

ORIGINAL ARTICLE



India's Fintech revolution: Transforming the financial landscape and driving inclusion

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ABSTRACT

This paper provides a comprehensive analysis of India's rapidly evolving Financial Technology (FinTech) ecosystem, examining its historical evolution, current market landscape, and future trajectory. Employing a descriptive approach based on extensive secondary data analysis from industry reports, government publications, and academic literature, the study identifies the key drivers underpinning the sector's phenomenal growth. The findings reveal that India has ascended to become the world's third-largest FinTech market, boasting the highest global adoption rate at 87%. This expansion is propelled by a unique confluence of factors, including the revolutionary 'India Stack' digital public infrastructure, widespread smartphone and internet penetration, substantial venture capital funding, and strategic government initiatives promoting financial inclusion. The analysis further highlights the market's structure, with the Payments and Lending segments emerging as the most dominant in terms of start-up activity and market valuation. The study underscores the transformative impact of FinTech on India's traditional banking sector and its critical role in advancing financial inclusion for millions of previously underserved citizens. The sector's trajectory points towards a future of 'co-opetition,' where traditional institutions and agile FinTech firms increasingly collaborate. While the report acknowledges persistent challenges such as data security and a dynamic regulatory landscape, it concludes that the Indian FinTech sector is poised for sustained growth, making it a crucial engine for the nation's digital economy.

KEY WORDS

FinTech; RegTech;
InsurTech; P2P;
Blockchain

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Introduction

FinTech is rapidly transforming traditional banking, with many banks adopting digital, paperless, and cashless methods. Fintech refers to emerging digital technology that digitalizes, improves, and automates financial services. The term combines Finance and Technology, highlighting the sector where both work together. The term FinTech was first used in the 21st century to describe technology in the back-end systems of established financial firms, though some historians trace its origins to the 19th century after WWII. Today, Fintech spans sectors like education, banking, non-profits, and investment, using software and algorithms to help companies, business owners, and consumers manage financial operations. FinTech now also includes the invention, transaction management and use of Digital currencies like Bitcoin in today's times. Although different sectors of FinTech continue gaining traction today, a large part of FinTech still focuses on transforming the traditional global banking industry, where India is at the forefront of the FinTech revolution [1].

Fintech is the application of technology to offer new financial services and products economically in new markets. It describes businesses using technology for easier financing, payment management, banking, and other services, enhancing convenience and efficiency. The FinTech sector depends heavily on technology companies acting as agents, mediators, or partners with financial institutions to drive growth. FinTech is now a game-changer for India's financial sector, including traditional banking, NBFCs, investors, brokerages, and wealth management. Equipped with real-time data, analytics, and low processing costs, FinTech companies threaten traditional financial services. As a promising and growing sector, it attracts significant domestic and foreign investments, including FDI, and secures substantial funding. The global FinTech market is vast, and investors see India as a potential

nation with ample scope for future growth. With market needs met, India is a promising hub for FinTech development [2].

Background

Technology is a key driver of the digital economy's growth. Indian banks have adopted technology to offer financial services, while customers are increasingly embracing FinTech for their financial needs. Fintech's origins date back to the 19th century or earlier. In 1860, the Pentelegraph was invented to verify signatures for banks. Historians consider 1856 to be the start of the FinTech revolution, with the advent of transatlantic cables enabling network connectivity. The development of electronic fund transfer via telegraph and Morse code in 1918 marked the early steps of digitalization [3]. WWII's coders and codebreakers influenced digital development, while the book "The Economic Consequences of Peace" first envisioned a FinTech-driven future through technological progress (Figure 1) [4].

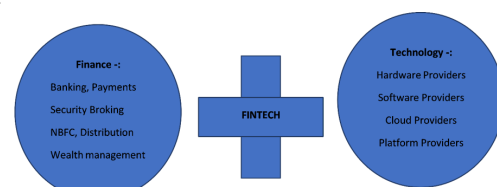


Figure 1. Fintech definition.

The evolution stage is divided into 4 Fintech ages (Figure 2):

- **FinTech 1.0:** This stage is of the 1886-1967 time period. In the late 19th century, during the first period of financial globalization, the merging of finance and technology took place. It witnesses the life-altering event in the history of FinTech evolution, i.e the development of the Diner's card,

during the early post-war period. This was the first step towards the attempt of a cashless transaction, which was later followed by the invention of the credit card in 1958 by AMEX [5].

