International Journal of Research in Finance and Management

P-ISSN: 2617-5754
E-ISSN: 2617-5762
IJRFM 2025; 8(1): 639-649
www.allfinancejournal.com
Received: 14-03-2025
Accepted: 16-04-2025

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FinTech and digital transformation in the banking sector: A systematic literature review

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DOI: https://www.doi.org/10.33545/26175754.2025.v8.i1g.486

Abstract
The transformation of the banking sector through financial technology (FinTech) has reshaped traditional financial services, offering innovative, efficient, and customer-centric solutions. This systematic review examines 20 papers (2019-2025) focused on FinTech adoption, blockchain integration, digital currency, mobile payments, green finance, and regulatory innovations in banking, with a particular emphasis on the Indian context. It analyses key themes such as customer trust and technology acceptance, the role of digital literacy, organizational agility, regulatory sandboxes, and sustainable finance practices. The review highlights common methodologies including structural equation modelling, confirmatory factor analysis, and panel regression, while also examining the use of case studies such as neo-banking platforms and the collapse of U.S. banks influencing FinTech investment trends. Findings underscore the importance of perceived usefulness, trust, and facilitating conditions in driving adoption, alongside the challenges of cybersecurity, regulatory adaptation, and market readiness. This review offers actionable insights for policymakers, practitioners, and researchers aiming to navigate the evolving FinTech ecosystem and enhance the resilience and inclusivity of the banking sector.

Keyword: FinTech, Banking sector, Financial technology

Introduction
The intersection of financial technology (FinTech) and traditional banking system has emerged as a pivotal force reshaping the global financial landscape. FinTech has revolutionized the delivery, accessibility, and regulation of financial services, driving a fundamental transformation in banking operations, consumer interactions, and risk management frameworks (Arner *et al*., 2016) [2]. This technological evolution has gained pronounced significance in the Indian context, where a unique socio-economic backdrop marked by a large underbanked population, widespread mobile penetration, and a robust policy thrust towards digital financial inclusion—has positioned the country as a dynamic hub for FinTech innovation (RBI, 2021; World Bank, 2022).

India's FinTech sector has experienced remarkable growth over the past decade, propelled by its demographic advantages, proactive regulatory mechanisms, and pioneering digital public infrastructure. Key government-led initiatives such as Aadhaar, the Unified Payments Interface (UPI), Bharat Interface for Money (BHIM), and the Pradhan Mantri Jan Dhan Yojana have laid a strong foundation for technology-driven financial inclusion (Mehta & Singh, 2021) [18]. As of 2023, India boasts over 2,000 active FinTech firms spanning domains such as digital payments, lending platforms, wealth-tech, insure-tech, and regulatory technology (RegTech) (Invest India, 2023). These developments have had a profound impact on the operational models of Indian banks, enhancing efficiency, reducing costs, and fostering greater customer engagement (Ghosh, 2020) [8].

Globally and within India, the FinTech revolution is marked not merely by competition with traditional banks but by growing collaboration. Financial institutions provide regulatory legitimacy, financial stability, and institutional expertise, while FinTech firms offer agility, customer-centric innovations, and cutting-edge digital platforms (Gomber *et al*., 2018; Zetzsche *et al*., 2020) [9, 31]. Emerging collaborative models such as Banking-as-a-Service (BaaS), neo-banking partnerships, and co-lending frameworks are becoming increasingly prevalent in India's financial ecosystem.

However, the digital transformation journey is not without risks. Key concerns include data security, regulatory arbitrage, operational fragmentation, and consumer privacy—issues that necessitate robust institutional and regulatory responses (FSB, 2022). The accelerated digitalisation of banking services has been accompanied by a sharp rise in technology-enabled fraudulent activities, marked by increasing sophistication and complexity. Recent data from the Reserve Bank of India (RBI) indicates a staggering 708% increase in digital fraud cases over the past two years, reflecting the intensifying vulnerabilities within the digital financial landscape (Kamal *et al*., 2025) [14]. In response, the Reserve Bank of India (RBI) has introduced regulatory innovations such as the Account Aggregator framework and the FinTech Sandbox, signalling a commitment to fostering innovation while ensuring systemic stability (RBI, 2019). These frameworks aim to balance the dual imperatives of financial innovation and consumer protection, thereby shaping a more resilient and inclusive financial architecture.

