



Ecosystem and challenges of fintech in India

Santosh Kumar¹, Kumar Deepak Raja¹, Dr. Sumita Sinku²

¹ Research Scholar, Department of Commerce, Mahatma Gandhi Central University, Motihari, Bihar, India

² Assistant Professor, Department of Commerce, Mahatma Gandhi Central University, Motihari, Bihar, India

Abstract

The financial system in India has changed as a result of the convergence of financial services and information technology. Fin Techs outlines how the financial industry employs technological breakthroughs to improve the quality and convenience of services to customers, has been recognised in the contemporary context as a key component for the financial industry's growth. India's FinTech ecosystem has grown significantly in recent years. The FinTech business in India was valued at \$50 billion in 2021 and is projected to reach \$150 billion by 2025. There are already over 6,000 FinTech start-ups offering a variety of services in the country. In India, the expected rate of FinTech adoption is 87%, which is significantly higher than the global average of 65.2 percent. From tapping new areas to exploring outside markets, India is developing into a dynamic ecosystem that allows fintech start-ups a platform to grow into billion-dollar unicorns. FinTech is consequently gradually gaining attention from all significant players in India's financial industry.

The goal of this paper is to deal with the pillars of the Indian FinTech ecosystem as well as the key enabling technology used by Fin Techs. This study also looks at the challenges to be considered seriously by Fin Techs for future development in India. It also elaborates the concern of regulatory mechanism for FinTech ecosystem in India as well as the current status of the Indian FinTech ecosystem and its fundings. The study concludes that fintech has a significant impact on numerous sectors of the financial system. This business has seen remarkable growth in India over the last few years which has aided the growth of the financial sector that has ultimately boosted the economy. The FinTech sector is predicted to grow at a compound annual growth rate of 22% over the next five years, and India is now the world's third largest FinTech ecosystem, behind the United States and China. FinTech adoption rate of India is the highest in the world (87 percent).

Keywords: financial technology, fintech, challenges. ecosystem, RBI, banking, govt

Introduction

The FinTech industry in India has experienced amazing growth over the past few years. Fintech refers to the combination of finance and technology that is used to improve business operations and financial service delivery. Fintech can be defined as software, a service, or a company that uses cutting-edge technology to improve financial operations by disrupting old techniques. Mobile payments, automated investment apps (Robo-advisors), cryptocurrencies, online lending firms, and crowdfunding platforms are some of the most well-known fintech applications. Internet and smartphone penetration rates have played a significant role in the development and expansion of the FinTech industry in the country. According to a report from the Ministry of Commerce and Industry, India accounts for 40% of all digital transactions worldwide. The country's FinTech industry has made this possible. In every modern economy, financial services play a crucial role, and India is no exception. FinTech has facilitated the provision of financial services to millions of disadvantaged citizens. The true beginning of FinTech in India began in 2016 with the demonetization of the 500 and 1000rupee notes. Although there were few FinTech businesses in the country before 2016, the economy was dominated by cash. As a result of the demonetization, a multitude of new players entered India's financial market. Initially, the majority of individuals were hesitant to use digital payment and transaction methods. People felt driven to embrace digital transaction methods due to the absence of cash in the economy. However, shortly thereafter, the majority of individuals discovered that digital transactions offer convenience, security, and adaptability. The Unique Payment Interphase (UPI) has further changed the nation's FinTech industry. What began as a simple digital form of transaction quickly developed into a full-fledged economic industry. Several new FinTech services emerged in less than five years, including digital lending, online KYC, digital insurance, digital microfinance, buy-now-pay-later, and banks without physical branches. The FinTech business in India was valued at \$50 billion in 2021 and is projected to reach \$150 billion by 2025. There are already over 6,000 FinTech start-ups offering a variety of services in the country. In India, the expected rate of FinTech adoption is 87%, which is significantly higher than the global average of 65.2 percent. Even the traditional banking sector, which is resistant to change, is being compelled to integrate digital technology in order to stay afloat. This demonstrates the strength of the FinTech business. Several conventional banks are forming alliances with FinTech start-ups in order to remain competitive.

Numerous factors have contributed to the growth of India's FinTech industry. The Indian's passion for the internet and cell-phones has played a significant role in this development. The government's goal of a cashless economy and digital India has aided business growth. The India is the youngest nation on earth. The younger population in India lacks the time and patience to deal with the slow-moving old banking system. This generation desires instant results supplied to their smart gadgets within seconds. This mindset has greatly benefited the FinTech industry. This generation also doesn't have any rigid core beliefs, so it can easily adapt to new changes. Traditional financial services have underserved a significant proportion of India's population. This was quickly recognised by the FinTech industry, which quickly tapped into this vast untapped market. The growth of the FinTech industry was aided by the expansion of the e-commerce industry. From 2016 onwards, the FinTech industry in India grew at a respectable rate. However, the introduction of COVID-19 boosted the rate by a factor of several, as everyone desired touchless transactions during this time. Almost all market surveys imply a good picture for India's FinTech industry. The sector is anticipated to increase at a 31% CAGR between 2021 and 2025. In the United States, there are already 21 FinTech unicorns. In the first three months of 2022, there were 81 transactions totalling \$1.77 billion. This amount was approximately 55% greater than the previous quarter of 2021. This indicates that investors are optimistic about India's FinTech economy and are willing to invest large sums in the field. As a result of the success of numerous FinTech start-ups in India, a growing number of multinational corporations are expanding into the country. There is still a large population in India that is underserved by financial services. Investors recognise that the FinTech industry in India still has enormous growth potential.

