

FINTECH & REGULATORS

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WHAT IS FINTECH?

- Term used to describe the solutions using new technologies in the financial services industry
- Includes a variety of products, applications, processes and business models that have transformed the traditional way of providing banking and financial services
- Uses applications of artificial intelligence, social networks, machine learning, mobile applications, distributed ledger technology, cloud computing, big data, etc. in providing banking and financial services

WHAT IS FINTECH?

- Use of technology can benefit both consumers and companies
- Enables greater access to financial services
- Offers wider choice
- Increases efficiency of operations
- Can contribute towards reducing national barriers and increasing competition
 - online banking, online payment and transfer services
 - peer-to-peer lending
 - personal investment advice and services

WHAT IS FINTECH?

- The technology that is used to improve the products and services being delivered can change over time
- A couple of decades ago, introduction of computers,ATMs, and wider acceptance of credit/debit cards would have been classified as digital finance
- The technology being introduced need not always have consumer/customer facing applications
- Introduction of Core Banking services by different banks in the 1990s/2000s in India would also qualify as introduction of technology making service delivery easier

WHAT IS FINTECH?

- In today's context, when we refer to digital finance, we usually refer to examples as the following:
 - e-Wallets
 - Mobile banking/app based banking
 - Mobile Payment Systems
 - Digital payment gateways
 - Blockchain and Cryptocurrency
 - AI
- Instances of digital finance products or services could be infrastructure (physical or otherwise), apps, and other solutions which can incorporate one or more of different technologies to deliver financial products and services (or to offer existing products more efficiently)

PAYMENTS BANKS

- Payments Banks are ‘niche’ or ‘differentiated’ banks with the common objective of furthering financial inclusion
- The objectives of setting up of payments banks will be to further financial inclusion by providing
 - Small savings accounts
 - Payments services
 - Remittance services

PAYMENTS BANKS

- Target audience is
 - migrant labour workforce
 - low-income households
 - small businesses
 - other unorganised sector entities and other users
- Payments banks cannot lend money to customers
- Have to deploy their funds in government papers and bank deposits

PAYMENTS BANKS

- Payments banks will initially be restricted to holding a maximum balance of INR 200,000 per individual customer
- Can issue ATM/debit cards. Payments banks, however, cannot issue credit cards
- Payments and remittance services can be provided through various channels
- Distribution of non-risk sharing simple financial products like mutual fund units, insurance products, etc. is allowed
- Payments banks cannot undertake lending activities

PAYMENTS BANKS

- Eligibility criteria mentioned by RBI for payments banking license
- RBI also imposed several conditions on the business model that payments banks can deploy (discussed in previous slide)
- Interest in payments banks reduced soon after RBI granted licenses due to the strict conditions on possible business models
- Considering the tough competition and the conditions put by RBI, 3 out of 11 payments banks -- Cholamandalam, Tech Mahindra, and Sun Pharma -- surrendered their license before even starting operations. After a successful launch and operating in the space, Aditya Birla Payments Bank also surrendered its license

PAYMENTS BANKS

- Following are the active payments banks operating
 - Airtel Payments Bank
 - Fino Payments Bank
 - India Post Payments Bank
 - Jio Payments Bank
 - NSDL Payments Bank
 - **Paytm Payments Bank**
- The first three are actively providing services. NSDL Payments Bank and Jio Payments Bank are slowly ramping up their offerings

E-WALLETS

- e-Wallets (or the more accurate term) Digital Wallets are a technological solution for simplifying transactions online or through mobile phones
- Stores the customers payment information like credit card info, debit card info, billing address, banking information, etc.
- Simplifies the process of checkout on different websites or platforms
- Strictly speaking, e-Wallets are a subset of Digital Wallets

E-WALLETS

- As discussed earlier, Digital Wallets are used online
- Digital Wallet solutions which function exclusively using apps would classify as Mobile Wallets (we shall discuss them in the next section)
- Digital Wallets which allow customers to load funds onto their technological platform/product are categorized as e-Wallets
- Categorized as Prepaid Payment Instruments (PPI) by RBI. Allows users to store funds in the wallet

