

Fintech Industry in India: The Digital Transformation of Financial Services

Submitted By

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Abstract:- The world is changing rapidly with the advancement in technology. Its impact can be seen in the financial sector as well. Money is also increasingly becoming digital or electronic with the advent of e-wallets and mobile wallets. The word 'FinTech' is an amalgamation of financial services and information technology. Emerging as a term referring to the technology used by large financial institutions, it has expanded to include technological innovation in the financial sector, including innovations in financial literacy and education, retail banking, investments, etc. However, the interlinkage of financial services and technology has a long history with three different eras. First being the analogue context, second being the digitalization of finance in the late twentieth century and the present era of digital transformation. We analyze the FinTech industry in India and the future of financial services.

I. INTRODUCTION

FinTech, a mixture of words 'finance' and 'technology', may be a term that refers to any technology that seeks to reinforce and automate the delivery of monetary services in newer and faster ways than was traditionally available. It aims to compete with traditional financial methods within the delivery of monetary services. The utilization of smartphones for technology led financial services has made the method hassle-free for the people.

FinTech can take the shape of software, a service, or a business that gives technologically advanced ways to form financial processes more efficient by disrupting traditional methods. FinTech describes a spread of monetary activities, like money transfers, depositing a ask your smartphone, bypassing a bank branch to use for credit, raising money for a business startup, or managing investments, generally without the help of an individual. The article analyses the evolution, performance and impact of the Fintech industry and the future of financial services.

Figure 1. FinTech



➤ Objectives Of The Study

- To analyze the Fintech industry and its future
- To examine various factors influencing the financial sector
- To identify initiatives of the government to promote the Fintech industry

II. LITERATURE REVIEW

- **S. Agarwal** investigated on the information values of credit rating actions. The study was published by the Journal for Management Science. The study briefs about the credit rating processes and agencies.
- **Douglass Arner, Janos Barberis and Ross Buckley** collectively worked on a study about the evolution of Fintech, which was published the University of Hong Kong Faculty of Law. The study focused on a new post crisis paradigm.
- **Anil Kavuri and Alistair Milne** studied about the Fintech and the future of financial services, which was published by SSRN Electronic journal.
- **Harish Natarajan, Erik Feyen and Jon Frost** investigated on the digital transformation of the financial services. The study was published by the Bank for International Settlements. The study focused on Fintech and the implications for market structure and public policy.

- **Deloitte financial advisory Netherlands** published a study on Fintech and financial institutions which focused on the disruption of financial sector due to technology.
- **RBSA advisors** published a study on Fintech Industry in India which focused on the aspects of the future of financial services and the technological disruption of financial sector.

➤ **BACKGROUND**

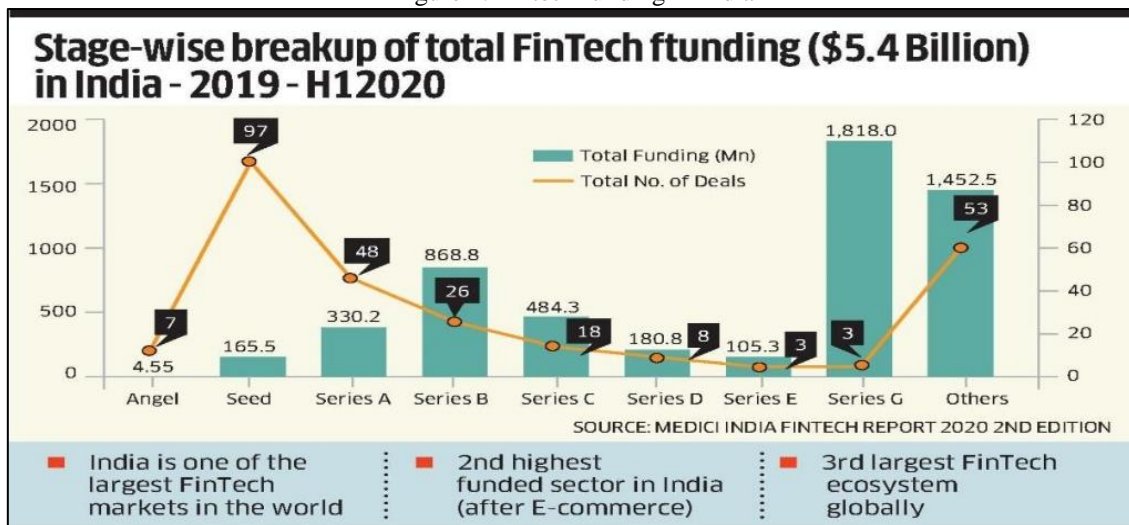
• India is one among the most important and therefore the fastest growing FinTech market within the world. India has Asia's highest FinTech investment activities (VC, PE and

M&A) with value of over \$647.5 Million, across ~33 deals, as compared to China's \$284.9 Million in 2020.