The goal of this paper is to deal with the pillars of the Indian FinTech ecosystem as well as the key enabling technology used by Fin Techs. This study also looks at the issues to be considered seriously by Fin Techs for future development in India. It also elaborates the concern of regulatory mechanism for FinTech ecosystem in India as well as the current status of the Indian FinTech ecosystem and its fundings.

The first section of this study deals with the pillars of the Indian FinTech ecosystem as well as the key enabling technology used by Fintech. The second section of the study is related with the issues to be considered seriously by Fin Techs for future development in India. The third section of the study is concerned with regulatory mechanism for FinTech ecosystem in India as well as the current status of the Indian FinTech ecosystem and its fundings.

Review of Literature

1. Zavolokina *et al.*, (2016) describe how the popular media and press perceive the FinTech conceptual framework. The goal is to educate the press about FinTech so that it may be used in scholarly publications. The research methods used were exploratory and descriptive. FinTech is not widely discussed in the scientific community, according to the findings, and it should not be limited to technology issues.
2. Nicoletti (2017) explores the future of FinTech by suggesting that a lot of clients are depending on FinTech and will be the new shape of the financial industry in the future. The major goal is to emphasise the significant benefits of FinTech activities. The most important results are new proof of economic trends.
3. Prof. Ashwini (2018) discussed about the role of Fintech in Indian banking, financial services, and financial gateways, as well as future banking in collaboration with Fintech. According to the report, the Reserve Bank is continuing its efforts to establish robust and secure payment and settlement systems in order to achieve a cashless society. India today has the best digital infrastructure for financial universalization, and the Jan-Dhan, Aadhaar, and Mobile (JAM) layer is an indigenous Indian stack that is propelling us from a data-poor to a data-rich country.
4. Badruddin (2017) ^[2] thought about the conceptualization of the effectiveness of FinTech in financial inclusion. He presented a research paper that was planned and based on information from different sources like diaries, books, websites, and so on. She stated that the advancement of FinTech has reduced costs and made the microfinance model simpler to use and enter. She ended her investigation by saying that the current situation makes it clear whether or not FinTech will work. Even though there are problems, this business looks at them.
5. Vijai (2019) ^[24] deals mainly about the opportunities and challenges in the FinTech industry and how FinTech technology in India has changed over time. FinTech gives the user a way to make transactions that are faster and safer. His research paper shows that the financial services industry in India is changing because of FinTech.
6. Priya and Anusha (2019) ^[18] examine the fundamental types of financial technology and their functions, as well as the potential and difficulties they present in the Indian business environment. Fintech companies must be properly groomed both technically and financially. According to the survey, the bulk of successful start-ups are in the payments market, and the same is expected in other financial segments. The fintech industry needs to be further supported by the government and other regulatory agencies through various measures.
7. Shashidhar K.J. (2020) ^[21] looked at Regulatory Sandboxes: Decoding India's Attempt to Regulate Fintech Disruption. He learned that technological advances are shaking up the traditional financial world, and the RBI's administrative sandbox practise is an attempt to be more coordinated and deal with some of this shaking up. In his paper, he looks at the current situation of administrative sandboxes in India and evaluates the successes and problems of his relatively new administrative system and tools. Taking everything into

account, it makes a point about how the controllers need to put together other traditional tools for aiding development.

8. Rajeswari and Vijay (2021) ^[25] looked at how FinTech has changed traditional financial institutions and is still changing the financial world. Their research paper goes into detail about FinTech Adoption, FinTech News Network, Indian FinTech industry design, FinTech Start-ups in India, and FinTech Trends in India. The test gave an overview of the FinTech industry and how the government is trying to help it grow. FinTech makes it possible for clients to get financial services and products faster. The growth of the FinTech industry is important for the Indian and global economies.
9. Shree *et al.* (2022) ^[23] looked at how things like how people see and trust digital payments and how much experience they have had with online fraud affect how their key demographic makes payments. Different things, like gender, income, and age, are the most reliable predictors of whether or not someone will use an instalment loan. Their findings demonstrate how money exchanges are increasing. This investigation has found new information in five areas: existing writing, information and system test rundown details, experimental findings, and suggestions for the end and next steps.
10. Kumar *et al.* (2022) looked at how Fintech affects the profits of public and private banks in India in 2022. They looked at how the growth of FinTech has helped India's banking industry. The main goal of their study is to find out how FinTech affects the ability of private and public banks in India to make money. The original information for their study came from PWS, KPMG, RBI, and SSRN. Their paper is about how things have changed over time, how big the market is, and how it is growing. They think that as the FinTech industry in India grows, there will be more and more new financial innovations that give people new ways to trade, donate, save money, and rebuild their accounts.