- **FinTech 2.0:** This era ranges from 1967 to 2008. It began with the introduction of the Automated Teller Machines (ATM). This stage also recorded the establishment of major FinTech growth promoter, i.e. NASDAQ, in 1971 as the world's first ever electronic stock market. This era also witnessed the E-trade system, complex computing systems, and e-commerce. In 1998, PayPal became the world's first successful FinTech software in digital finance. It also witnessed the birth of SWIFT, BLOOMBERG, the Mobile phone, program trading, the internet, and the Dot.com bubble. Analogue to digital happened due to the evolution of FinTech [6].
- **FinTech 3.0:** It is of the 2008–2014 time. The major 2008 crisis led to the implementation of various stricter and fundamental regulatory compulsions for traditional banks, to pave their way towards the new, growing digital market. The overall aim of this stage was to minimize operational costs using in-hand technology. This era witnessed the growth and birth of new technological tools like P2P, wallets, bitcoins, digital lending, Regtech, etc. in the segment. This stage can also be referred to as the game-changer stage in the evolution of the FinTech industry [7].
- **FinTech 3.5:** This era started from 2014 till the present times, in which the FinTech sector grew rapidly and steadily in two of the most populous countries, i.e India and China. Despite the non-linear rise and complex structure of physical banking, the FinTech industry has paced its growth at a much higher rate than many other developed countries. Many payment banks, online payment platforms, and a large number of FinTech start-ups emerged during this period [6,8].

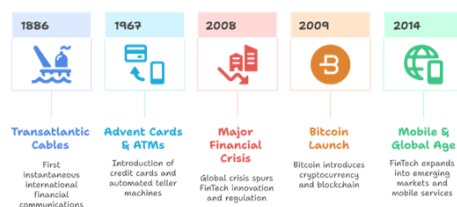


Figure 2. The Evolution of fintech.

Literature Review

According to Jagtiani and Lemieux, their research on the FinTech lenders and their relationship with the underserved traditional banks, the lending capacity of the FinTech Lending Club's consumer lending and their activities have penetrated through the underdeveloped areas where the banking activities were underserved. The capacity of FinTech lenders increases in areas where there is low performance of the local/rural economy. According to them, FinTech brings the idea of credit modelling into the loan-granting system. FinTech has enhanced the financial institutions and their inclusion, and has also allowed borrowers to be assigned to lower and better loan ratings, receiving lower-priced credit than before, i.e., to avail of loans at a very minimal interest rate. This makes the borrowers borrow loans more often at the FinTech outlet, so that the borrowers are on time to pay loans at rural banks. As a result, non-performing rural loans increased over the past years at the rural banks [5, 9].

The Joint Small Business Credit Survey report in Jagtiani and Lemieux stated that there are a lot of complexities in the process of loan or credit sanctioning at a rural Bank. Therefore, the consumers or the small enterprises and banks prefer to take credit from the online money lenders of FinTech. For this reason, FinTech is growing and penetrating the rural areas at a faster rate. This is causing the decline in the income of the rural banks. The rural banks cannot lend money to people who cannot pay back the loans or credits in time, which causes an increase in the non-performing assets (NPA) count of the banks. This finding is supported by the Research from Schweitzer and Barkley, which examined the behavior and characteristics of businesses that depend on online money lenders to satisfy their need for credit. The findings are in line with the argument that businesses denied funding by the banks turn towards FinTech lenders to satisfy their credit needs for their companies that wouldn't be fulfilled by the traditional banking or financial system. Overall, it is about shaping the relationships between financial and banking institutions [10].

According to Anagnostopoulos, Disruptive innovation has the potential to yield welfare outcomes for consumers, including regulatory and supervisory gains, as well as reputational benefits for the developing financial services industry. It deals with the variables of the regulation of the banks. Because of its consumer welfare outcomes, it becomes even more important in the process of the financial services industry's evolution. He used a particular behaviour perspective to examine the banking and regulatory issues and problems created by disruptive Innovation. According to the author, "FinTech is compared to a living body with flexible and changing characteristics rather than a stable notion which is transparent and clearly understood by everyone, including academia and media". According to him, banks will have to cut down their processing and transaction costs to a minimum since they are shockingly costly, which partly explains the penetration of the new entrants into the market. According to Anagnostopoulos, he does not predict that the banking institutions will completely vanish in the future, but many new services that banks provide could possibly become the basis of new start-ups, due to limitations of the traditional banking and financial systems. And with the increasing regulations and strictness on the bank, consumers find it quite difficult to adjust to them, hence making way for the less strict, newly found start-ups, which become the new resort for the consumers [1, 11].