This systematic literature review seeks to critically examine the evolving interface between FinTech and the banking sector, with a particular emphasis on the Indian context. The review consolidates insights from academic research, policy reports, and industry studies to explore the drivers of FinTech adoption, its impact on operational efficiency and financial inclusion, and the challenges institutions face in implementation. Methodological approaches used in evaluating FinTech integration are analysed, alongside case studies that illustrate both successful deployments and persistent hurdles. This study aims to contribute to the broader discourse on digital transformation in banking by offering a nuanced understanding of how FinTech is reshaping the sector. It highlights key trends, regulatory responses, and innovation trajectories, while also identifying research gaps and proposing directions for future inquiry. Ultimately, the review aspires to inform policymakers, scholars, and industry stakeholders seeking to build sustainable, inclusive, and tech-driven financial systems in an era of rapid digital change.

The purpose of this systematic review is articulated through the following objectives.

Objectives

1. To identify and categorize key themes and technological trends shaping the adoption of FinTech in the banking sector.
2. To examine the research methodologies and analytical techniques used to evaluate FinTech adoption, customer behaviour, and operational impact in banking, with a focus on India.
3. To assess the benefits, challenges, and limitations of FinTech integration as reported in empirical studies, including its influence on financial inclusion, sustainability, and institutional agility.
4. To synthesize findings from case studies and highlight research gaps that inform future directions for policy, practice, and academic inquiry in digital banking transformation.

Methodology

A systematic literature review was conducted to identify relevant research on FinTech and the banking sector published from 2017 to 2025. The Scopus database was selected as the primary source due to its comprehensive coverage of peer-reviewed academic publications. The search utilized the keywords “FinTech” and “Banking sector,” which were critical to the focus of this review. Filters were applied to narrow the search results, including timeline range (2017-2025), subject areas (Business Management and Accounting, Economics, Econometrics, and Finance), document type (articles), country (India), language (English), source type (journals), and publication stage (final publications). Initially, 370 papers were identified, which were narrowed down to 20 after applying the filters and inclusion/exclusion criteria.

The inclusion criteria for this review focused on research that specifically examined FinTech and its impact on the banking sector. Studies were required to be peer-reviewed, published between 2017 and 2025, and relevant to FinTech adoption, challenges, technological innovations, or regulatory aspects within the banking sector in India. Only empirical or theoretical journal articles were included, while publications not directly related to the scope of the review were excluded. Studies not published in English or falling outside the designated timeframe were excluded. The data extraction process involved analysing the 20 selected articles to extract key insights regarding FinTech adoption, challenges, and technological advancements within the banking sector in India. Data was gathered on factors influencing adoption, technological innovations such as blockchain and mobile payments, and regulatory frameworks. The data was then subjected to qualitative analysis through thematic analysis, which helped identify recurring themes, trends, and gaps in the literature. The results were categorized into major themes such as adoption drivers, technological innovations, regulatory challenges, and the evolving role of FinTech in the banking sector. This qualitative summary provided an in-depth examination of the current state of FinTech adoption in the Indian banking sector, highlighting key insights and areas for future research.

Table 1: Methodology of Systematic Literature Review Using PRISMA Framework (Source: Created by author adapted from Moher, D *et al*., 2009)

Phase	Description
Identification	A systematic literature review was conducted to identify research on FinTech and the banking sector published from 2017 to 2025. The Scopus database was used as the principal source due to its extensive coverage of peer-reviewed academic publications. Search terms: "FinTech" and "Banking sector."
Screening	**Filters applied** Language: English exclusively. Subject area: Business Management and Accounting, Economics, Econometrics and Finance. Document type: Journal articles. Country: India. Publication stage: Final publications. Initially obtained 370 papers.
Eligibility	**Inclusion criteria** Focus on FinTech and the banking sector. Published between 2017 and 2025. Pertinent to FinTech adoption, technological innovations, regulatory aspects, or challenges in the banking sector in India. Only empirical or theoretical journal papers included. **Exclusion criteria** Research not directly pertinent to the review's scope. Publications not in English or beyond the designated publication timeframe. Final selection resulted in 20 papers.
Included	**Data extraction process** Analysing the chosen 20 articles to extract essential insights regarding FinTech adoption, challenges, and technological advancements in the banking sector in India. Data gathered on factors influencing adoption, emerging technologies such as blockchain, mobile payments, and regulatory frameworks. Qualitative analysis through thematic analysis to discern repeating themes, trends, and gaps in the literature.

