

**DIGITAL FINANCIAL INNOVATIONS: A COMPARATIVE STUDY OF RURAL
AND URBAN INDIA**

Mr. Shubham Gaur
Assistant Professor
Don Bosco Institute of Technology

Ms. Tanya Jolly
Assistant Professor
Don Bosco Institute of Technology

ABSTRACT

"FinTech" says it all: financial technology. India is a growing nation with the world's biggest population, which it achieved in April 2023 by overtaking China. Most citizens of such a large nation still use antiquated methods of transacting business, such as waiting in queue for banking services. Important for developing nations like India, this study illustrates the difficulties inherent in the early stages of financial technology's push to expand access to banking services in underserved rural communities by way of institutional frameworks. We need to implement robust cyber security measures since the number of people accessing the internet is growing at an exponential rate. Many new problems have recently emerged in India's financial systems, such as cyberattacks, which have crippled the government's economic plans and disrupted monetary policy, causing financial institutions to lose a lot of money. For a nation as densely populated as India, the task of ensuring the utmost security in the modern, rapidly digitalizing economy is no small feat. To address the issues brought about by cyber security vulnerabilities and to strengthen its cyber resilience, India must establish a centralized cyber control system, especially for the sensitive information of its citizens.

Keywords: Fintech, financial, financial innovation, Rural, Urban and India.

INTRODUCTION

Banking and financial services are deeply impacted by advanced FinTech, including AI, Big Data, Blockchain, digital payments, Insurtech, and regtech. India ranks as the third fastest-growing country in FinTech advancements. FinTech, a blend of "financial" and "technology," enhances financial services through innovation. Schueffel (2016) defines it as a new industry applying technology to improve financial processes. According to a 2021 Fortune survey, there are over 26,000 FinTech startups globally, with 10,000 in the U.S., and 90% of Americans use FinTech for financial management. This emerging field requires further research and exploration.

Financial technology (fintech) is changing the face of financial services in India by bridging the gap between conventional banking and digital innovations. With a fast-expanding digital economy, fintech technologies are playing an important role in increasing financial inclusion in both rural and urban areas. These advances simplify banking operations while also making financial services more accessible, inexpensive, and efficient for millions.

Urban India leads in FinTech adoption, leveraging AI, blockchain, and big data. UPI, mobile wallets, and contactless payments have revolutionized transactions. Digital lending platforms simplify loan access, reducing reliance on traditional banks. Robo-advisors and investment apps democratize wealth management, while Insurtech platforms offer AI-driven policies and seamless claims processing. Despite challenges, rural India is experiencing a FinTech revolution, improving financial access. Mobile banking and microfinance enable banking without physical branches. AI-powered digital lending helps farmers and entrepreneurs secure microloans. Government initiatives like PMJDY and Aadhaar-enabled payments boost

inclusion. FinTech-driven agritech supports farmers with digital payments, crop insurance, and market insights, enhancing productivity and livelihoods.

LITERATURE REVIEW

Rathi, Cheenu et.al (2024) - "FinTech" said it all: financial technology. India was a growing nation with the world's biggest population, which it achieved in April 2023 by overtaking China. Using a case study methodology, this research examined the need for, and potential solutions to, the problem of FinTech literacy in rural areas, as well as the effects of FinTech on the banking and e-commerce sectors, as well as the role of intermediaries in these industries.

S. Amudhana et. al. (2022) - Research showed that 8 out of 10 rural areas in India suffered from internet connection issues and other challenges affecting their banking systems. Banks and FIs were gaining information about customer interaction in a new and crucial manner. Digitization of technology occurred in every facet of a company, in general. It was in everyone's best interest to have a workable system in place for the whole financial system that could be quickly and readily implemented in the financial market as the banking sector and other financial institutions moved towards a digital future.

Vijai, C. & Joyce, D & M., Elayaraja. (2020). Financial technology, or FinTech, referred to the latest innovations in digital technology and its integration into the financial services industry. The theoretical groundwork had been laid for the study subjects. The information had been gathered by SSRN, RBI, PwS, and KPMG. The article traced the development of FinTech and the market's size and growth over time.