• India has around 2174 FinTech startups as on June 2020. Availability of technically skilled workforce and therefore the presence of the financial services and technology ecosystem make Bengaluru and Mumbai the highest two headquartered cities for FinTech companies.

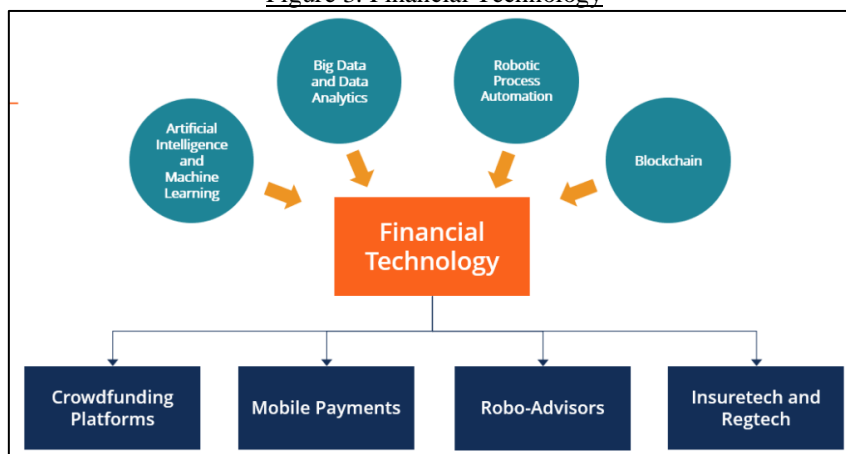
• FinTech is that the second highest funded sector in India after E-Commerce. Total investments in India's FinTech sector crossed the \$10 Bn mark over the last 4.5 years. Amid the COVID 19 crisis, India has seen a 60% increase in FinTech investments. Stage-wise breakup of total FinTech funding in India during 2019-H12020 is as follows.

Figure 2. Fintech funding in India



➤ **TECHNOLOGY**

Figure 3. Financial Technology



FinTech companies use various technologies like AI (AI), Big Data, Cloud Computing, Robotic Process Automation (RPA) and Blockchain.

1. **AI (AI) and Machine Learning (ML):** Artificial Intelligence and Machine Learning are a number of the foremost used technologies in FinTech. They transform and revolutionize the approach of monetary risk management. AI algorithms are often used to predict changes within the stock exchange, to understand the

choices of consumers, financial risk reduction, give insights into the economy, customer spending habits and better understanding about the clients. a number of the FinTech applications of AI and ML include credit scoring, fraud detection, regulatory compliance, and wealth management, among others. Chatbots are another AI-driven tool that banks have started using to assist with customer services. Chatbots are another AI-driven

tool that banks are beginning to use to assist with customer service.

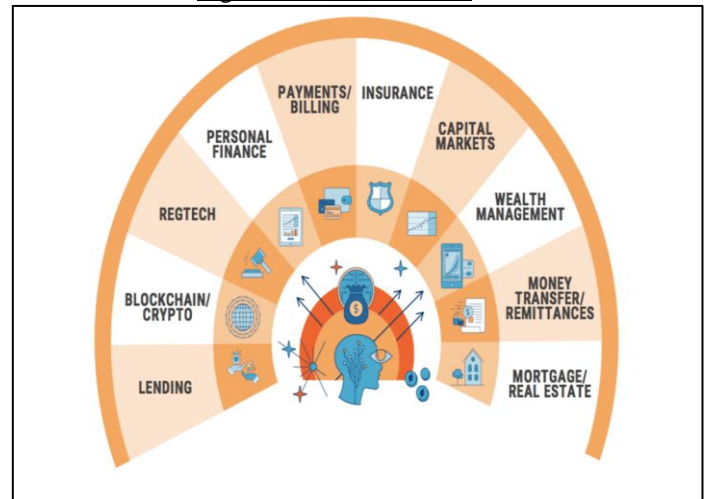
2. **Big Data Analytics:** Data from customers and markets is of high value to FinTech companies. Through large datasets, information about consumer preferences, spending habits and investment behavior are often extracted and want to develop predictive analytics. Predictive analytics refers to predicting how consumers are likely to behave using past information and a mathematical algorithm. The collected data also helps in formulating marketing strategies and fraud detection algorithms.
3. **Cloud Computing:** Cloud Computing in financial services facilitates reduced time to plug enhanced business intelligence, strategic planning, targeted marketing and processing. Cloud gives FIs the power to reply quickly to changing market, customer and technological needs. It not only allows the banking system to spice up computing power so as to satisfy the growing demands of their customers, but also provides better insights which helps banks to make customized services for his or her clients.
4. **Robotic Process Automation (RPA):** RPA refers to the technology that focuses on automating process of manual and repetitive tasks to robotics rather than humans so as to streamline workflows in financial institutions. These tasks just involve the input of data into a system and don't require much skill. Thus, companies are replacing manual workforce with RPA which may complete the task quicker and more efficiently. RPA are often wont to increase the productivity of the financial company. The foremost widespread applications of RPA in finance are statistics and data collection, regulatory compliance management, emails and transaction management.
5. **Blockchain:** Blockchain technology is another financial technology which is being adopted at an outsized scale within the financial industry, primarily thanks to its capability to securely store transaction records and other