Key themes identified

The analysis of the selected literature on FinTech adoption in India highlighted several key themes that have been pivotal in the ongoing transformation of the banking sector. These themes reflect the challenges, innovations, and opportunities that FinTech brings to the traditional banking environment. The following section presents an analysis of the key themes emerging from the literature.

FinTech Disruption

FinTech has been a major disruptor in the financial services sector, significantly altering traditional banking models. The rise of FinTech companies has enabled faster, more efficient financial services, challenging the dominance of traditional banks. This disruption is particularly evident in how these companies leverage technology to reduce costs, enhance customer experience, and offer more accessible financial products. The transformation includes the shift towards digital-first banking models and greater reliance on technological solutions to manage financial operations. Studies have explored how FinTech adoption has impacted the market share of traditional financial institutions, with many banks now scrambling to incorporate digital solutions to stay competitive.

Blockchain & Security

Blockchain technology has emerged as a key component in modernizing banking operations, with applications ranging from transaction processing to building secure, transparent, and efficient systems. The integration of blockchain in the banking sector not only facilitates faster and more secure transactions but also helps in establishing trust, especially in digital payments. Research indicates that blockchain is crucial in reducing fraud risks, improving data privacy, and enabling greater transparency in regulatory frameworks. As banks and financial institutions continue to adopt blockchain, the literature highlights its potential for revolutionizing various aspects of banking, from improving cross-border payments to strengthening regulatory compliance mechanisms.

Digital Currency Adoption

The increasing adoption of digital currencies, including central bank digital currencies (CBDCs), is another significant theme in the literature. These innovations are reshaping monetary policies and customer behaviour, especially in how consumers and businesses handle transactions. The research delves into the effectiveness of digital currencies in enhancing payment systems, their impact on financial inclusion, and their role in modernizing traditional financial systems. However, challenges such as regulatory concerns, security issues, and the overall adoption rate remain central points of discussion.

Mobile Payments & Online Banking

Mobile payments have emerged as one of the most widely used FinTech innovations, especially in regions like India, where the shift towards digital banking has been accelerated in recent years. The literature highlights the growing adoption of mobile payment solutions, driven by factors such as the ease of use, accessibility, and the rise of smartphones. Customer readiness and adoption intention are major factors influencing this shift, with studies emphasizing the need for mobile services to be designed to cater to diverse customer needs. Online banking, coupled with mobile payment systems, has also been crucial in improving the overall customer experience by providing seamless and instant access to financial services.

Green Finance & ESG Integration
A significant trend in the FinTech landscape is the growing integration of environmental, social, and governance (ESG) factors into financial decision-making processes. Green FinTech has played an important role in promoting sustainable banking by enabling investments in environmentally friendly projects and facilitating the issuance of green bonds. The literature emphasizes the importance of incorporating ESG principles into investment strategies and banking operations to support sustainable economic development. Green finance initiatives are seen as essential for mitigating climate change and supporting the transition to a low-carbon economy.

Neo-banking & Digital Banks
Neobanks, or digital-only banks, have emerged as formidable competitors to traditional banks. These institutions operate entirely online, leveraging technology to offer banking services with reduced overhead costs. Studies on neo-banking indicate that these institutions have captured a significant portion of the market by offering tailored, tech-driven services that appeal to digitally savvy consumers. They are not only a disruptive force but also serve as a catalyst for traditional banks to innovate their service offerings. The competitive influence of neobanks is reshaping customer expectations and driving innovation in the banking sector.

Regulatory Technology (RegTech)
As FinTech continues to evolve rapidly, there is a growing emphasis on the need for regulatory technology (RegTech) to help banks and financial institutions manage regulatory compliance. The use of regulatory sandboxes, where financial services are tested in controlled environments before full deployment, is a prominent feature of many of the studies reviewed. These sandboxes allow for experimentation with new technologies and business models while ensuring that regulatory frameworks can adapt to rapid technological advancements. RegTech is also helping financial institutions manage risk, automate compliance processes, and mitigate financial crime, all of which are crucial for maintaining trust in the financial system.

Financial Inclusion
One of the key advantages of FinTech is its potential to promote financial inclusion, particularly in underserved and rural areas. Digital payment systems, mobile banking, and alternative lending platforms have made it easier for individuals and small businesses without access to traditional banking services to participate in the financial ecosystem. The literature reveals that FinTech has expanded financial access, providing previously unbanked populations with essential services such as savings accounts, loans, and insurance. However, challenges remain, such as digital literacy and infrastructure gaps, which must be addressed to fully harness the potential of FinTech for financial inclusion.