According to Jugner and Meitzner, a household's level of trust and comfort with the newly developed technologies, financial literacy, and overall transparency in the financial process determines the success ratio of FinTech, i.e., whether the FinTech sector will advance or regress during its evolution. Households with a low level of trust (as FinTech involves the risk factor), good financial education and a preference for transparency are characterized by a higher probability of adopting or adapting to FinTech. At the same time, people with low financial education prefer to go with the traditional financial system due to their trust in the old-fashioned method of finance. In contrast, the price factor of the household does not significantly impact the tech switching probability. Lack of trust and dissatisfaction are generally the primary reasons why households opt to switch to FinTech as their primary finance service provider rather than traditional financial institutions. Many FinTechs are highly enhanced and specialized in some aspect. Out of them, some are P2P, clean mobile payment providers, while others are lending platforms (for example ,

crowdfunding online platforms), to provide the needed investment or funding opportunities. However, many of the others still focus primarily on new digital advisory and trading platform systems. However, from a customer's point of view, using these highly specialized financial services on a day-to-day basis requires a higher amount of financial knowledge and expertise, which is one more reason for the more intellectual households to be more likely to switch to FinTech's. On the other hand, practical results show that the price of a financial service is not a usual criterion for a decision to switch between traditional credit financial institutions or FinTech, which highlights that the convenience perspective is more important than any other differentiator for customers, though it may be the service price [6, 12].

According to Nakashima, the new era, when technology was being used to provide services that were needed and could be accepted by the consumer community easily, by direct or indirect means, paved new ways for society, which gave rise to the emergence of new cultures. FinTech has recognized the potential of these emerging business models and schemes, and these forms of technology will be in high demand in the future. If the upcoming advancement in technology can fulfil the demand of the community, then the community would begin to switch to using FinTech for various financial purposes like daily day-to-day online transactions, borrowing credit loans and also start using many more other services. FinTech continuously can affect the income of the rural bank, which is reflected in the declining ROA (Return on Assets) of the banks. This literature mainly deals with FinTech as the Internet of Things (IoT), which is quite popular in modern times. The basis of this is that, for every business operation, large or small, an essential business activity does not mean using technology only to create business and earn profits, but to achieve social creation and connections using technology, which defines the use of technology to create social status in society. According to the author, technologies like FinTech can be used to create businesses that will be truly accepted, not only as concepts of business extensions of existing businesses, but as dramatic breakthroughs in society. It introduces the examples of FinTech services that are created for the convenience of the recipients or consumers rather than the providers or producers. It also asserts that the intellectual process needed for social creation is open innovation, which is not only limited to a single business but also is carried out across the whole industry behind that particular business. This concept has attracted the interest of many communities over the last few years due to its multipurpose, continuous development and welfare-type nature [7, 13].

As per Vikas, Puneet, Harshita, and Shweta, this study highlights the lessons that the FinTech firms and regulators can learn from the experience of their counterparts across the globe. It divided FinTech into three themes [14].

1. Financial industry
2. innovation/technology
3. law and regulations

The study shows the thorough impact of FinTech on various stakeholders and businesses that can be understood using three dimensions, namely: -

1. Consumer
2. Market players
3. Regulatory fund

It should be noticed that FinTech is still in its growing (nascent) stage of development and is continuously going through rapid changes and implementations of product and process innovation, disruption and evolving transformations. According to this study, FinTech promises huge potential for the future development of the financial sector. It also highlights the threats and opportunities upcoming for the various FinTech stakeholders and businesses associated with FinTech [15].

According to Drasch et al. this study specifically targets policymakers, emphasizing that our taxonomy can serve as a useful tool for distinguishing different cooperation cases and their unique features. Policymakers can analyze the structure of the proposed cooperation models to determine appropriate legal actions. For example, case-driven research approaches should align with legislation relevant to each specific characteristic, such as banking licenses, antitrust laws, and patent regulations. These measures are essential for ensuring security and building confidence among participants in the FinTech industry, as well as the businesses operating within it. Currently, banks face challenges due to a slow innovation process, while FinTech companies leverage the digital era to provide customer-centric solutions more easily and cost-effectively. Although banks recognize that collaboration with FinTech is crucial for innovation, they still encounter many difficulties because of their traditional financial systems. This research focuses on the growth of the FinTech sector and its cooperation with banks, offering promising directions for future study [2, 12].