sensitive data. Each transaction is encrypted, and therefore the chances of successful cyber-attacks are relatively low when blockchain technology is used. This technology is additionally the backbone of the many cryptocurrencies. A blockchain may be a decentralized, distributed, and sometimes times public, digital ledger consisting of records called blocks that's want to record transactions across many computers in order that any involved block can't be altered retroactively, without the alteration of all subsequent blocks. This enables the participants to verify and audit transactions independently and comparatively inexpensively.

➤ **FINTECH SECTORS IN INDIA**

FinTech Industry has various sectors like lending, cryptocurrency, Regtech, real estate, wealth management, insurance etc.

Figure 4. Fintech Sectors



1. **Lending:** Lending can be divided into two categories, namely digital lenders and intermediaries. They use technology like AI and ML for analyzing credibility of customers, screening and granting loans and other financial services.

Table 1. Segments of Lending with Examples

Segment	Description	Key players
a. Peer to Peer (P2P) lending	It is method of debt financing where the customers directly connect with the borrowers through an online platform.	Faircent, Lendenclub
b. Personal and other loans	Debt financing	Rupeek, Instapaisa
c. Pay Day loans	Single installment loan	Flexsalary, Earlysalary
d. PoS credit	Pay overtime Installment option	Lazypay
e. SME Financing	Small and medium-term enterprises funding	Lendingkart, Incred

2. **Blockchain / Cryptocurrency:** Cryptocurrency is a digital currency in which encryption techniques are used to regulate the generation of units of currency and verify the transfer of funds, operating independently of a central bank. Most of the cryptocurrencies have a public common underlying ledger termed blockchain, where tamper-proof blocks of transactions are linked through an append-only logic following a predefined set of rules.

Examples of cryptocurrencies are Bitcoin, Litecoin, Ethereum, Ripple, Monero etc.

Crypto assets can be classified into two main categories based on their principal function, namely:

a. **Native coins:** Native coins are digital fungible assets created within a novel or “forked” off a pre-existing blockchain. They generally compete with the traditional forms of money providing both an alternative currency

instrument and a payment infrastructure. Example Bitcoins.

b. **Crypto tokens:** Crypto tokens are the coins that embed some intrinsic values somehow linked to the quality of the issuing entity’s business model and to the ecosystem it generates. They give opportunity to create business and automate them while maintain the record of the different states of data exchanged in the blockchain. The following are the types of token classes:

- Payment tokens
- Utility tokens
- Asset / Debt tokens
- Hybrid token

3. **RegTech:** Regulatory Technologies (RegTech) is a new vital dimension to FinTech. It is an information technology that helps firms manage regulatory requirements and compliance imperatives by identifying the impacts of regulatory provisions on business models, products and services. RegTech has established a foundation within the FinTech ecosystem to overcome the complexities of regulations and litigations and come up with the solutions and remedies through technology.

An example of RegTech is the emergence of eKYC for customers. The functions of RegTech are as follows:

- To manage regulatory requirements
- To enable compliant business systems and data
- To control and manage regulatory, financial and non-financial risk.
- To perform regulatory compliance reporting

Table 2. Reghtech segments with examples

Segment	Key players
a. Accounting	Khatabook
b. Tax compliance	EaseMyGST, Cleartax

4. **InsurTech:** The insurance business involves risk transfer from the policy holder to the insurer. InsurTech is the adaption of technology into the historic insurance models. This utilization of technology reduces the challenges and risks of the insurer and improves the efficiency and savings in underwriting, risk pooling and claims management.