Market Stability & Competition
The rise of non-banking financial companies (NBFCs) and other FinTech firms has increased competition in the banking sector. While this has led to greater innovation and more diverse financial products, it has also raised concerns about market stability. Studies suggest that the intense competition between traditional banks, NBFCs, and FinTech firms is reshaping the dynamics of the financial sector. The need for regulatory oversight to ensure the stability of the financial system while promoting innovation is a recurring theme. Balancing competition with financial stability remains a critical challenge for regulators in India and globally.
These key themes reflect the significant changes occurring in the banking sector due to FinTech innovations. They highlight the transformative potential of FinTech, the challenges it poses to traditional banking, and the emerging opportunities for financial institutions and consumers alike.

Table 2: Key Themes Identified

Theme	Description
FinTech Disruption	Influence of FinTech on traditional banking models and market share.
Blockchain & Security	Applications of blockchain in transaction processing, regulatory frameworks, and trust building.
Digital Currency Adoption	Focused on effectiveness, impact on customer behaviour, and monetary policy.
Mobile Payments & Online Banking	Customer readiness, adoption intention, and mobile service design.
Green Finance & ESG Integration	Green FinTech's role in sustainable banking and investments.
Neo-banking & Digital Banks	Emergence of neobanks and their competitive influence on legacy banks.
Regulatory Technology (RegTech)	Role of sandboxes and governance to accommodate rapid FinTech evolution.
Financial Inclusion	FinTech's contribution to expanding financial access in rural and underserved regions.
Market Stability & Competition	Effect of competition from NBFCs and FinTech firms on bank stability and innovation.

Descriptive Analyses
This systematic literature review presents a comprehensive overview of current trends, empirical findings, and research gaps related to FinTech adoption and digital transformation within the Indian banking sector. Drawing from 20 peer-reviewed journal articles published between 2017 and 2025, the selected studies span a variety of reputable journals focused on finance, business management, information systems, and sustainability—reflecting robust academic engagement with the convergence of technology and financial services. The literature explores a diverse range of themes including mobile payments, blockchain applications, neo-banking, green finance, and regulatory frameworks, primarily within the Indian context. Collectively, these studies provide valuable insights into how emerging technologies, demographic shifts, and institutional reforms are reshaping traditional banking operations and customer engagement models.

Relevant Journals
The reviewed literature spans a wide range of journals, each focusing on distinct themes related to FinTech adoption in

the banking sector. The journals provide valuable insights into how various aspects of FinTech, such as blockchain, digital banking, and green finance, are shaping the future of the financial industry. The following presents a concise summary of the key themes identified across these journals.

International Journal of Business and Globalisation
This journal has contributed to understanding the intersection of blockchain, FinTech policy, and corporate banking. Research published here highlights the growing role of blockchain in reshaping financial transactions, particularly in the context of corporate banking. It discusses how blockchain can increase transparency and reduce transaction costs, while also exploring the regulatory implications that come with the adoption of this technology. The journal emphasizes the need for clear FinTech policies to foster innovation while managing associated risks.

International Journal of Financial Studies: A significant theme emerging in this journal is the application of the Unified Theory of Acceptance and Use of Technology (UTAUT) in understanding the adoption of blockchain technology. The studies in this journal examine the factors influencing the adoption of blockchain in financial institutions and its integration into banking systems. The UTAUT framework offers a useful lens to understand customer acceptance, technology readiness, and organizational factors that drive blockchain adoption in financial services.

Technological Forecasting and Social Change: This journal provides a forward-looking perspective on blockchain technology, particularly in terms of its perceived benefits. Research in this area explores how blockchain can enhance data security, reduce fraud, and streamline operations in the financial sector. The journal also examines the broader societal impacts of blockchain, focusing on its potential to revolutionize financial systems and enable more efficient and secure transactions globally.

Managerial Finance: Green FinTech and Environmental, Social, and Governance (ESG) integration is a central theme in *Managerial Finance*. The journal highlights the role of FinTech in advancing sustainable banking practices, particularly through green bonds, eco-friendly investment portfolios, and responsible lending. It discusses how financial institutions can integrate ESG principles into their digital finance solutions, promoting both sustainability and profitability.