Research Gap

After making detailed and extensive review of the available literature, some studies deal with the impact and relevance of Fintech on the financial industry's stability. Some studies included impact of Fintech on economy, challenges faced by technological entrepreneur and the role of Fintech in Indian banking, financial services and financial gateways. Some studies deal with the elements that make up the fintech ecosystem and the services that fintech provides and also looking at the benefits and drawbacks of fintech. There is a gap in the related literature discussing the pillars of the Indian FinTech ecosystem as well as the key enabling technology used by Fintech. It has been also found that no any study is related to the issues to be considered seriously by Fin Techs for future development in India. It also tries to explain the regulatory mechanism for FinTech ecosystem in India as well as the current status of the Indian FinTech ecosystem and its fundings.

Design of the study

The nature of the study is descriptive and exploratory and there is no use of statistical tools and techniques in this study. Data presented in the form of table, graph and chart has been collected from secondary sources such as RBI Report, Traxcn Pvt. Ltd. Report, Ministry of Finance Report and from various magazines, articles, websites and papers.

Objective of the study

- To discuss the pillars of the Indian FinTech ecosystem as well as the key enabling technology used by Fintech.
- To elaborate the challenges/issues to be considered seriously by Fin Techs for future development in India.
- To explain the regulatory mechanism for FinTech ecosystem in India as well as the current status of the Indian FinTech ecosystem and its fundings.

Explanation of the study

The objective of the study has been explained under six headings.

1. Pillars of the Fintech Ecosystem

1. Traditional Financial Institutions

- Traditional Banks
- Insurance companies
- Stock Brokerage Firms
- Venture Capitalists

2. Government

- Financial Regulators
- Financial Legislatures

3. Fintech Start-ups Payment Company

- Wealth Management Company
- Crowdfunding Company
- Capital Market Company
- Insurances Company

4. Technology Developers

- Big Data Analytics
- Cloud Computing
- Cryptocurrency
- Social Media Developers

5. Financial Customers

- Individuals
- Organisation

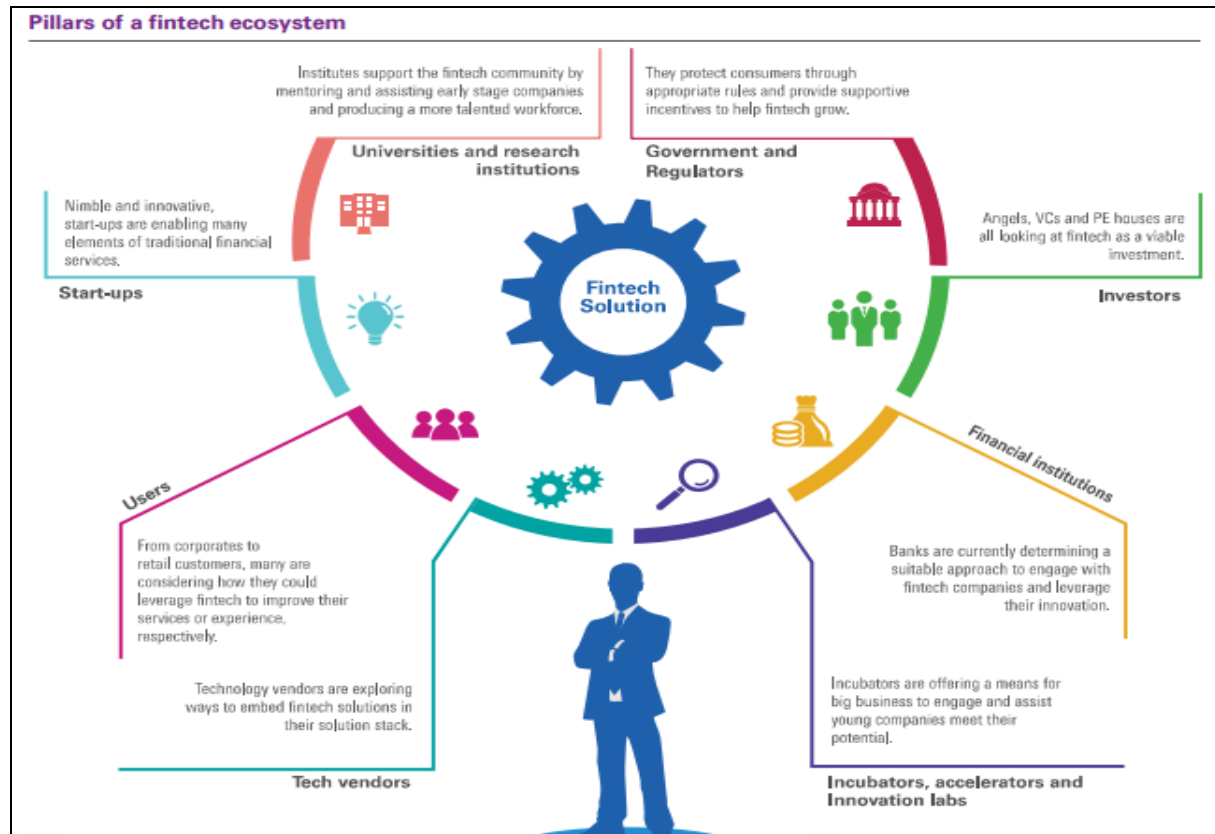


Fig 1

2. Key enabling Technology used by Fin Techs

- **API (Application Programming Interface):** Software programmes utilise APIs (Application Programming Interface) to communicate with one another. An API is a collection of guidelines and requirements. They make it possible to layer new apps on top of older ones.
- **Cloud Computing:** It is the use of a virtualized network, or "cloud," of hosting processors to expand and change computing capabilities while lowering costs.
- **Biometrics:** It is the study of unique and measurable human characteristics that can be used to group and identify people.
- **DLT (Distributed Ledger Technology):** It is a digital asset transaction recording system that allows for the simultaneous recording of information in different locations.
- **Big Data:** It refers to large amounts of organised or unorganised data that can be made, analyzed and used by digital technologies and information systems.
- **AI (Artificial Intelligence):** IT systems that can carry out tasks that would normally require human capabilities are known as artificial intelligence (AI) systems
- **ML (Machine Learning):** ML is the process by which computers learn from data without help from people.