E-WALLETS

- Three types of e-Wallets as categorized by RBI
 - Closed – can only be used on the platform of the company (its app or website only) which issues the wallet
 - Semi-closed – can be used on the platform of the company as well as any merchants which have tied up with the company. No withdrawal of balance allowed
 - Open – can be used anywhere. Akin to bank account. Balance can be withdrawn through ATMs. Can only be issued by banks (or by other companies if they have tied up with banks)

MOBILE PAYMENT SYSTEMS

- Subset of Digital Wallets
- Function exclusively using mobile phones
 - Mostly using dedicated apps
 - Can also work using non-app based solutions
- App based mobile payment systems examples
 - Samsung Pay
 - Google Pay
 - Apple Pay

MOBILE PAYMENT SYSTEMS

- Non-app based mobile wallets
 - Vodafone m-pesa

BLOCKCHAIN

- Blockchain is a specific kind of way that data is stored
- Data is broken into little pieces (blocks) which are then linked together
- Every new piece of data is added into a “block” which is “chained” to the previous data that has already been entered into the system
- All blockchains are databases but not all databases are blockchain

BLOCKCHAIN

- As a result of the way it is structured, The “blockchain” gives a chronological history of the entire data entered into the database
- Each block contains its own hash value as well as the hash value of the block before it
- As a result, it is very difficult to modify individual elements in the chain unless the owner of the database/blockchain agrees to it/is involved in the change
- In the case of decentralized blockchains like Bitcoin, modifying the blockchain is nearly impossible



BLOCKCHAIN

- Use cases
 - Banking
 - Insurance
 - Financial markets
 - SEBI exploring ways to incorporate blockchain based MF instruments into the financial markets

WHAT IS ARTIFICIAL INTELLIGENCE?

- The term “Artificial Intelligence” was coined by John McCarthy in 1956
- It refers to the ability of a machine to think like animals and, eventually, humans
- The goal of developing artificial intelligence is to be able to develop a system that can study its environment and take decisions/actions to achieve its goal
 - Even if the decisions/actions have not been programmed into the machine
- Examples of such systems – VIKI in I, Robot and the machines in the Matrix franchise



MACHINE LEARNING

- Machine Learning is the ability of computers to identify and process large quantities of data to identify patterns and make decisions with as little human involvement as possible
- The ability of the system to identify patterns and make decisions is limited to the quality of data it is fed
- Depending on the complexity of the systems, some of them can also develop connections/networks beyond what was originally intended by the developers. Systems with this capability are said to exhibit “**Deep Learning**” capabilities
- However Deep Learning systems require much larger data sets than systems with more basic Machine Learning capabilities

AI VS. MACHINE LEARNING/DEEP LEARNING

- AI is a system where the machine should be able to think and respond even if it is faced with a situation on which it has no data
- Machine/Deep Learning systems can only take decisions based on data sets which have already been fed into the system (or to which they have been exposed)
- An illustration to drive home this difference – If an autonomous vehicle driving down the road comes across 5 pedestrians jaywalking on the road (with 1 pedestrian standing on the sidewalk), what should the software running the vehicle do? Choose to save the 5 pedestrians breaking the rules or the 1 pedestrian following the rules? (assuming the vehicle is unable to stop)



APPLICATIONS OF AI/MACHINE LEARNING IN FINANCE

- Machine Learning is colloquially referred to as Artificial Intelligence nowadays
 - Assessing risks
 - Detecting and preventing fraud
 - Anti-money laundering activities
 - KYC

DO WE HAVE ARTIFICIAL INTELLIGENCE?

- We do not yet have systems that display true artificial intelligence
- Turing Test
- Eugene Goostman, Google Duplex can claim to have passed the Turing Test
- AI experts argue that what we currently have are systems with great Machine Learning capabilities

HOW ARE CENTRAL BANKS LEVERAGING TECHNOLOGY?