Virani, Shreya. (2024) - FinTech revolutionized the banking industry by leveraging information technology and mobile devices to transform financial services worldwide. Technologies like AI, blockchain, and data analytics have significantly impacted various financial sectors, including deposits, loans, remittances, insurance, and cryptocurrency. This study examines India's FinTech sector, highlighting key technological developments and presenting a conceptual model based on thorough research.

OBJECTIVES

1. To study the concept of Fintech, role of fintech in urban and rural India.
2. To identify the challenges in Fintech Adoption
3. To analyze the Impact of Fintech on Financial Inclusion
4. To evaluate the Growth and Adoption of Digital Financial Services

RESEARCH GAPS

Despite FinTech's rapid growth in India, several research gaps remain. There is limited study on the long-term sustainability of digital financial services in rural and urban areas, the impact on income disparity, and cybersecurity risks like fraud and data breaches. The absence of a standardized regulatory framework leads to inconsistencies in security and compliance. Additionally, behavioral factors affecting FinTech adoption, such as trust and digital literacy, need deeper analysis. While government initiatives have boosted financial inclusion, their long-term impact on economic stability remains underexplored. Addressing these gaps is crucial for ensuring inclusive and secure financial growth.

RESEARCH METHODOLOGY

We need to implement robust cyber security measures since the number of people accessing the internet is growing at an exponential rate. Many new problems have recently emerged in

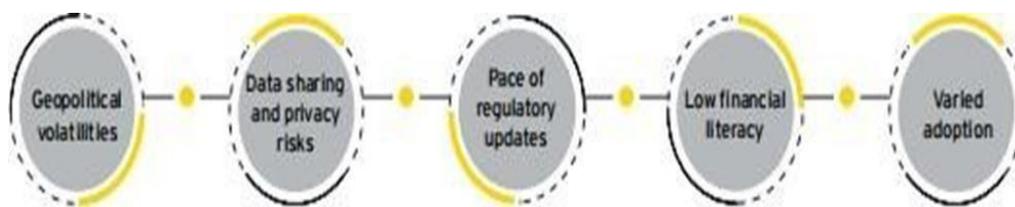
India's financial systems, such as cyberattacks, which have crippled the government's economic plans and disrupted monetary policy, causing financial institutions to lose a lot of money. Hackers seize control of the economy and establish a rival system, discouraging long-term investments from international investors in India. Money laundering and similar operations encourage criminal mindsets, which in turn leads to a decline in moral and social responsibility and ultimately causes government policy paralysis. Indian financial system is susceptible to fraud due to the existence of numerous regulatory bodies, including the Reserve Bank of India (RBI) and the Securities and Exchange Board of India (SEBI), and the fact that these bodies often work in tandem with one another, as seen with the Serious Fraud Investigation Committee (SFIO) and the National Cyber Protection and Information Centre (NCPIIC).

Advanced Level Certified Risk Managers Prior to any fraudulent activity occurring in the payment network, a PCI DSS (Payment Card Industry Data Security Standards) processor may identify it. Passwords and PIN codes may be guessable, but fingerprint authentication ensures the data is more secure.

The BFSI Network research, *Transforming Rural India: FinTech Startups Bridging the Financial Divide*, explores how financial technology is narrowing the rural-urban wealth gap. Digitization has revolutionized banking, driven by technology and rising demand for digital services. From 2018 to 2022, financial solutions became more customer-centric, enhancing efficiency, increasing digital payments and e-commerce participation, and empowering consumers with greater financial autonomy.

DATA ANALYSIS

In April 2022, the Internet and Mobile Association of India (IAMAI) reported that India ranked second globally in internet users, after China. By 2025, 56% of India's new internet users are expected to come from rural areas, with women making up 56% of new active users. Despite this growth, 2 billion people worldwide still lack access to formal financial services. In India, 48% of first-time internet users disengage after initial use, while digital payment adoption in rural areas has risen to 36%. Interestingly, rural India now has more social media users than urban areas. By 2025, India could emerge as a financial technology powerhouse, with a projected market value of \$1.3 trillion.