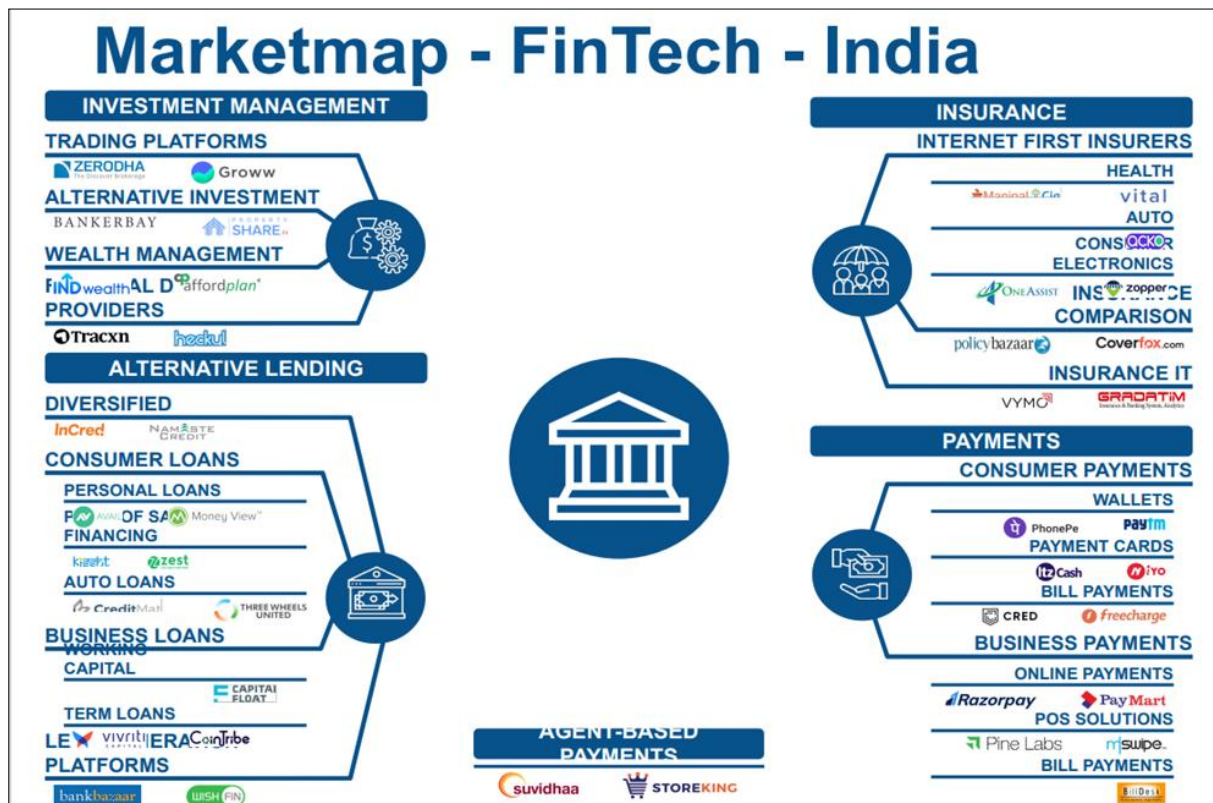


Fig 2

3. Issues to be considered seriously by Fin Techs for future development

Fin Techs will have a lot of chances and problems in the future. In general, they need to deal with six issues to become more effective, reliable, fair, and strong.

- **International money transfers are still unexplored for Fin Techs**

Cross-border payments are still unprecedented for Fin Techs, even though they have a lot of space for improvement. D. Silva *et al.* (2019) say that the high cost of remittance services makes it hard for migrant workers to use them. A lot of cross-border payments go through correspondent banks. If the number of correspondent banks goes down, this could lead to even higher costs and a return to unofficial, unregulated payment networks (Carstens, 2020). Cross-border transactions in India are slow compared to domestic payments, and there aren't many options, even though there are a lot of personal remittances coming in (RBI, 2019). Payment instructions need to be translated into a common language so that payment systems in different places can talk to each other. To do this, standards and practises must be coordinated across jurisdictions, and there must be mutual trust in the Know Your Customer (KYC) and Anti-Money Laundering (AML) frameworks of each domestic network. At the Singapore FinTech Festival 2019, UPI was connected to Singapore's Network for Electronic Transfers (NETS) as part of a pilot project. This shows that big changes could be made to the current system. The UPI system settles in fiat currency within the regulated financial system. This makes it less risky than systems like stable coins, which are usually run by big tech companies. (Economic Times, 2019).