The major technology used in the insurance industry is the Big Data Analytics. Big Data has impacted the insurance world in three different areas, namely:

- Telematics:** The Telematics technology devices can be used in driving metrics like location, time of the day, mileage, behaviors around hazardous zones, braking habits etc. these metrics are further used for accurate and individualized pricing model for the policy holders, accidents and claims management.
- Wearables:** Typical wearables like FitBit, Apple smart watches derive biometric information through physical activities, cardiovascular measures, sleep data, body temperature etc. and helps the insurer to determine the true underlying risks of the policy holder.

c. **Smart homes and Internet of Things (IoT):** IoT is the physical devices with sensors and connections like smoke alarms, thermostats, etc. IoT has permeated the market to such an extent that forecasts suggest that by 2022 IoT would consist of 35 billion objects with a global market value of around \$8trillion.

Table 3. Insurtech segments with examples

Segments	Key players
a. Digital insurance advisors	PolicyBazaar, Turtlemint
b. Digital insurers	Digit, Acko
c. Claims	Remedinet, SureClaim

5. **WealthTech:** WealthTech is the utilization of technology in wealth management aspects with an aim to provide innovative digital solutions for the investment and asset management industries. WealthTech companies provide a suite of digital tools which include software programs for portfolio management, investment planning and AI for investing. WealthTech includes major segments like investment platforms, robo advisors, thematic investors and digital discount brokers.

Figure 5. Global Wealth Investment

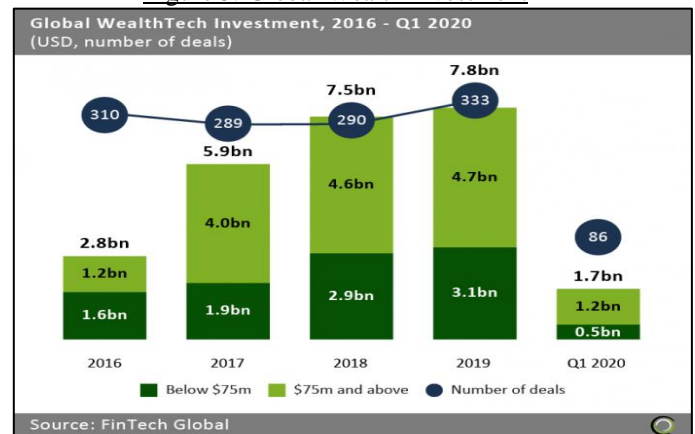


Table 4. Wealthtech segments with examples

Segments	Key players
a. Investment platforms	Smallcase, ETMoney
b. Robo advisors	Kuvera, Scripbox
c. Thematic investing	Screener, Trendlyne
d. Digital discount brokers	Zerodha, Upstox

6.) **Payments:** Digital payment services have largely disrupted the traditional business approach. A number of existing businesses like credit card issuers, and merchant acquirers provide opportunities for new FinTech companies and large firms such as Amazon, Apple etc. There are opportunities for firms that specialize in ‘account to account’ transfers (A2A) who collect individual customer spending information, analyze data and market it.

Payment ecosystem consists of the following segments:

- a) **Prepaid payment instruments**- like smart cards, magnetic stripe cards, internet banking accounts, online wallets, mobile accounts, paper vouchers etc.
- b) **Mobile and digital wallets (Payment aggregators)** – They allow users to make payment without physical cash or credit card transactions.
- c) **Payment gateway**- It is a technology that the merchants use to accept debit or credit card purchases from customers. It includes both physical transactions and online portal transactions.
- d) **Payment banks**- They are a new model banks which accept a restricted deposit limited to Rs.200000 per customer. They are the conceptualization of the RBI. These banks can't issue loans and credit cards.
- e) **Peer to Peer (P2P)**- Online P2P lending platforms represent a convergence of P2P lending and collective financing, enabled by an Internet based platform.

Table 5. Payment segment with examples

Segments	Key players
a. Prepaid solution providers	Bharatpe, Ezetap
b. Mobile and digital wallets	Paytm, Mobikwik
c. Payment gateway	Razorpay, PayUmoney
d. Payment banks	Paytm bank, Airtel Payment bank
e. P2P	Phonepe, Googlepay, Amazonpay

III. FACTORS INFLUENCING FINTECH INDUSTRY IN INDIA

There are various factors and challenges that influence the FinTech industry. We can make use of PESTEL Analysis to understand such factors.

