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## Fintech Inclusion: Emerging Technologies Reshaping Undeserved Communities

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**Dr. Ablin Joanes Carneiro Alphonso**

*Associate Professor And Head, Department Of Economics*

*Institution: R. D. & S. H. National College, Bandra West, Mumbai-400 050*

**Corresponding Author – Dr. Ablin Joanes Carneiro Alphonso**

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### **Abstract:**

*The rapid advancement of financial technology (FinTech) is transforming traditional banking, fostering a digital revolution in financial services. Emerging technologies such as artificial intelligence (AI), blockchain, big data analytics, and cloud computing are enhancing efficiency, accessibility, and security in banking systems. In the Indian context, Prime Minister Narendra Modi's vision of Azadi Ka Amrit Mahotsav, celebrating 75 years of independence, emphasizes innovation, financial inclusion, and a self-reliant (Atmanirbhar) digital economy. Government initiatives such as Unified Payments Interface (UPI), Aadhaar-enabled payment systems, and digital lending platforms are key drivers of this transformation. FinTech is democratizing access to banking services, empowering small businesses, and fostering economic growth in line with Viksit Bharat 2047—a roadmap for a developed India by acknowledging the undeserved communities. While FinTech brings immense opportunities, challenges such as cybersecurity risks, regulatory frameworks, and financial literacy remain crucial considerations. This paper explores how emerging technologies are reshaping banking, their impact on traditional financial institutions, and their role in realizing India's vision of a technologically advanced and financially inclusive economy for undeserved communities.*

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**Keywords: Artificial Intelligence, Blockchain Technology, Disruption, Digital Banking, Undeserved Communities**

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### **Introduction:**

FinTech is a combination of the words “financial” and “technology” describing the use of technology to deliver financial services and products to consumers. This could be in the areas related to finance such as banking, insurance, investment. Fin Tech requires the use of software, mobile applications and other technologies to improve and automate the traditional forms of finance for business and consumers. The vision of Viksit Bharat 2047, the Indian roadmap to becoming a developed nation strongly aligns with the FinTech revolution, transforming the financial sector through digital innovation. FinTech is playing a crucial role for accelerating the Indian economic growth, in terms of financial inclusion of undeserved communities.

Key areas FinTech advancements contribute to Viksit Bharat 2047:

- 1) Financial Inclusion for All
- 2) Empowering MSMEs and Startups
- 3) Cashless Economy & Transparency
- 4) AI and Blockchain for Secure Transactions
- 5) Employment & Skill Development
- 6) Smart Governance & Digital Public Infrastructure
- 7) Global Leadership in Digital Finance
- 8) Rural and Agricultural Transformation

- 9) Cybersecurity & Data Protection
- 10) A Roadmap to a \$5 Trillion Economy

FinTech is a cornerstone of Viksit Bharat 2047, enabling a digitally empowered, financially inclusive, and globally competitive India. By leveraging technology, financial innovation, and regulatory support, India is poised to become a world leader in digital finance, ensuring economic prosperity for.

Table 1 highlights the integral role of FinTech in advancing India's journey toward becoming a developed nation by 2047, aligning with the strategic objectives of Viksit Bharat 2047.

**Table 1: Corelation Between Vision Of Vikist Bharat 2047 And Fintech Sector**

CRITERIA	OUTCOME
Market Growth	\$145.09 billion in 2025 to \$550.21 billion by 2030, reflecting a Compound Annual Growth Rate (CAGR) of 30.55%.
Segment Expansion	Lending segment of India's FinTech market generated revenues of \$8 billion
Investment Trends	Attracted more than \$20 billion in funding, accounting for 21% of the total investment in the startup ecosystem
Global Standing	FinTech ecosystem ranks as the third-largest and one of the fastest-growing globally, with revenues surging to \$25 billion in 2023: a 56% year-on-year increase
Digital Payments	Digital payment landscape, processing over 3,700 transactions per second as of 2024, making it the most utilized alternative payment method worldwide
Financial Inclusion Initiatives	Synergy between platforms like the Open Network for Digital Commerce (ONDC) and the Account Aggregator (AA) framework aims to revolutionize financial services for Micro, Small, and Medium Enterprises (MSMEs) by enhancing data availability, improving credit accessibility, and promoting financial inclusion

### Scope and Trends: Financial Inclusion and Fin Tech:

Fintech is important in India as it can enhance public trust in digital India to catalyse the country's economic growth with better security products. These technologies are transforming how financial services are delivered, making them more accessible, efficient, and secure.