As per the CGAP (Consultative Group to Assist the Poor), it was stated that digital financial inclusion can enhance the welfare of individuals and businesses with limited resources, provided they have reliable digital platforms to access daily financial services and transactions [4,9]. Additionally, the total assets the bank has invested in loans have decreased, indicating greater liquidity and an improved ability to lend to businesses and individuals. Positive results have been found in the research conducted by Boot which states that FinTech are not completely independent of Banking systems as they also require credit to function; instead, they have developed a way mainly through joint ventures or other types of alliances with traditional banks sectors. Through this method of joint ventures and partnerships, banks fulfill their role in providing loans to third parties [13].

Motivation of the study

This sector is highly demanded by both foreign and domestic markets, attracting significant investment that boosts the country's economy by increasing GDP. Its development advances technology and the financial sector. Analyzing this sector's variables helps direct investments effectively, promoting economic growth and development [14].

Objectives

To study the different aspects and different sectors of the FinTech segment in India.

1. Studying the present scenario of FinTech in India
 - a) Rise of FinTech in the Indian market
 - b) Market size of FinTech
 - c) Investments and Fundings in the FinTech sector in India
 - d) FinTech start-ups in India

- e) Factors that drive the FinTech growth in India.
2. Studying the different FinTech sectors in India
 - a) Lending
 - b) Blockchain/cryptocurrencies
 - c) RegTech
 - d) Insurtech
 - e) WealthTech

Research Methodology and Data Collection

The use of inspired research philosophy is opted for this project work on Fintech. This "use inspired" project work is different from the "applied" research work. Investigating FinTech on the basis of use-inspired angle, i.e., firstly, studying the real-world issues associated with the FinTech sector, then studying the various literature, articles, magazines, and theories published on the FinTech sector before proposing a research agenda for the above study.

All the data in this dissertation is collected from secondary sources like websites, newspapers, magazines, literature, etc [15].

Results

Objective I: Study of the present scenario of FinTech in India

Rise of FinTech in India

India, one of the fastest-growing economies, has emerged as a major FinTech hub globally due to its development potential. Secure payment gateways, mobile banking, wallets, and other paperless transactions are widely adopted. Over the last decade, digital payments have made financial services more accessible, driven by smartphone penetration, internet access, and technological advancements. Traditionally, banks were the main payment gateways, but their dominance is weakening with innovative FinTech solutions. Recent improvements in India's payment infrastructure include new mechanisms like IMP, UPI, and BHIM [16].

India's evolution as a FinTech progressive nation is not an extraordinary or miraculous thing. It happened on the basis of executing a four-point program step by step (Figure 4):

- a) Firstly, solving the problem of identification in the form of Aadhar for the formalization and identification.
- b) Secondly, getting everyone a bank account or equivalent through PMJDY (PM Jan Dhan Yojana).
- c) Thirdly, building scalable and reliable platforms to move money, i.e., IMPS, UPI, etc.
- d) Allowing banks, FinTech, and other financial players to access public platforms like UPI has fostered innovation, making India known as the Progressive FinTech Nation globally [17].

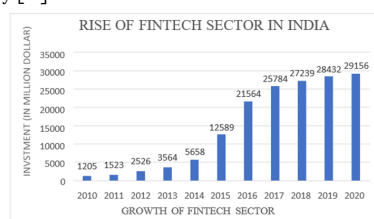


Figure 4. Rise of FinTech sector in India.

Market size of FinTech in India

The global FinTech market grows at 23.4% annually, but India remains underserved due to low financial service penetration in some regions. BlinC Insights reports 14.6% of Indians are unbanked, compared to 6% in the US. Only 20% of SMEs have credit access, and mutual funds and insurance penetration are still low. These opportunities, driven by high-speed penetration, expanding middle and high-income households, and supportive government initiatives, present high growth potential for Indian FinTechs, especially in digital lending, insurance, and Neo banking. Digital lending is projected to grow fastest with a CAGR of about 33.5% by 2023; insurance with a CAGR of 12.5% by 2030; and Neo banking with a CAGR of 50.4% by 2026.

The Indian FinTech market is currently the third largest worldwide, behind only the US and China, according to a recent survey by BlinC Insights. India's total financial services ecosystem was valued at about \$500 billion in 2021, with the FinTech sector making up \$31 billion. The rapid growth of India's FinTech market is attributed to the country's accelerated digitalization, the report notes. Over the next five years, the sector is projected to grow at a compound annual rate of 22%. Among the 6,386 FinTech companies, 28% focus on investment tech, 27% on payments, 16% on lending, 9% on banking infrastructure, and 20% on other areas. India also leads globally in FinTech adoption, with a rate of 87%, far above the global average of 64% (Figure 5) [18].