1. **Political factors:** Political stability ensures the growth of an economy. Political factors play a significant role in determining the growth of financial services and credit opportunities. They also ensure the maintenance of a balanced political environment. The following are the various political factors;

- Bureaucracy and interference of government in financial sector
- Military invasion risk
- Corruption
- Anti-trust laws related to credit services
- Industrial safety regulations in the financial sector
- Protection of intellectual property.

2. **Economic factors:** The strength of an economy relies on the market conditions, macroeconomic and microeconomic factors. Market conditions include the changes in the demand and supply conditions, consumer behavioral pattern changes and changes in the expectations of the people. The following are the various economic factors influencing the financial sector;

- a) **Macroeconomic factors:**
 - Inflation rate
 - Foreign exchange rate

- Bank rates
- Quality of infrastructure
- Economic and business cycles
- Aggregate demand and supply
- Savings, consumption and investment of people
- National income of the economy- GDP, GNP, Personal Disposable Income
- Unemployment rate
- b) **Microeconomic factors:**
 - Competitive advantage of the FinTech firms
 - The type of economic system
 - The type of market and competition in the market
 - Education and skill level of the workforce
 - Government intervention in the market
 - Efficiency of the financial markets

3. **Social factors:** social values, culture and the way of doing business impact the culture of the organization and the economy on the whole. Social factors include the values, beliefs, customs and traditions of a society that influence the business and the way of conducting business activities. Shared beliefs and attitude of the people plays a vital role in understanding the behavior and consumption pattern of the customers. The following are the various social factors;

- Demography
- Education or literacy level
- Skill set of the people
- Social class
- Religious beliefs
- Hierarchy in the society
- Attitude
- Culture – gender roles and social conventions

4. **Technological factors:** Technology is disrupting various industries across the world. Financial sector has been influenced by the technology and has given rise to a new sector called FinTech. The firms should not only do the technological analysis but also understand and analyze the speed at which the technology would disrupt the industry. Slower speed of technology would provide more time to adapt but greater speed of technological destruction would give very less time to the industry to cope up with and adapt to the changes. The following are the various technological factors;

- Recent technological advancements like AI, robotics and machine learning
- Digital transformation through online platforms
- Technological impact on cost structuring of financial services
- Impact on the value chain structure of FinTech
- Rate of technological diffusion
- Technological impact on financial products and consumer expectations

5. **Environmental factors:** Different markets have different environmental standards for the operations and activities of the business. Every organization need to carefully analyze the ecological situation of the environment

before entering into a new venture. The following are the various environmental factors;

- Weather and climate changes
- Pandemic issues like COVID
- Laws regulating environmental protection
- Waste management and recycling
- Cyber security
- Attitude towards green and ecological products like green accounting

6. **Legal factors:** Legal framework and regulations are dynamic to every industry in the economy. The organizations must follow the changing rules and regulations and should be updated. The following are the legal factors;

- Changes in the taxation laws
- Changes in the company and incorporation laws
- Consumer protection and e-commerce
- Changes in employment laws
- Cyber security and data protection
- Trademarks, patents and copyrights regulations.

IV. DIGITIZATION OF INDIAN FINANCIAL INFRASTRUCTURE

“The WhatsApp moment in Indian banking is here, Tighten your seatbelts!”

- Nandan Nilekani

Presently, in India and the world over, at least the major nodes of the internal network are already digitized. So, banks have a core banking network which can identify each branch by a number and corporate houses have IT systems like ERP Software, SAP, Oracle etc. which can identify their various offices, key customers and vendors. Governments, on the other hand, have various citizen databases and corporate and tax information.

The new infrastructure that India is perfecting makes the job of identifying each of the external nodes a simple digital task of checking a number against a database through Aadhar IDs, CINs, GST IDs etc. Thus, the ongoing digitization of the Indian Financial system makes the entire financial system an interconnected network of digital nodes.

- 1) **The Network Effect:** The network effect is a magic term that drives the value of large technology projects. It is a phenomenon whereby increased number of participants improve the value of goods or services. The Internet is an example. Initially, there were few users of the internet but gradually the users increased. There were more content, websites, information and resources. These developments made it more valuable to the users.
- 2) **Public Ecosystem:** The Indian digital infrastructure is a public ecosystem like Ethernet or JPEG format. It is not a private ecosystem like Facebook or Alibaba. It can create a moat around the country in the league of other countries like for a start-up to become a unicorn and eventually a trillionaire. Connecting individuals to

companies and to the government creates a digital society of a unique type.