Fintech is rapidly expanding in emerging markets, driven by increasing smartphone penetration and internet access. Fintech includes different sectors and industries such as education, retail banking, fundraising, investment management and also includes the development and use of cryptocurrencies, such as Bitcoin.

The main goal of FinTech services is that it is more accessible, affordable, and personalized. By automating mundane tasks, providing data-driven insights, and creating innovative products, Fintech is redefining the way we manage our money as identified in Table 2.

**Table 2: Five Key Technologies Driving Fin Tech**

Technology	Description	Applications
Artificial Intelligence (AI)	Enables data-driven decision-making, predictive analytics, and personalized financial services.	Credit scoring, fraud detection, robo-advisors, chatbots.
Blockchain	Provides secure, transparent, and tamper-proof systems for transactions and data sharing.	Cryptocurrencies, smart contracts, cross-border payments, decentralized finance (DeFi).
Cloud Computing	Offers scalable, cost-efficient infrastructure for storing and	SaaS solutions, real-time data processing, mobile banking.

	processing financial data.	
Application Programming Interfaces (APIs)	Enables seamless integration between different financial platforms and services.	Open banking, embedded finance, payment gateways.
Biometric Technology	Enhances security and simplifies customer authentication.	Aadhaar-based KYC in India, facial and fingerprint recognition for payments.

### Emerging Technologies Reshaping Traditional Banking: Historical Background:

The FinTech ecosystem in India is diverse and comprises several key players who contribute to the growth, innovation, and development of the sector as seen in Table 3.

**Table 3: Historical Development Of Fin Tech In India**

Period	Key Developments in FinTech in India
1960s - 1980s	Banking Digitization Begins: Introduction of mainframe computers in banks and establishment of the National Payment Corporation of India (NPCI)
1990s	Liberalization Era: Economic reforms (1991) led to a boost in financial services - First ATMs and credit cards introduced
2000 - 2010	Digital Payment Platforms: Rise of online banking NEFT introduced in 2005, RTGS in 2004, and mobile banking emerges
2010 - 2016	Rise of Mobile Wallets & Startups: Entry of platforms like Paytm (2010); Aadhaar and e-KYC enabled easier onboarding processes
2016 - 2019	Demonetization Impact: Surge in digital payment adoption; UPI (Unified Payments Interface) launched in 2016; BharatQR and FASTag introduced
2020 - Present	Digital Acceleration: COVID-19 boosts contactless and digital payments; rise of neo-banking and fintech innovations in lending, insurance (InsurTech), and wealth management (WealthTech)

### Review of Literature:

A comprehensive review of studies reveals the multifaceted role of financial technology in advancing India's "Viksit Bharat" vision for 2047 that highlight FinTech's contributions to financial inclusion, economic growth, and social development.

A study published in the Journal of Innovation and Economic Research explores how FinTech innovations drive financial inclusion and economic progress in India. The research emphasizes the transformative potential of FinTech in achieving multiple developmental goals for sustainable development and inclusiveness of the underserved communities.

A report by PwC India discusses the critical role of the financial services sector in shaping India's economic landscape to realize the Viksit Bharat vision. It underscores the importance of empowered citizens, efficient connectivity, advanced digital infrastructure, and a supportive regulatory framework.

Another report by PwC India highlights how FinTech is powering India's journey toward a \$5 trillion economy by fostering innovation. It discusses the government's visionary initiative 'Viksit Bharat 2047' and the role of technology in democratizing financial services.

A paper by NITI Aayog presents a vision of a developed India in 2050, focusing on fast catch-up growth and utilizing global opportunities. It discusses the importance of unshackling job creators and empowering growth drivers to achieve this vision.

A study titled "From Cash to Cashless: UPI" Impact on Spending Behavior among Indian Users" investigates how the Unified Payments Interface (UPI) has influenced individual spending habits. The research finds that a significant percentage of users reported increased spending due to UPI, highlighting the platform's impact on consumer behavior.

Collectively, these studies underscore the pivotal role of FinTech and related technological innovations in driving India's development agenda, aligning with the nation's aspirations for 2047.

### Research Methodology:

The financial technology (FinTech) revolution has disrupted traditional banking and financial services through the adoption of emerging technologies such as blockchain, artificial intelligence (AI), big data analytics, and cloud computing. This research aims to analyze the impact of FinTech on traditional financial models, assess its benefits and risks, and evaluate how emerging technologies drive innovation and financial inclusion.