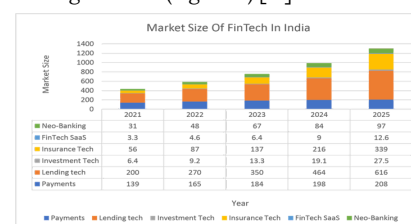


Figure 5. Market size of FinTech in India.

Investments and funding in the FinTech sector in India

Since 2016, increasing demand for FinTech has drawn venture capital investors eager to fund startups. The expanding market for technology-enabled FinTech products explains sustained investor confidence over the past five years. From 2016 to 2021 (Figure 6), total FinTech funding reached \$16.5 billion, with approximately 60% occurring in the last three years. In 2021, digital Payments received \$0.9 billion across 43 investment rounds, digital lending secured \$0.73 billion from 62 rounds, and investment tech totalled \$169 million over 36 rounds. Insurtech investments amounted to \$512 million across 34 rounds, a significant increase from \$291 million in 2020 across 38 rounds. Similarly, Neo banking investments grew to \$159 million in 2021 from \$33 million in 2020, across 15 and 9 rounds, respectively. Other banking solutions attracted \$476 million across 32 rounds in 2021, up from \$68.6 million over 33 rounds in 2020 [19].

According to BLinC Insights, 37 companies operate with funding between \$100 million and \$1 million, 144 in the \$10 million to \$100 million range, 263 in the \$1 million to \$10 million range, and 339 below \$1 million. The report also states that 90% of FinTech companies have not yet raised funds through investment rounds, mainly due to a lack of quality mentoring or because they are still establishing themselves in space, which makes it difficult to attract investor transactions (Figure 6) [20].

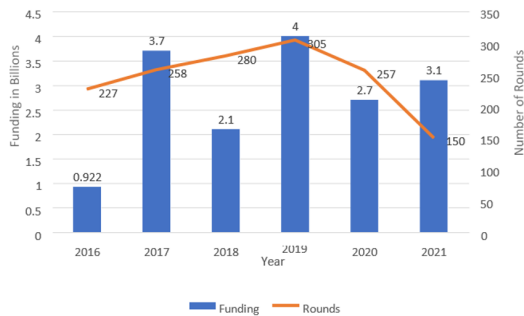


Figure 6. Funding in FinTech in India.

Start-ups in India

In the last 4-5 years, it has been an exciting phase for the entrepreneurs as well as the investors (Table 1). The Indian FinTech start-up ecosystem grew rapidly. Until 2014, the US led with 1,788 start-ups, followed by India with 737 and the UK with 432. In 2015, India saw a major increase, surpassing all developed countries except China, marking its rise as a fast-growing FinTech hub. The trend continued in 2016, with India outpacing the US by 12.4% in new FinTech start-ups. In 2015-16, India established more FinTech start-ups than any other developed country. Over the last four years, the US and India have been comparable in annual new FinTech start-ups [21].

Table 1. Segment-wise Fintech start-ups in India till 2021.

Segments	Number of start-ups
Payments	405
Lending	365
WealthTech	313
Personal finance management	173
InsurTech	111
RegTech and cybersecurity	58
Others	747
Total	2172

Factors driving the FinTech revolution

A high volume of funds and investments from venture capitalists, private equity, and investment institutions significantly boost the innovation and growth of India's FinTech sector. Open API platforms like Aadhar, UPI, Bharat Bill Payments, BHIM, and GSTN provide essential data and analytics for industry stakeholders. Technological advancements, including the development and application of artificial intelligence and machine learning, help maintain industry efficiency. India has the world's second-largest number of smartphone users, around 550-600 million, and the second-largest internet user base with over 795 million users, according to Invest India's 2020 data. Demographically, with 65% of the population under 35, India's largely young population fuels industry growth. By 2030, India expects to add 140 million middle-income and 21 million high-income households, further driving FinTech demand. Programs like PMJDY, DAYNRLM, Direct Benefit Transfer, and Atal Pension Yojana have accelerated digital adoption and financial inclusion, especially in rural areas, expanding access to digital financial services (Figure 7) [22].