Source: *The wind of change, Trends setting India's FinTech sector (2022)*

Figure 1: Major FinTech challenges

Table 1: Fintech Surge in India

Sectors	Market size (2022)	Market size (2030)	CAGR (2022-2030)	Percentage size market share (2030)
<i>Overall FinTech market</i>	\$584Bn ⁺	\$2.1Bn ⁺	18%	-
<i>Lending Tech</i>	\$270Bn ⁺	\$1.3Bn ⁺	22%	60%
<i>InsurTech</i>	\$87Bn ⁺	\$307Bn ⁺	17%	14%
<i>Payments</i>	\$165Bn ⁺	\$253Bn ⁺	5%	12%
<i>Neo Banking</i>	\$48Bn ⁺	\$183Bn ⁺	18%	9%
<i>Investment Tech</i>	\$9.2Bn ⁺	\$74Bn ⁺	30%	3%
<i>Fintech SaaS</i>	\$4.6Bn ⁺	\$31Bn ⁺	27%	1.5%

Source: *Secondary source, Inc 42*

Concerns about geopolitical inequalities in India, careless data sharing, outdated regulations, and low literacy rates are among the biggest obstacles to the widespread adoption of financial technology. However, with brave government backing, FinTech has the potential to not only increase confidence in the country's financial system, but also to eradicate financial literacy gaps. With a total market size of over \$584 billion to over \$2.1 billion, fintech is booming in India. This covers a wide range of technologies, including loan tech, which is projected to account for 60% of the industry. Up to 2030, according to Table 1, Insurtech will account for 14%, payments for 12%, neo-banking for 9%, investment tech for 3%, and fintech software as a service for 1.5%.

Table 2: Different types of Internet Users and their Growth

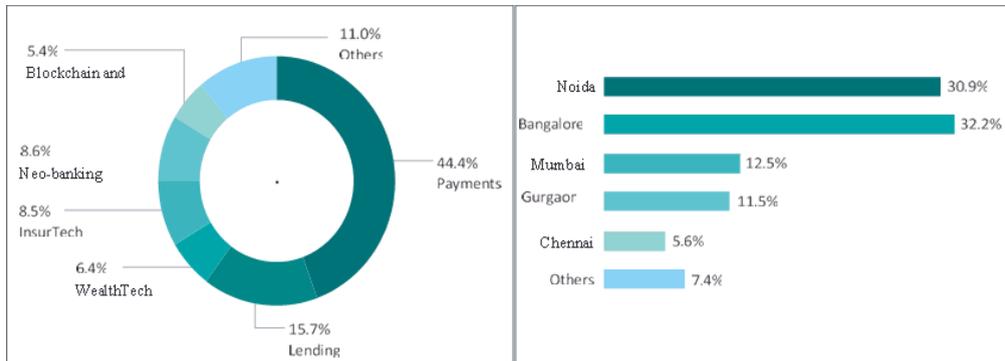
	2022	2025	% Growth
Smart phone users	931 Mn+	11 Bn+	22%
Internet users	759 Mn+	900 Mn+	19%
Urban internet users	360Mn+	396 Mn+	10%
Rural internet users	399Mn+	504Mn+	26%

Source: IAMAI, Inc 42

In 2023, 81% of 462.5 million PMJDY accounts were active, up from 76% in 2017, according to the RBI. Prime Minister Narendra Modi emphasized FinTech's role in driving financial revolutions. The IAMAI study *Internet in India* estimates 346 million Indians engage in electronic payments or online shopping, surpassing the U.S. in digital transactions with 331 million users. Digital transactions grew by 51% due to the pandemic, and India's internet users are expected to exceed 931 million by 2025. Rural users are three times more likely than urban users to engage online.

BlinC study 31 ranks India's FinTech ecosystem as the third biggest globally. With a compound growth rate of 22%, the financial services sector in India is projected to expand

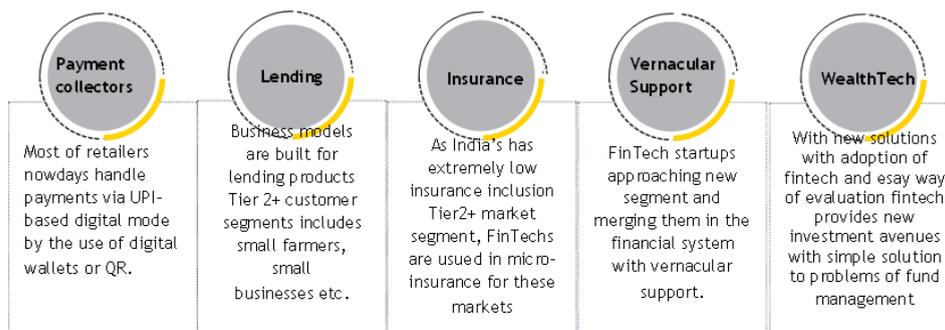
from \$31 billion in 2021 to \$150 billion in 2025. The financial services industry as a whole has a potential for 8.5% growth over the next five years, or \$500 billion.