- 3) **Digital Identification:** Digitalization makes it possible to govern the country using a common identification tools and parameters that are available technologically. The widespread use of mobile phones, internet connectivity, cloud computing and big data improves the efficiency of the governance through Aadhar IDs, Corporate Identification Numbers, GST IDs, Bank account details, PAN, Jan Dhan accounts, etc.
- 4) **Digital Financial Services:** The various financial services like banking transactions, financial market transactions, foreign exchange activities, credit services, insurance services, lending and payment activities etc. have been digitalized with the help of technology through cloud services and internet.
- 5) **GST:** Making the data flow seamlessly between corporates and the government is an important part of the achievement of GST system design. It has reduced the cascading effect and improved the taxation policies of the corporates. GST has eliminated the demerits of VAT system. Every corporate under GST system has a unique GSTIN for easy identification and data processing.

➤ FINTECH AND DEMONETIZATION

Demonetization regulations of 2016 gave rise to a new era of digitalization of the economy in the country. There was an exponential increase in the digital payments, with a phenomenal growth witnessed by the new age digital financial instruments like UPI (Unified Payments Interface), PPI (Prepaid Payment Instrument), AEPS (Aadhar Enabled Payment System), NEFT (National Electronic Transfer Fund), RTGS (Real Time Gross Settlement) and debit and credit card payments.

Many financial start-ups emerged after demonetization in 2016-17 which boosted the performance of the FinTech industry. Digital payments companies like Paytm, Phonepe, Googlepay and digital payment platforms like Paypal and Razorpay became the most sought-after payment options of the people. The factors that influenced the boost of the economy are as follows:

- Digital infrastructure and digital products
- Boost to interoperability
- Usage of internet and smart phones
- Social media influence
- Embedding the offline space through digital financial products
- Promotional and marketing efforts by the market players.
- Digital and mobile wallets

Figure 6. Digital Wallets Performance

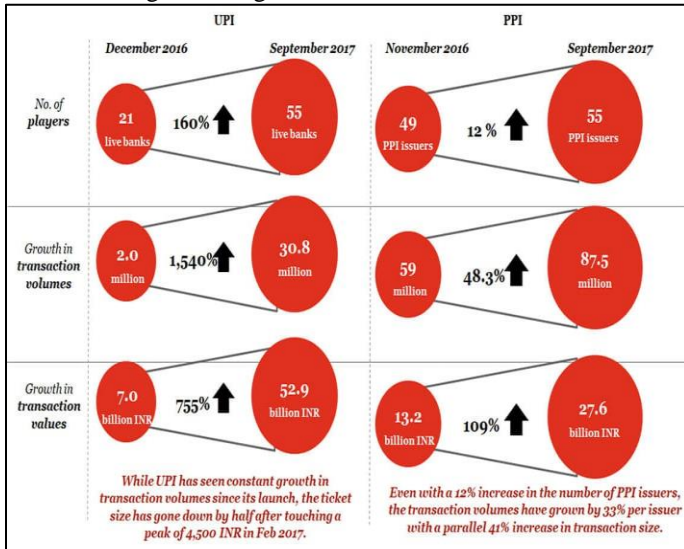


Figure 7. Digital payment platforms.

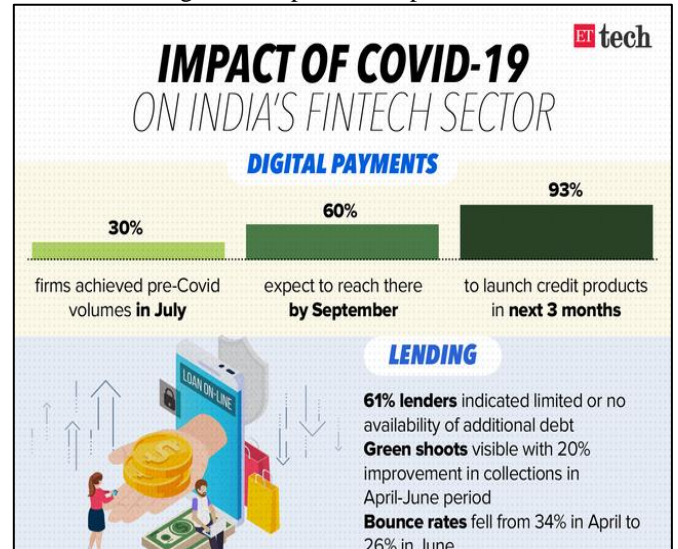


V. THE IMPACT OF COVID19 PANDEMIC ON THE FINTECH INDUSTRY

COVID19 pandemic has affected almost all the sectors of the economy. Various industries like automobile, construction, real estate, infrastructure etc. have seen downfall in their growth. The oil and coal crisis of 2021 has also affected the economy. The only industry which has flourished amidst the pandemic is pharmaceuticals.