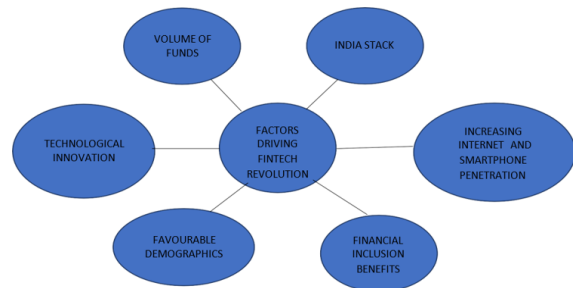


Figure 7. Cobweb of factors driving FinTech.

Objective II: FinTech sectors in India

Lending

The FinTech lending sector splits into two main categories: online digital lenders and intermediary lenders. It leverages technologies such as AI and ML to verify customer credibility and facilitate credit and other financial services [23].

Blockchain/Cryptocurrencies

Cryptocurrencies are digital currencies that use encryption techniques to generate units and regulate financial transfers, operating independently of central banks. Most have tamper-proof transaction blocks linked through append-only chains, following a set of rules called Blockchains. Examples include Bitcoin, Litecoin, Ethereum, Ripple, and Monero [24].

RegTech

Regulatory Technologies (RegTech) is a new, important dimension of FinTech is an information technology that assists enterprises in managing nonsupervisory conditions and compliance requirements by addressing how nonsupervisory factors impact business models, products, and services. RegTech has become an integral part of the FinTech ecosystem, helping to navigate regulatory complexities and develop solutions using technology [25].

InsurTech

It pertains to the insurance segment within financial services. This sector primarily involves transferring risk from the policyholder to the insurer. It represents the integration of technology into traditional insurance models. Using this technology lowers risk factors in financing, enhances sector efficiency, and simplifies the claims management process [26].

WealthTech

It involves using technology in wealth management to deliver innovative digital solutions for investment and asset management. These companies provide a range of digital tools such as software for portfolio management, investment planning, and AI-driven investment strategies. WealthTech encompasses key components like investment platforms, robo-advisors, thematic investing, and digital brokerage services [24].

Payments

Digital payment services have significantly transformed the

traditional business model. Various businesses, such as credit card issuers and acquirers, create opportunities for new FinTech firms and large corporations like Amazon and Apple. Additionally, there are prospects for companies that focus on

'account-to-account' (A2A) transfers, which involve collecting, analyzing, and requesting individual client spending data (Figure 8 and Table 2) [17].

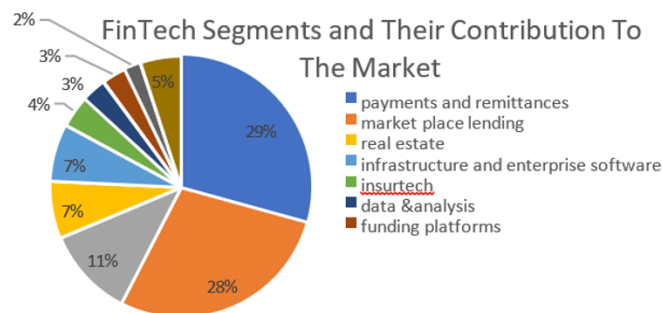


Figure 8. Fintech segment's contribution.

Table 2. FinTech sectors in India.

Segment	Description	Examples
Lending		
P2P (peer-to-peer) Lending	It is a unique method of debt financing in which the customers can directly connect with the borrowers with the help of online platforms	Lendenclub Faircent
Personal and other loans	It deals with debt financing part	Rupeek Instapaisa
Payday loans	Deals with the single installment loans	Flexsalary Earlysalary
PoS credit	Deals with the Pay overtime installment options.	Lazypay
SME financing	Deals with small and medium-sized enterprises funding	Lending cart Incred
Blockchain / Cryptocurrencies		
Native coin	These are digital fungible assets off a preexisting blockchain within a novel. It is an alternative currency to the traditional currency.	Bitcoins
Crypto tokens	These coins possess intrinsic value linked to the quality of the issuing business model and the surrounding ecosystem. generates it.	Payment tokens, Utility tokens, Asset/debt tokens, Hybrid tokens
RegTech		
Accounting	To manage the accounts of businesses or individuals	Khatabook
Tax compliance	To keep a tally of all the taxes paid or to be paid	EaseMyGst Cleartax
InsurTech		
Digital insurance advisors	Provides online advice for insurance	PolicyBazaar Turtlemint
Digital insurers	Helps in the process of insurance	Digit Acko
Claims	Deals with insurance claiming process	Remedinet SureClaim
WealthTech		
Investment platforms	Helps the customers with the investment process by properly guiding them	Smallcase ETMoney
Robo advisors	Specialized software to deal with the investment process	Kuvera Scripbox
Thematic investing	Deals with the specific form of investment separately	Screener Trendlyne
Digital discount brokers	Act as an agent to manage your investment portfolio	Zerodha Upstox
Payments		
Prepaid payment providers	It deals with the likes of smart cards, internet banking accounts, magnetic strip cards, online wallets, mobile accounts, paper vouchers.	BharatPe Ezetap