### Objectives:

1. To examine the role of emerging technologies in the FinTech sector
2. To analyze how FinTech improves financial accessibility and efficiency for the underserved communities
3. To assess the challenges posed by FinTech adoption
4. To study regulatory frameworks governing FinTech advancements
5. To evaluate the future growth prospects of FinTech in developing economies

### Hypothesis:

1. FinTech advancements contribute positively to financial inclusion and economic growth
2. Emerging technologies significantly enhance the efficiency and accessibility of financial services
3. Hypothesis 1: FinTech advancements contribute positively to financial inclusion and economic growth
4. FinTech advancements contribute positively to financial inclusion and economic growth

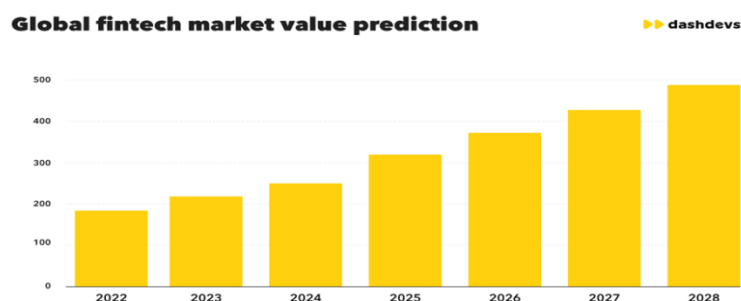
The FinTech ecosystem in India is diverse and comprises several key players who contribute to the growth, innovation, and development of the sector. These players include financial institutions, technology providers, regulators, and start-ups that collaborate to drive the future of financial services. Below is a breakdown of the key players in the FinTech industry ecosystem in India as identified in Table 4.

**Table 4: Key Players In Fintech Indian Ecosystem**

Category	Key Players	Role in the Ecosystem
1. Digital Payments Platforms	- Paytm - PhonePe - Google Pay - Amazon Pay - BharatPe	Provide digital wallets, mobile payment solutions, and QR-based payments.
2. Banks and Financial Institutions	- State Bank of India (SBI) - HDFC Bank - ICICI Bank - Axis Bank	Traditional banks adopting digital solutions, offering online banking and lending services.
3. Payment Gateways	- Razorpay - Citrus Pay - Instamojo	Provide infrastructure for online payments and secure transaction processing for businesses and consumers.

	- PayU	
4. Lending Platforms	- Lendingkart - MoneyTap - KreditBee - Indifi	Offer digital loans and credit services to consumers and small businesses.
5. InsurTech (Insurance Technology)	- PolicyBazaar - Acko - Digit Insurance - BimaPe	Leverage technology to offer affordable, personalized, and accessible insurance products.
6. WealthTech	- Groww - Zerodha - Upstox - ETMoney	Provide platforms for digital investments, stock trading, and portfolio management.
7. Blockchain and Cryptocurrency	- WazirX - CoinDCX - Unocoin - Polygon	Enable cryptocurrency trading and blockchain-based solutions for secure transactions.
8. Regulatory Bodies	- Reserve Bank of India (RBI) - Securities and Exchange Board of India (SEBI) - NPCI	Set regulations, guidelines, and infrastructure for secure and efficient functioning of the FinTech industry.
9. Technology Providers	- Tata Consultancy Services (TCS) - Infosys - Tech Mahindra - Wipro	Provide technology infrastructure, software solutions, and IT services for FinTech companies.
10. Venture Capitalists & Investors	- Sequoia Capital - Accel - Tiger Global - SoftBank	Fund and support growth-stage FinTech startups, helping them scale and innovate.
11. Regulatory Technologies (RegTech)	- Signzy - Perfios - IDfy	Offer technology solutions to help financial institutions comply with regulatory requirements efficiently.
12. NeoBanks	- Jupiter - Fi - Niyo	Digital-first, branchless banks providing a range of financial services, from savings to investments.