- **High Concern regarding use, protection & privacy of Data**

The growing popularity of FinTech could make data use, protection, and privacy worries worse if service provider's legal rights and responsibilities aren't clear. Machine learning algorithms could repeat and reinforce patterns of discrimination and leave out groups that are more vulnerable. With more people getting access to the Internet and mobile phones, the Indian population is getting more and more data. The next challenge is to give consumers control over the data they create through legal and regulatory interventions. Citizens should have the same control over their data as they do over any other asset they own. Data localization is becoming more and more important in many places. In this situation, a solution could be a model in which data is stored locally and only binary (Yes or No) queries from outside the country are allowed, from a set of allowed queries that everyone agrees on.

- **FinTech's expansion based on financial stability**

It is important to figure out how FinTech affects financial stability since its growth makes it more likely that the whole system will be at risk. Because more people have access to credit and there is more competition, lending standards could get worse. Since FinTech lenders give out loans based on debt and equity instead of deposits, this type of credit could be more cyclical and volatile because it doesn't follow standard rules. Also, credit activity that doesn't fall under prudential regulation could make it harder for credit-related

countercyclical policies to work. When banks work with FinTech, they may face reputational, cyber, and third-party risks.

- ***Focussing on availability of equality of access to FinTech services***

Everyone can't use the same FinTech services available in India. Even though India has the second-most Internet users in the world, access to the Internet is still heavily skewed toward urban, male, and wealthy people. People don't trust the online market very much, and it takes the average user three to four months to make their first purchase online. Most people use online platforms to research products, but they prefer to buy them in person (Bain & Company, 2018).

Even though "micro-merchants" make up the vast majority of sales in India, they have not been included in the cashless revolution, especially in smaller cities. Even though mobile data and smartphones are widely used, not many people use them for financial transactions. This is because of things like a lack of trust, misunderstandings about taxes, a lack of experience with digital payment methods, and fears about security (IFMR, 2017).

- ***Enhancement of consumer protection and digital education***

There is an important concern to be focussed on consumer protection and digital education. Regulators need to focus on catching fraud before it happens, and they also need to teach digital literacy and financial literacy together to clear up misunderstandings. To get low-income groups to join, safety rules and ways to get problems fixed need to be made clearer and easier to use. But financial literacy and good digital hygiene may not be enough on their own. Evidence from all over the world shows that paying with cash is a habit that is hard to break. In China, electronic payments can be made to street vendors, buskers, and even beggars (Jenkins, 2018). But in Tokyo, six out of ten restaurants only accept cash (Lewis, 2019). When people worry more about privacy, they use cash more, but when they trust banks more, they use cash less (Ping and Tan, 2020). So, if you want to encourage electronic payments, you need policies that address basic concerns about privacy and trust in financial institutions.

- ***Regulators must maintain a neutral approach***

Lastly, regulators need to act in an unbiased way. The Report of the Working Group on FinTech and Digital Banking [RBI, 2018(a)] warns that regulators shouldn't favour newcomers too much by giving them different rules than existing businesses. As big companies become more dominant in digital payments, there will be a trade-off between data fuelled oligopoly for cheap services and the need to re-align incentives to encourage smaller, more innovative companies for a competitive ecosystem. To stick to the principle of neutrality, authorities may have to deal with stricter treatment for certain types of activity, such as when a claim is made on the platform's balance sheet or when retail investors and consumers are involved. (Claessens *et al.*, 2018).