Information and Computer Security: Focusing on mobile payments and technology acceptance, *Information and Computer Security* explores the challenges and opportunities posed by mobile payment systems. It covers the security implications of mobile transactions, the role of digital identity, and how customer trust can be built in mobile payment technologies. The journal is pivotal in understanding the security challenges that come with the widespread adoption of mobile banking solutions.

Competitiveness Review: The Competitiveness Review examines the competitive landscape within the banking sector, focusing on how FinTech innovations affect financial stability. Studies discuss the implications of increased competition between traditional banks and FinTech firms, with a particular emphasis on market stability. The journal highlights the role of new entrants, such as non-bank financial companies (NBFCs) and FinTech startups, in reshaping the competitive dynamics of the banking industry.

Emerald Emerging Markets Case Studies: In this journal, the focus shifts to the role of venture capital in supporting FinTech startups, particularly in emerging markets like India. Research covers the growth of neo-banking and its competitive influence on traditional banks. The journal explores the rise of digital-only banks, their unique value propositions, and their ability to offer personalized banking experiences, challenging established banking models.

Journal of Sustainable Finance and Investment: The *Journal of Sustainable Finance and Investment* emphasizes the growing importance of blockchain in promoting sustainability within financial services. The journal explores how blockchain technology is used to ensure transparency in sustainable investments, reduce carbon footprints, and support green finance initiatives. Research in this journal illustrates how blockchain can support sustainable investment practices by tracking the environmental and social impacts of financial transactions.

Banks and Bank Systems: The theme of human resources (HR) and employee empowerment in the context of digital banking is central to the *Banks and Bank Systems* journal. It explores how the digitalization of banking services is impacting bank employees and the organizational culture within financial institutions. Studies here look at employee training, the shift to digital skill sets, and the role of HR in fostering a culture of innovation within banks.

International Review of Financial Analysis: Finally, *International Review of Financial Analysis* examines market signals, particularly following major bank failures. Research in this journal investigates the role of market signals in predicting and responding to financial crises. The journal explores how the failure of financial institutions impacts market stability and the regulatory measures needed to mitigate such risks. It also provides insights into how the banking sector can better adapt to evolving challenges and maintain resilience in the face of disruptions.

The diverse themes identified across these journals demonstrate the multidimensional nature of FinTech adoption in the banking sector. The journals cover a broad spectrum, ranging from technological innovations like blockchain and mobile payments to the more social and regulatory aspects of FinTech, such as financial inclusion and market stability. These research findings provide a comprehensive understanding of the ongoing changes in the financial landscape and offer insights into both the challenges and opportunities presented by the rapid evolution of digital finance.

Table 3: Journals Table

Journal Title	Notable Themes
International Journal of Business and Globalisation	Blockchain, FinTech policy, corporate banking
International Journal of Financial Studies	Blockchain adoption via UTAUT
Technological Forecasting and Social Change	Perceived benefits of blockchain
Managerial Finance	Green FinTech, ESG
Information and Computer Security	Mobile payment and technology acceptance
Competitiveness Review	Bank competition and financial stability
Emerald Emerging Markets Case Studies	FinTech venture capital, neo-banking
Journal of Sustainable Finance and Investment	Blockchain and sustainability
Banks and Bank Systems	HR, employee empowerment in digital banking
International Review of Financial Analysis	Market signals post bank failures

Methodologies Employed in the Reviewed Literature

The studies included in this systematic review employed a variety of research methodologies, reflecting the diverse nature of FinTech adoption in the banking sector and its impact on financial systems. Each methodology has been strategically used to address different research questions and to provide insights into specific aspects of the financial industry's digital transformation.

Quantitative surveys emerged as the most common research method in the reviewed studies. These surveys typically used structured questionnaires with Likert-scale responses, allowing researchers to gather data on user perceptions, intentions, and behaviours regarding FinTech adoption. This methodology was particularly effective in exploring customer readiness, technology acceptance, and the impact of FinTech solutions such as mobile payments and blockchain. The large sample sizes and statistical power of these surveys enabled robust generalizations about consumer behaviour and attitudes in the context of digital banking.

Structural Equation Modelling (SEM), including Partial Least Squares SEM (PLS-SEM), was another frequently used methodology. SEM is a powerful tool for analysing complex relationships among multiple variables, and it was employed to assess both direct and indirect effects in the adoption of FinTech technologies. For example, researchers used SEM to study the mediating effects of trust and empowerment in customer adoption of mobile banking or blockchain technologies. This method allowed for the exploration of how various factors—such as perceived ease of use, trust in technology, and regulatory frameworks—interact and influence FinTech adoption and success.

