800 cyber crime cases are pending investigation.

Some of the recommendations/suggestions in this regard can be mentioned as under :

- i. There is a need for creating awareness regarding electronic banking and risks associated with electronic banking and financial services through online frauds. RBI Regional Offices has been involved in organizing electronic banking and awareness training programmes in various parts of the country and RBI also has been spearheading a digital awareness through print and audio-visual media which was launched in 14 languages. There is a need for undertaking such awareness programmes in a sustained manner with active involvement of Govt. and especially District Administration so that there is spread of awareness at the grassroot level.

- ii. There is need to bolster the investment in technological infrastructure, GoI has taken a number of digital initiatives for strengthening digital infrastructure in rural areas such as Bharat Net Project, Telecom Development Plan and initiatives in North – Eastern Region through Comprehensive Telecom Development Plan. Although GoI has been taking such initiatives and undertaking the fiscal burden on this account, Private Sector players can be encouraged as a CSR initiatives to invest in the development of IT infrastructure in the country.
- iii. There has been greater international understanding and cooperation between countries in terms of standardization and regulation of digital innovations such as G-20 forum, there is need for enhanced cooperation for the same and also to increase the membership of countries within these forums to enhance the efficacy of the guidelines evolved by them.
- iv. In the emerging market economies, there is need for developing technologies for catering to the interests of poor and under privileged segments of the society. An illustration of the same is UPI 123 Pay in the Indian context which is a payment system which is meant for non-smart phone/feature phone which is used for making payment using UPI without internet connectivity. There is need for broad basing of such technologies/systems.
- iv. There is need for investment in education, research and development which will provide a base for development of digital technologies. Recently GoI has been approved an \$ 255.5 million for improving of technical education and it is expected that this project will support 275 govt. run technical institutions covering 3,50,000 students each year over a period of next five years.

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