Source: Tracxn, Media reports as of June (2022)

Figure 2: Sector-wise and State-wise distribution of FinTech

With a fourteen percent stake in the total, Indian financial technology firms are the country's second-most-funded startup industry. By 2030, it's predicted to have grown by USD 2.1 trillion. In 2022, fintech companies in India made \$5.56 billion, and the country saw a doubling of its institutional investors, from 535 in 2021 to 1019 in 2022.



Source: The winds of change Trends shaping India's FinTech Sector: EditionII

Figure 3: Innovative solutions by FinTech

The *Wind of Change* trend (2022) highlights the need for sector-specific FinTech solutions. Retailers, as shown in Figure 3, can leverage UPI-based transactions and QR code scanning,

benefiting tier 2+ categories like small enterprises and farmers. Vernacular assistance, WealthTech trading solutions, and microinsurance services help integrate previously unreached market segments into the mainstream.

Most rural Indians have limited IT education, making them vulnerable to digital risks. An ideal FinTech payment platform should be transparent, leveraging AI for real-time data management. Paytm, RuPay, and BHIM, after turning profitable, have significantly expanded online payments in rural areas. However, the rise in internet users has led to increased fraud and cybercrime. As digital transactions grow, businesses accepting online payments must strengthen security by adhering to PCI guidelines to protect users and ensure safe transactions.

VIEW POINT OF TECHNOLOGY IN FINANCIAL INCLUSION

Financial inclusion faces two major challenges: the unbanked population and financial service providers. Limited financial literacy and education restrict access, making informal credit systems more attractive. IT serves as a bridge, helping banks reduce costs through ICT. ATMs have transformed banking supply chains by cutting costs, while online transactions remain cheaper than handling physical cash. Banks are expanding internet banking for SMEs and cooperatives and using rural kiosks to enhance digital transactions. Mobile banking lowers infrastructure costs without requiring additional investment from users. Financial institutions are leveraging technologies like GIS and GPS to improve accessibility, making digital banking more efficient and inclusive.

By using mobile-based technologies like GPS and GPRS, these banks can track their BCs and provide guidance as needed. The core banking system (CBS) connects all branches,

allowing customers to transact from any branch. It supports the "Anywhere, Any-Time" banking concept, enhancing convenience. Additionally, NEFT enables seamless electronic fund transfers between bank branches nationwide.

FinTech holds immense potential in rural India. As awareness grows, its reach will expand even to remote areas. Many expect the government to leverage FinTech 2.0 fully. By 2024, both urban and rural regions will see significant growth, though eventually, the scope may narrow, as seen in urban areas.

SCOPE FOR FUTURE WORK

FinTech has immense potential in rural India, driven by rising smartphone usage and government initiatives. As adoption grows, it will reach even the most remote areas, improving financial inclusion. Advanced technologies like AI and blockchain will enhance security and accessibility, while vernacular support and biometric authentication will build trust. Though FinTech has transformed urban finance, its rural expansion will empower small businesses and local economies. However, challenges like digital illiteracy and cybersecurity risks must be addressed. With continuous innovation and strong policies, India's FinTech sector is poised for significant growth, driving nationwide economic development.

CONCLUSION

Ensuring security in India's rapidly digitalizing economy is a major challenge. To address cybersecurity vulnerabilities, a centralized cyber control system is essential, especially for safeguarding sensitive citizen data. A tailored regulatory strategy is needed for each product. Rural financial inclusion is advancing through partnerships between conventional banks and FinTech firms, boosting trust in financial institutions. Embracing cutting-edge technology has

become crucial. Since 2015, India has added nearly 330 billion people to the formal financial sector, making it a promising field for future research. The surge in internet users calls for a robust cyber defense system, as cyberattacks have disrupted economic plans and monetary policy, causing financial losses.

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