Mobile and digital wallets	It allows users to make payments without the help of hard cash, also without the use of credit cards.	Paytm Mobikwik
Payment gateway	A payment gateway is helpful for the traders to receive transactions from customers	Razorpay PayUmoney
Payment banks	These are new model banks that accept deposits up to a strict limit of Rs. 200000.	Paytm bank Airtel payment bank
P2P	Peer-to-peer Lending platforms in online mode	PhonePe, Google Pay, Amazonpay

Discussion

This study provides a comprehensive overview of the Indian FinTech ecosystem, charting its explosive growth and identifying the core drivers and key segments. The results indicate that India has rapidly emerged as a global FinTech powerhouse, a finding that aligns with and builds upon existing literature. The discussion will now interpret these findings by comparing them with external research, exploring their broader implications, and acknowledging the study's limitations to propose directions for future inquiry [25].

Interpretation of findings in the context of existing literature

The manuscript's finding that India has one of the highest FinTech adoption rates globally is a central outcome. The rate of 87% found in the study, which is significantly higher than the global average of 64%, can be directly attributed to the "India Stack" framework identified as a key driver. This unique, government-backed digital public infrastructure, encompassing digital identity (Aadhaar), universal bank accounts (PMJDY), and scalable payment platforms (UPI), has acted as a powerful catalyst, democratizing access to financial services on an unprecedented scale. While the literature review correctly identifies factors like financial literacy and trust as crucial for adoption, the results of this study strongly suggest that in the Indian context, this state-led infrastructural push has been the primary accelerator, creating a low-cost, interoperable ecosystem where innovation can flourish.

The investment trends presented in Figure 5, which show a dramatic funding peak in 2021, reflect a global post-pandemic surge in venture capital for digital platforms. However, this peak was followed by a global recalibration, often termed a "funding winter," which saw investment volumes moderate in 2022 and 2023. Despite this, the Indian FinTech sector demonstrated resilience, continuing to attract significant funding, albeit more selectively, highlighting its maturation and sustained investor confidence [26].

The sectoral breakdown of start-ups in Table 1, showing a dominance of Payments (405 start-ups) and Lending (365 start-ups), aligns perfectly with the market size projections in Figure 4. This supports the arguments made by Jagtiani and Lemieux (2018), who highlighted the role of FinTech lenders in penetrating underserved markets. The success of these two sectors is logical: payments, supercharged by the frictionless experience of UPI, serve as the gateway for consumer entry into the digital economy. Digital lending, in turn, addresses the vast, unmet credit demand from individuals and Micro, Small, and Medium Enterprises (MSMEs) that traditional banks have historically struggled to serve due to high underwriting costs and a lack of data. The proactive regulatory approach, including the introduction of regulatory sandboxes by the Reserve Bank of India (RBI), has further enabled firms in these segments to test and scale their innovations responsibly [27].

Broader implications of the results

The findings carry significant implications beyond the financial sector. First and foremost is the profound impact on financial inclusion. The rapid rise of FinTech has been instrumental in bringing millions of unbanked and underbanked citizens into the formal economy. According to the World Bank, the share of adults in India with a bank account rose from 53% in 2014 to over 77% by 2021, a growth largely attributed to policies that leverage digital technology. This is not merely about providing access but about creating a pathway to a suite of financial products credit, insurance, and investments that can foster economic mobility and resilience.

Second, the growth trajectory of the FinTech sector, projected to reach a valuation of \$150-160 billion by 2025, positions it as a cornerstone of India's digital economy. It fosters a vibrant start-up culture, creates high-skilled jobs, and attracts significant foreign investment, thereby contributing directly to national GDP. Furthermore, the principles of the India Stack are now being extended to other sectors like commerce (through the Open Network for Digital Commerce - ONDC), demonstrating how FinTech infrastructure can serve as a foundational layer for broader economic digitalization [28].