FinTech and Financial sectors have mixed response for the pandemic. They have both positives and negatives due to pandemic. There are few segments which have seen growth due to the pandemic like Insurance services or InsureTech, digital payments and credit services, financial markets, foreign exchange etc. The other segments which were affected by the pandemic includes wealth and treasury management, investment segment, savings and consumption, lending etc.

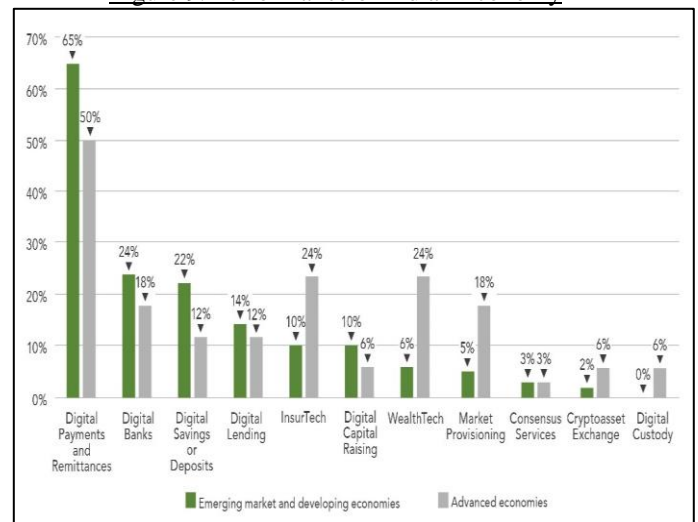
Figure 8. Impact of the pandemic



After the second wave of COVID in 2021, the economy has experienced a ‘v-shaped’ growth in the economy with the increasing financial activities through emerging start-ups. This incremental growth of our economy is visible through the excelling performance of the Sensex, reaching 60000 points in 2021 and the NIFTY reaching 18000. There are many policies and programs initiated by the Government which would boost the performance of our Indian economy, like

- Make In India
- Start Up India Stand Up India
- MUDRA yojana
- Infra Vision
- Athmanirbhar Bharat
- Digital India
- National Payment Council of India (NPCI)
- Jan Dhan Yojana

Figure 9. Performance of Indian Economy



➤ **ROLE OF FINTECH IN INDIA'S VISION OF \$5 TRILLION ECONOMY**

Figure 10. Growth of our economy



Indian economy has seen a significant and continuous growth since the post-liberalization period in the 1990s. The first decade of this millennium saw massive global investments to increase the growth rate, helped by the IT wave and global banking through foreign exchange transactions. After the Global financial crisis of 2008, the economy again increased its growth rate. After demonetization in 2016, the economy saw a huge growth due to digitalization, smart phones, digital infrastructure, digital financial products and social media influence. This growth of Indian economy resulted in the vision of \$5 trillion economy by 2025. But the COVID19 pandemic has affected the GDP of the country and has slowed down the growth rate in the year 2020-21.

Post second wave of COVID the Indian economy has shown a great potential of growth with better performance of the various industries, financial markets, market conditions etc. through the utilization of digital technologies. There are various FinTech Start-ups that are fueling the economy to reach the vision of \$5 trillion economy by 2025. These start ups include digital payment services providing firms, credit facility firms, financial services, stock market services, etc.

Some recent fintech innovations in India include the tamper proof e-Stamp with its unique identification number, the e-Way bill - a compliance mechanism for goods movement, the Government e-Marketplace (GeM), Trade Receivables Discounting System (TReDS) that facilitates MSMEs to receive payments from corporates through e-banking, GSTN for checking claim on input tax credit and Bharat Bill Payment System, an integrated and interoperable bill payment system where customers can through a network of registered agents through multiple payment modes.