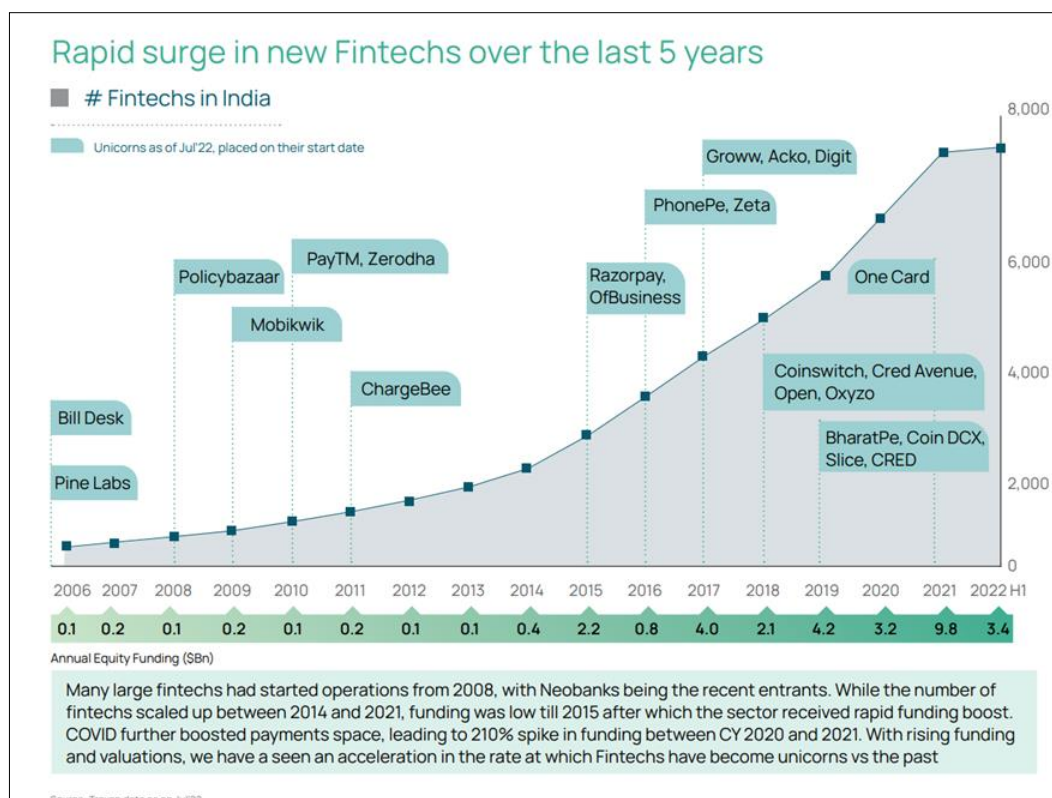


Fig 3

4. Regulatory Mechanism for FinTech ecosystem in India

India is one of the few countries with a Payments and Settlements law. This law "provides for the regulation and supervision of payments and settlement systems in India and names the Reserve Bank as the authority for this purpose and matters related to or connected with it."

Some Fin Techs are regulated directly by the Reserve Bank, which grants them NBFC licences (such as NBFC-P2P) or indirectly by regulating the banks and NBFCs connected with them. Under the Payment and Settlement Systems Act of 2007, the Reserve Bank of India and the Indian Banks' Association (IBA) set up the National Payments Corporation of India (NPCI) to run retail payment and settlement systems in India. The Reserve Bank's proposed interventions in the payment and settlement systems in its different Monetary Policy Statements have been amended from time to time.

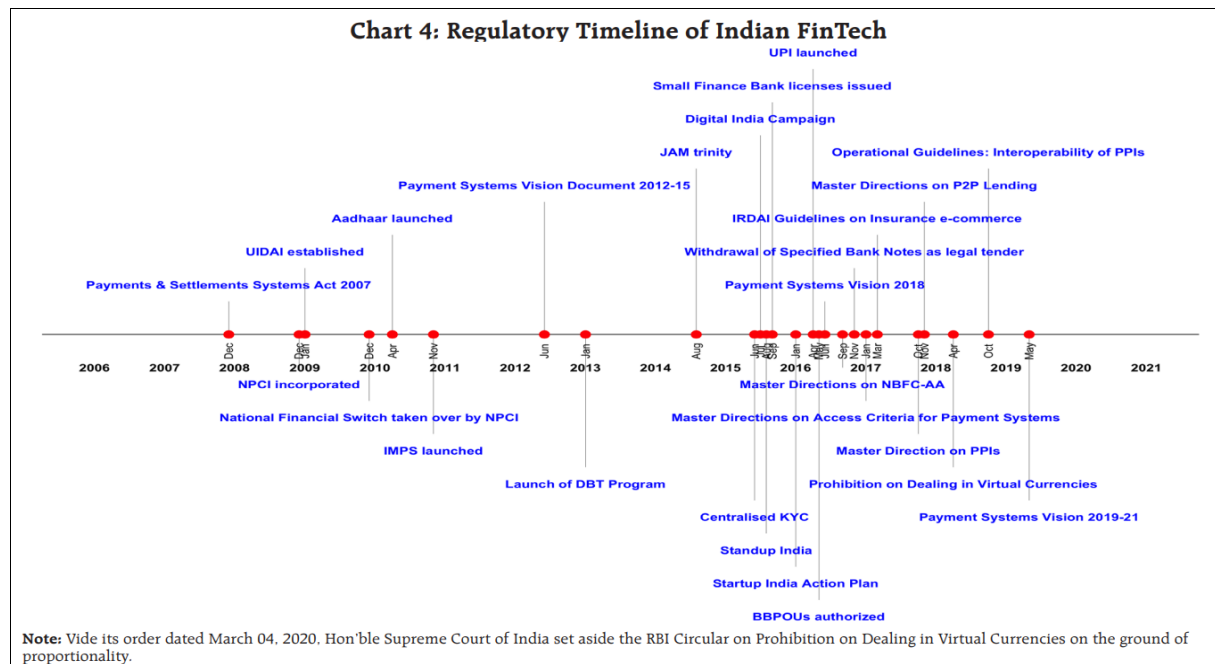


Fig 4

5. India's FinTech Ecosystem at a glance

- India has 6,636 FinTech Startups and is one of the fastest growing FinTech industries in the world.
- The Indian FinTech business is expected to be worth \$31 billion in 2021 and \$150 billion by 2025.
- At a CAGR of 20%, the value of FinTech transactions is expected to increase from US\$ 66 billion in 2019 to US\$ 138 billion in 2023.
- Payments, Lending, Wealth Technology (Wealth Tech), Personal Finance Management, Insurance Technology (Insur Tech), Regulation Technology (Reg Tech), and other subsegments make up the Indian FinTech sector ecosystem.
- In FY22, India's FinTech sector received \$8.53 billion in investment (in 278 deals).
- India's Unified Payments Interface (UPI) had 313 banks participating as of March 2022, resulting in 5.4 billion monthly transactions totalling approximately \$128 billion.
- India has 16 FinTech Startups that have achieved 'Unicorn Status' with a worth of over \$1 billion as of April 2022.
- A 24.57 percent CAGR in the size of the FinTech market in 2025.
- A 25 percent increase in the number of agreements from 2018 to 2021.
- From FY19 to FY21, digital payments transactions will expand at a 37 percent compound annual growth rate (CAGR).
- From FY19 to FY21, the highest predicted return on investment (ROI) for FinTech projects will be 29 percent.
- Since 2017, Investment over \$23 Billion in FinTech ecosystem.
- FinTech adoption rate is the highest in the world (87 percent). 14. India is the world's third-largest FinTech ecosystem.