Finally, the results signal a permanent transformation of the traditional banking landscape. As noted in the literature, FinTechs pose a significant competitive threat. However, the findings also align with the "co-opetition" model proposed by Drasch et al. where collaboration is becoming the dominant strategy. Banks are increasingly partnering with FinTechs to enhance their digital offerings, improve customer experience, and reduce operational costs, leading to a more integrated and efficient financial ecosystem [29].

Limitations of the Study

Despite its comprehensive scope, this study has several limitations.

Reliance on secondary data

The research is based exclusively on secondary data from reports, websites, and existing literature. It lacks primary data from surveys or interviews with consumers and FinTech entrepreneurs, which could have provided deeper qualitative insights into adoption behaviors and operational challenges.

Descriptive nature

The study is primarily descriptive, outlining trends and market structures. It does not employ econometric models to establish causal relationships between the identified drivers (e.g., internet penetration, government policy) and the growth outcomes.

Dynamic environment

The FinTech sector is exceptionally dynamic. The data, largely

concluding in 2021-2022, may not fully capture the most recent trends, such as the full impact of the global venture funding slowdown or new regulatory frameworks introduced by the RBI [30].

Future Work

Building on the findings and limitations of this study, future research could explore several promising avenues:

A quantitative impact assessment could be conducted to measure the socio-economic effects of FinTech adoption on household income, poverty reduction, and women's economic empowerment, particularly in rural India.

Future research could conduct primary surveys to explore the consumer-side drivers and barriers to adopting more complex FinTech products beyond payments, such as WealthTech and InsurTech, linking back to the themes of trust and financial literacy.

An in-depth regulatory analysis is needed to examine the impact of recent RBI guidelines on digital lending and data privacy on the innovation and profitability of FinTech firms.

A comparative study analyzing the "India Stack" model against the FinTech ecosystems in other emerging markets like Brazil, Indonesia, or Nigeria could yield valuable insights into the role of public digital infrastructure in fostering innovation.

Policy Suggestions

High level of security

FinTech software in developing countries can help establish a high-security interface, such as an app or firewall. This app may incorporate two-factor authentication, biometric verification, data encryption, real-time alerts, and behaviour analysis.

Legal compliance

Ensure legal compliance before developing or using software. It's advisable to hire a legal consultant to guide you through compliance policies and key details. Before launching, confirm that your legal team understands all relevant new norms and government regulations.

Basic tech education

Businesses and consumers must be aware of the basic knowledge about the technicalities involved in the FinTech industry. People must know about things like QR code payments, the use of NFC chips, scanning of credit and debit cards, and the use of fingerprints for the authentication process.

Proper AI integration

To integrate AI with essential data, you need to train your system using machine learning, which requires large datasets. However, most banks cannot access such extensive data. Therefore, a one-shot learning model is necessary, enabling your system to train effectively with smaller amounts of available data.

Blockchain system

Implementing this Blockchain system ensures compliance with government guidelines and regulations. Additionally, it helps you avoid restrictions related to your mobile services, as many authorities remain hesitant to adopt Blockchain technology.

User-friendly system

While developing a FinTech application, you have to make sure that the UI/UX part provides a secure and user-friendly experience to the user. Further, users are ready to accept all the authentication, but continuously asking for the details again and again for login purposes may frustrate the user.

Effective marketing strategies

To elevate their businesses and stand out from competitors, FinTech companies need to improve their performance. This often requires either significant financial investment or dedicating effort to human resources to provide seamless customer service. In essence, offering the best product is the most effective marketing strategy to attract consumers.

Customer insights

FinTech organizations should have precise customer insights to understand the behaviour of users better and to gain insight into their social interactions. This can be achieved by developing trust among the users.

Conclusion

Continuous innovation, investments, and technological progress have fueled the growth of India's FinTech sector, attracting many players and new entrants. FinTech offers numerous services, transforming traditional banking into modern online banking that attracts and retains customers through convenience and trust. It facilitates real-time transactions, online shopping, and wealth management, changing the traditional financial landscape. Collaboration between FinTech and traditional institutions is vital for innovation while adhering to legal and regulatory frameworks. Recent reforms and increased investments aim to develop FinTech infrastructure, positioning it as a key driver of economic growth in the coming years. Access to advanced technology, autonomous governance, limited rules, and strong rights protection are crucial for global FinTech expansion.

Disclosure Statement

The authors declare that they have no competing interests.

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