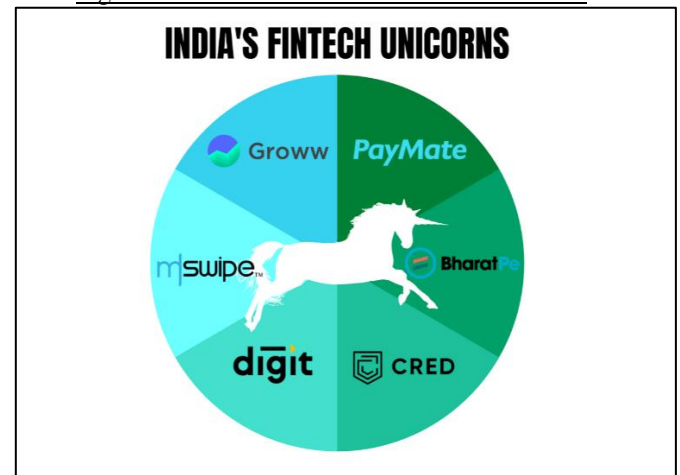
➤ **FINTECH UNICORNS OF INDIA**

Unicorn is a private company or a start up with the valuation of over \$1 billion. India has over 60 unicorns, of which there are 21 FinTech unicorns. Paytm is the largest FinTech unicorn company with a valuation of over \$16 billion. The following are the some of the FinTech unicorns

- Paytm
- Phone Pe

- Cred
- BillDesk
- Razorpay
- Policybazaar.com
- Pine Labs
- Zerodha
- Zeta
- Digit Insurance
- Groww

Figure 10. FinTech unicorns of India in 2020-21



VI. FUTURE OF FINTECH INDUSTRY IN INDIA

Dynamism is the dominant factor in the society. Change is an inevitable parameter for the growth of an economy. Technological advancement is the result of the changes in the environment and changes in the thought process of the people. FinTech as an industry is garnering rapid followers over the past few years. It would also proceed with humungous growth in the future, catering the digital requirements of the people.

The future of the FinTech industry looks promising with rising new startups, use of smart phones, internet facility, social media influence, technology and digitalization. Some recent developments in FinTech are as follows

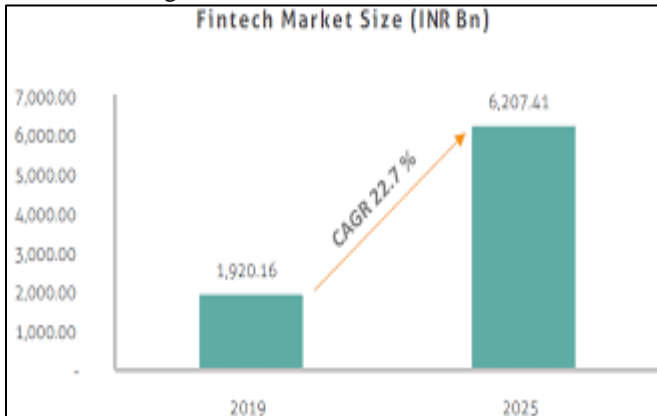
- SEBI relaxes norms to allow FinTech startups to enter mutual funds business
- Expansion of digital financial products
- Investments in UPI

India's FinTech industry is expected to grow at a CAGR of 22.7% by 2025. In the future the FinTech startups may make use of various other technologies and the potential developments would be as follows

- Human intelligence to machines and computers
- Utilization of Algorithms and Autonomous systems instead of AI
- Increased bitcoins and cryptocurrency transactions
- Cloud computing in finance
- Banks on cloud through platformization, cloud computing and AI

- OWASP (Online Web Application Security Project) and other cyber security protocols
- Internet of Things and smart sensors for instant data collection, partial processing of customer service, decision making and risk management
- The Age of 5G
- Quantum computing with super computer and code breaker

Figure 11. Market share of Fintech



VII. CONCLUSION

Digital tools can improve the quality and delivery of public services. FinTech promises to make the world of finance ubiquitous, yet invisible in the next 5-10 years through unexpected technological advancements. Harvard Business Review, which ranks the countries in their progress towards digitalization, ranks India for its technological developments. India is one of the two countries in the world that have been lauded by the IMF for their push to digitization and social protection, the other country being South Africa.

The future of finance belongs to services which are ubiquitous such as cloud, miniaturized IOT devices, personalized customer services, internet assistants like Google assistant Siri and Amazon assistant Alexa. As Arthur Clarke said, “every advanced technology is indistinguishable from magic. We are the cusp of an era in FinTech when that magic is about to happen”. The people in India have a ringside view of the events that will unfold to make this magic real.

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