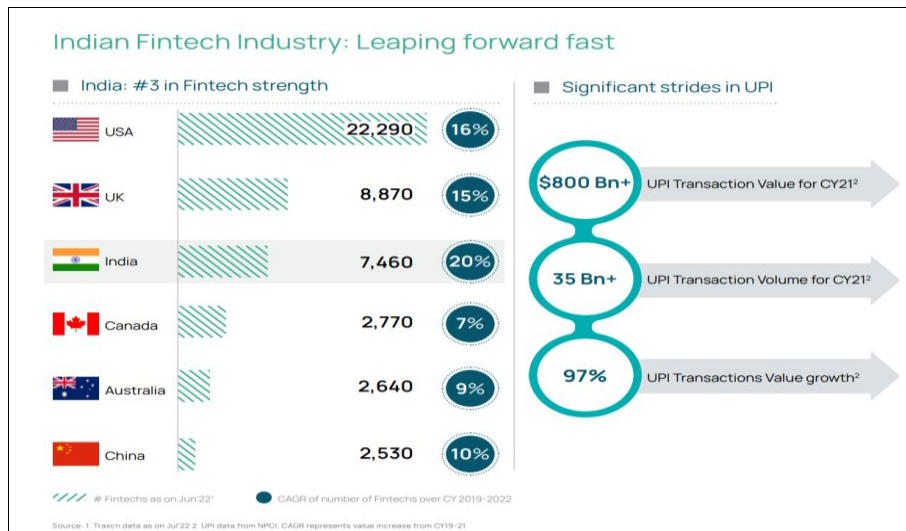


Fig 5

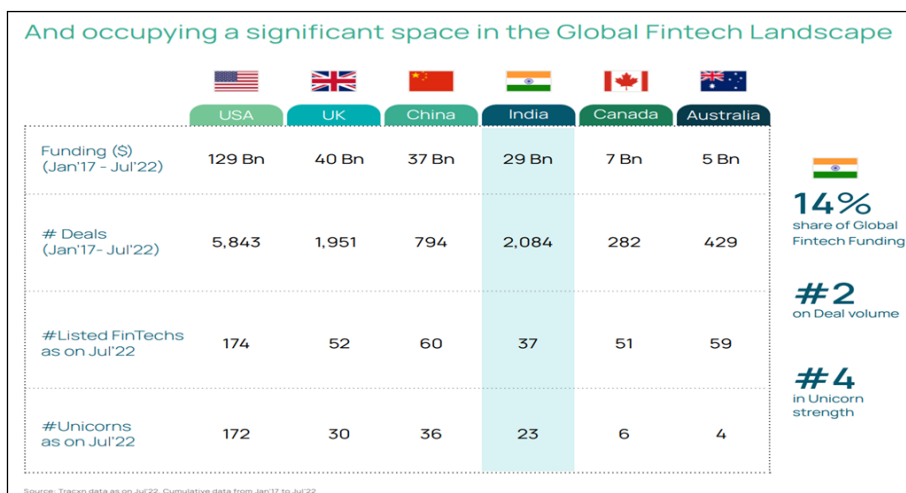


Fig 6

6. Funding of FinTech ecosystem in India

The overall funding of the FinTech ecosystem in India comprises of \$ 9.8 Bn as in 2021 that includes \$ 3.5 Bn of global funding investor and \$ 6.3 Bn of Indian funding investor.