**Figure 1: Global Fin Tech Market Value Prediction**



Source: Expert Market Research (2024), Best Business Models to choose for Fin Tech Startups in 2024

<https://encryptedtbn0.gstatic.com/images?q=tbn:ANd9GcTzswC5GRfhD7uW98MSdwd41i8Flmr gVuItPw&s>

**Table 5: Global Financial Ecosystem and Fin Tech Adoption**

Region	Total Investment in Fin Tech (2021)	Key Markets	Fin Tech Adoption Rate (%)	Key Players/Companies
North America	\$91.5 Billion	USA, Canada	88%	PayPal, Square, Stripe, Robinhood
Europe	\$65.4 Billion	UK, Germany, France	80%	Revolut, TransferWise (Wise), N26
Asia-Pacific	\$38.4 Billion	China, India, Singapore	85%	Ant Group, Alipay, Paytm, Razorpay
Latin America	\$7.2 Billion	Brazil, Mexico, Argentina	75%	Nubank, Mercado Libre, PagSeguro
Middle East	\$4.1 Billion	UAE, Saudi Arabia, Egypt	70%	Network International, Rain, YAP

Source: PwC Fin Tech Reports, Statista, Global Fin Tech Survey 2022

According to a report by Grand View Research, the global Fin Tech market size was valued at \$112.5 billion in 2021 and is expected to expand at a (CAGR) of 23.8 percent from 2022 to 2030. This growth as observed in Table 5 as well as in Figures 1 is largely driven by the increasing adoption of digital payments, the rise of online lending, and the growing need for financial inclusion.

Hypothesis 2: Emerging technologies significantly enhance the efficiency and accessibility of financial services

The FinTech ecosystem in India is composed of several business models, each addressing specific segments of the financial services industry. An overview of key FinTech business models are identified in Table 6.

**Table 6: Fintech Business Models Ecosystem**

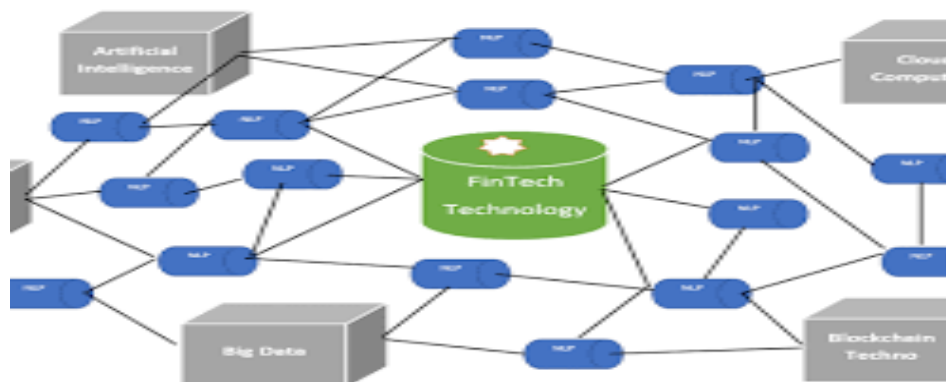
Business Model	Description	Examples
1. Digital Payments	Focuses on facilitating digital transactions between consumers, businesses, and financial institutions	UPI (Unified Payments Interface), Paytm, Google Pay, PhonePe
2. Peer-to-Peer (P2P) Lending	Allows individuals to lend and borrow money directly without the involvement of traditional banks, often facilitated through digital platforms	LendingClub, Faircent, PeerLend
3. Crowdfunding	A platform where individuals or businesses can raise small amounts of money from a large number of people, often through online platforms	Ketto, Milaap, ImpactGuru
4. Online Lending & Microfinance	Provides digital loans to individuals, small businesses,	

The FinTech ecosystem is a complex network of interconnected players, including:

- FinTech Startups: Innovative companies disrupting traditional finance.
- Traditional Financial Institutions: Banks, insurance companies, and investment firms adapting to the digital age
- Technology Providers: Companies offering the technology infrastructure for FinTech solutions
- Regulators: Government agencies overseeing the FinTech industry

- Investors: Venture capital firms and other investors funding FinTech startups
- Consumers: Individuals and businesses benefiting from FinTech innovations
- Key Trends Shaping the FinTech Landscape:
  - Artificial Intelligence (AI) and Machine Learning: AI-powered tools are enhancing fraud detection, risk assessment, and customer service.
  - Blockchain Technology: Blockchain offers secure and transparent solutions for various financial applications.
  - Open Banking: Open banking initiatives are promoting data sharing and innovation.
  - Mobile-First Approach: Mobile devices are becoming the primary channel for financial services.
  - Cybersecurity: Protecting sensitive financial data remains a top priority.
- By understanding the diverse business models and the dynamic ecosystem, we can appreciate the transformative impact of FinTech on the global financial landscape.