- RBI proposing a seamless payment system in India
- RBI issuing Payments Banking licenses
- RBI experimenting in a sandbox framework to develop solutions for different problems
 - Retail Payments
 - Cross Border Payments
 - MSME Lending
 - Prevention and Mitigation of Financial Frauds
 - No Theme

HOW ARE CENTRAL BANKS LEVERAGING TECHNOLOGY?

- International Central Banks experimenting with digital currency
 - e-Krona (Sweden)
 - Digital Yuan (China)
 - Digital Rupee (India)

RBI SANDBOX – RETAIL PAYMENTS

- First Regulatory Sandbox framework introduced by the RBI
- Allows RBI, innovators, financial service providers and customers to conduct field tests
- Purpose is to collect evidence on the benefits and risks of new products and systems
- RBI had announced opening of the first cohort under RS with the theme of 'Retail Payments'
 - Mobile payments solutions including feature phone based payment services
 - Offline payment solutions
 - Contactless payment solutions

RBI SANDBOX – RETAIL PAYMENTS

- Eligibility criteria mentioned by RBI to participate in the Regulatory Sandbox
- 6 firms chosen to participate in the 1st Regulatory Sandbox
 - Natural Support Consultancy Services Pvt. Ltd., Jaipur – eRupaya
 - Nucleus Software Exports Ltd., New Delhi – PaySe
 - Tap Smart Data Information Services Private Ltd., Mumbai – CityCash
 - Naffa Innovations Pvt. Ltd., Bengaluru – ToneTag
 - Ubona Technologies Pvt. Ltd., Bengaluru
 - Eroute Technologies Pvt. Ltd., Noida – OmniCard

RBI SANDBOX – CROSS BORDER PAYMENTS

- Second Regulatory Sandbox framework introduced by the RBI
- 8 firms chosen to participate in the 2nd Regulatory Sandbox
 - Book My Forex Private Limited
 - Cashfree Payments India Private Limited
 - Fairex Solutions Private Limited
 - Flyremit Private Limited
 - Nearby Technologies Private Limited
 - Open Financial Technologies Private Limited
 - SoCash India Private Limited
 - Wall Street Finance Limited

RBI SANDBOX – MSME LENDING

- Third Regulatory Sandbox framework introduced by the RBI
- 8 firms chosen to participate in the 3rd Regulatory Sandbox
 - FinAGG Technologies Private Limited – ‘Quick Cash Flow’
 - Moshpit Technologies Private Limited – ‘Finbox Embedded Finance’
 - Mynd Solutions Private Limited – ‘MIXchange Small-Small’
 - New Street Technologies Private Limited – ‘MiFiX’
 - Rupifi Technology Solutions Private Limited – ‘Pay by Rupifi’
 - Small Industries Development Bank of India – ‘GST Sahay’
 - SysArc Infomatix Private Limited – ‘LENDperfect – Shishu Mudra’
 - ZikZuk Technologies Private Limited – ‘Business Finance Manager’

RBI SANDBOX – PREVENTION AND MITIGATION OF FINANCIAL FRAUDS

- Fourth Regulatory Sandbox framework introduced by the RBI
- 6 firms chosen to participate in the 4th Regulatory Sandbox
 - Bahwan Cybertek Private Limited – ‘rt360 Real Time Monitoring System’
 - Crediwatch Information Analytics Private Limited – ‘Crediwatch EWS’
 - enStage Software Private Limited (Wibmo) – ‘Trident FRM’
 - HSBC in collaboration with enStage Software Private Limited (Wibmo)
 - napID Cybersec Private Limited – ‘napID Fraud Filter Layer’
 - Trusting Social Private Limited – ‘Trusting Social CI & AV’

RBI SANDBOX

- Fifth Regulatory Sandbox framework introduced by the RBI
 - Applications invited 27 October 2023
 - Application window from 30 October 2023 to 30 November 2023
- Theme Neutral

DIGITAL CURRENCY

- What is digital currency?
- Sweden, China, and India experimenting with digital currency
 - e-Krona in Sweden
 - Digital Yuan in China
 - Digital Rupee in India (e₹) (*Difference between e₹ and e-RUPI?*)
- Challenges in acceptance of digital currency
 - Monetary policy implications
 - Sociological challenges