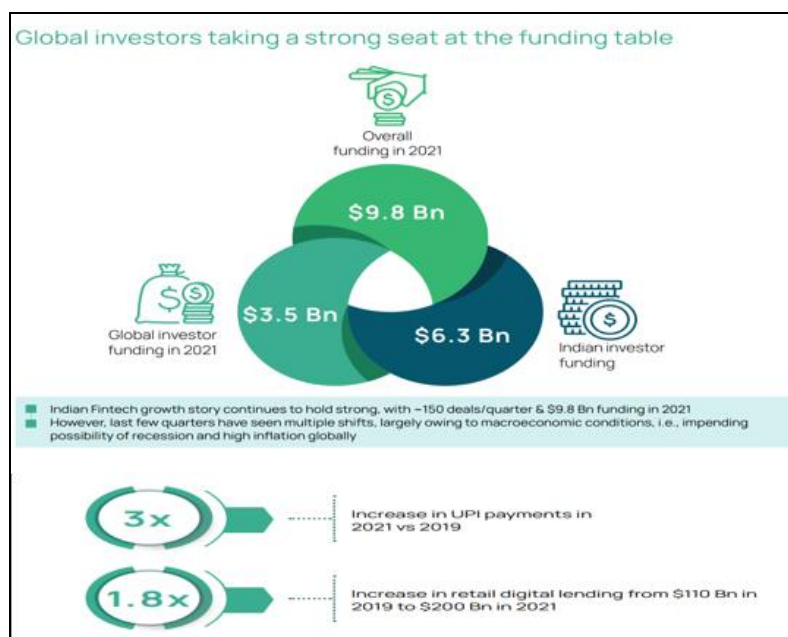


Fig 7

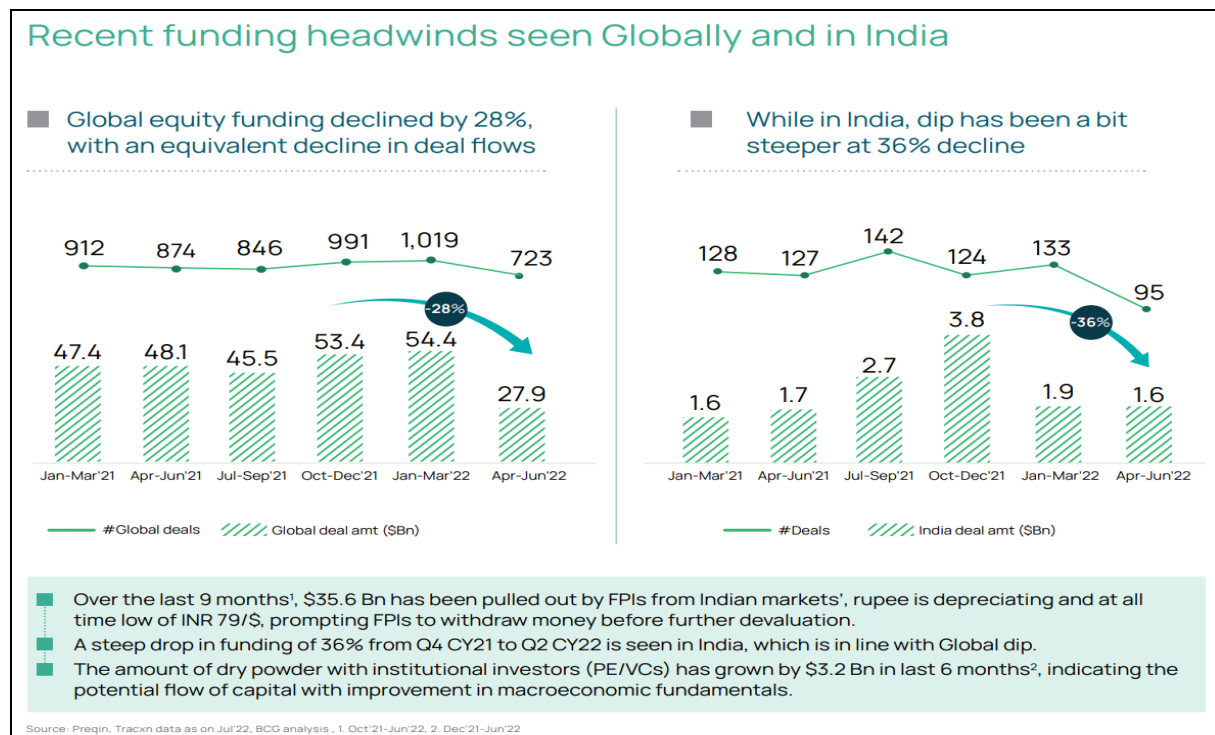


Fig 8

Conclusion of the study

India is the world's third-largest FinTech ecosystem. India has 16 FinTech Startups that have achieved 'Unicorn Status' with a worth of over \$1 billion as of April 2022. Fintech is a form of technology in which every country adopts a brand-new, effective service model. When banks and other financial institutions can offer better financial goods and services at lower costs because of a combination of more flexible technological adoption and increased consumer purchasing power, Today, technology serves as the main equaliser and enabler. We have created enormous new trade flows for markets that were previously underserved or overlooked as we connect one-on-one in real time. Over one billion people now have cell phone subscriptions in India. As a result, the first notable change in the network impact of financial inclusion is the permanent connection of millions of individuals who previously lacked access to digital services. Having a central bank that is as dedicated to modernization and technology as we are is also promising.

The study comes to the conclusion that fintech significantly affects a number of financial system sectors. Over the past few years, this industry has had impressive growth in India, which has assisted the expansion of the financial sector, which has eventually boosted the country's economy. It has the power to upend the entire financial system, and in recent years, it has been crucial to the rapid digital transformation of the financial industry as well as the creation, distribution, and consumption of financial goods and services. It has helped to boost output and is expanding its customer base. Fin Techs are sprouting up all across the financial services industry in India. The rate at which fin technologies are developing makes it impossible to deny the reality that India has enormous entrepreneurial potential. Fintech businesses need to be well-prepared financially and technically. The payments sector accounts for the majority of successful start-ups, and other financial segments should follow suit. The government and other regulatory bodies need to keep doing different things to help the fintech sector. The results of this study show how the fintech industry has affected India's financial services and how the country is at the top of the fastest-growing fintech market in the world. The fintech industry is a focus for the Indian government, which also supports it and promotes new concepts and inventions. In the financial sector, fintech is a new idea. The Fintech services in India are more -safe and user-friendly, giving the Indian economy a greater advantage. Their costs for financial services are reduced by using fintech services.

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