**Figure 2: Fintech Ecosystem**



Source: Fintech in India – Powering a Digital Economy, Nasscom <https://nasscom.in> › product

**Table 8: Growth Of Fin Tech In India Through Digital India And Financial Inclusion (2015-2023)**

Year	Digital Payments Transactions (Billion INR)	Number of Mobile Banking Users (Million)	Fin Tech Market Size (Billion USD)	Number of Fin Tech Startups	Key Drivers
2015	25.5	100	1.2	350	Demonetization, UPI Launch
2016	36.8	120	1.5	400	Digital India Initiative
2017	49.3	160	1.8	500	Government Initiatives
2018	62.8	200	2.2	700	Smartphone Adoption
2019	85.4	250	2.8	850	Digital Infrastructure
2020	110.3	350	3.5	1,200	COVID-19 Impact, Digital Push
2021	140.2	450	5.0	1,500	Post-Pandemic Digital Transformation
2022	180.7	520	7.5	2,000	Expansion in Tier 2/3 Cities
2023	210.5	600	10.0	2,500	Increasing Investor Interest

Source: National Payments Corporation of India (NPCI), RBI Reports, Fin Tech Market Report

**Research Findings:**

The Economic Survey 2024 - 2025 provides insights into India's strategic approach to achieving the "Viksit Bharat" vision by 2047, emphasizing the role of financial technology ( in this journey. The following are the important areas:

- (a) **Economic Growth and FinTech Integration:** The Survey underscores the necessity of sustaining an 8 percent annual growth rate to realize the Viksit Bharat vision. It highlights the importance of systemic deregulation and improving the business environment to foster innovation and investment, areas where FinTech can play a pivotal role.
- (b) **Balancing Financialization:** While acknowledging the benefits of financial sector growth, the Survey cautions against excessive financialization, which has posed risks in advanced economies. It advocates for a balanced approach, ensuring that the expansion of financial services, including FinTech, aligns with economic stability and national growth objectives.
- (c) **Regulatory Reforms and Impact Assessment:** The Survey recommends that financial regulators, such as the Reserve Bank of India and the Securities and Exchange Board of India, implement formal processes to assess the impact of their regulations. This includes establishing internal Regulatory Impact Assessment (RIA) agencies to enhance transparency and responsiveness, which is crucial for the evolving FinTech landscape.
- (d) **Public-Private Partnerships in Infrastructure:** To meet the Viksit Bharat objectives, the Survey emphasizes the need for private investment in critical sectors through public-private partnerships (PPPs). FinTech companies can contribute significantly by providing innovative financial solutions to fund and manage infrastructure projects, thereby accelerating development.
- (e) **Environmental Sustainability and FinTech with special emphasis on the Underserved Communities:** Aligning with the Viksit Bharat 2047 goal of combining economic growth with carbon neutrality, the Survey highlights initiatives like the LiFE scheme and the National Adaptation Plan. FinTech can support these efforts by facilitating green financing and promoting sustainable investment practices.

In summary, the Economic Survey 2024-25 identifies FinTech as a key enabler in India's pursuit of becoming a developed nation by 2047. It calls for a balanced and well-regulated approach to financial innovation, ensuring that growth in the FinTech sector contributes to broader economic and social objectives.

India's Fin Tech sector faces numerous challenges, despite its rapid growth. Some of the key challenges faced by Fin Tech companies and users in India are related to the dynamic nature of Fin Tech wherein, rapid technological advancements require real time data collection and analysis. Data accessibility and consumer behavior variability are other major problems affecting the Fin Tech sector. Similarly, cyber security and regulatory compliance remain significant hurdles.

**Conclusion:**

FinTech innovations are reshaping India's economic landscape by enhancing financial inclusion and promoting sustainable growth. The financial services sector is crucial in realizing the Viksit Bharat 2047 vision. Key pillars include empowered citizens, efficient connectivity, cutting-edge digital infrastructure, and a robust regulatory framework that encourages innovation while ensuring sustainable progress. These elements collectively aim to transform India into a modern and developed nation. A robust digital infrastructure is fundamental to achieving the Viksit Bharat vision. It propels economic growth, inclusion, and positions India for global



leadership. The alignment of vision, policy, and innovation in building this infrastructure serves as a blueprint for progress.

The 2025-26 budget emphasizes inclusive growth, digital empowerment, and financial accessibility, aligning with the vision of creating next-generation FinTech solutions. These initiatives aim to bridge gaps, simplify processes, and unlock new growth opportunities for businesses and individuals

Continuous innovation in financial services, driven by FinTech, is essential for achieving the goals of Viksit Bharat. Embracing new technologies and business models will facilitate economic growth and development by including the underserved communities.

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