Regression analysis, particularly panel regression and Chow tests, was used to assess the financial performance of banks post-digital transformation. This methodology enabled researchers to evaluate how FinTech adoption influences key financial metrics like profitability, liquidity, and market share. By comparing data before and after digital transformation, panel regression models helped identify the causal impact of digital banking solutions, such as online payments, digital currencies, and neo-banking, on financial performance. Chow tests, in particular, were useful for examining structural changes in financial performance across different time periods.

Confirmatory Factor Analysis (CFA) was employed to validate the constructs in several studies, particularly those focusing on blockchain and FinTech perception. CFA is used to test whether the data fits a hypothesized measurement model, making it an ideal tool for confirming the validity and reliability of scales used to measure key concepts like trust in blockchain systems or customer attitudes toward FinTech services. Researchers utilized CFA to ensure that their instruments accurately captured the underlying constructs and provided meaningful insights into how customers and financial institutions perceive and adopt FinTech solutions.

The case study method was employed in studies that focused on the assessment of venture capital in the FinTech space, particularly for startups and digital-only banks. This approach allowed for in-depth examination of specific cases, such as the success or challenges faced by OPEN FinTech in securing funding or scaling its operations. Case studies provided detailed, context-rich insights that might not be generalizable through other methods, but were valuable for understanding the real-world dynamics of FinTech ventures, including regulatory hurdles, funding challenges, and competitive advantages.

Network and Vector Autoregression (VAR) modelling were employed in studies analysing the volatility and return spillovers of Exchange-Traded Funds (ETFs) in the context of FinTech markets. These methodologies are particularly suited for analysing dynamic relationships between financial instruments, allowing researchers to study how FinTech innovations influence market behaviour and volatility. Network modelling, for instance, helped understand the interconnections between financial institutions and how these relationships are impacted by digital transformations. VAR modelling provided insights into the causal relationships between variables, such as how fluctuations in the adoption of digital payments might spill over into broader financial markets.

Finally, content and thematic analysis were predominantly used in conceptual and theoretical papers, particularly those focused on frameworks such as green finance and neo-banking. These qualitative methodologies helped identify and analyse recurring themes, trends, and gaps in the literature. For instance, thematic analysis was useful in identifying how different authors conceptualize sustainability within the context of FinTech and banking, while content analysis helped categorize and synthesize the variety of ways in which neo-banking is discussed across different academic papers. These methods provided a rich, qualitative understanding of the emerging trends in the digital finance landscape.

The diverse range of methodologies employed in the reviewed studies highlights the complexity of researching FinTech adoption in the banking sector. From quantitative surveys that assess user behaviour and attitudes, to advanced

statistical techniques like SEM and regression analysis that explore causal relationships, the methodologies reflect the multifaceted nature of the topic. Case studies, CFA, and content analysis further enrich the findings, offering deep insights into specific aspects of digital banking, such as venture capital investments, regulatory frameworks, and emerging trends in green finance. Together, these methodologies provide a comprehensive understanding of how FinTech is transforming the banking industry and shaping the future of financial services.

Table 4: Methodologies Employed

Methodology	Description
Quantitative Surveys	Most common. Used structured questionnaires and Likert-scale responses.
Structural Equation Modelling (SEM / PLS-SEM)	Used to assess direct, indirect, and mediation effects (e.g., trust, empowerment).
Regression Analysis	Panel regression and Chow tests were applied to assess financial performance post-digital transformation.
Confirmatory Factor Analysis (CFA)	To validate instrument constructs (blockchain and FinTech perception).
Case Study Method	For venture capital assessment of OPEN FinTech.
Network & VAR Modelling	Used for analysing ETF volatility and return spillovers.
Content & Thematic Analysis	Mainly for conceptual frameworks in theoretical papers (green finance, neo-banking).

Key Analytical Techniques Used in the Reviewed Studies

The reviewed literature on FinTech and the banking sector in India showcases a variety of sophisticated analytical techniques, each serving specific research purposes ranging from behavioural analysis to financial market evaluation. These techniques not only enhance the methodological rigor of the studies but also provide deeper insights into FinTech's multifaceted impact on the banking ecosystem.

One of the most widely applied techniques is Structural Equation Modelling (SEM), including its variant Partial Least Squares SEM (PLS-SEM). This approach was prominently used by researchers such as Sharma *et al*. (2025) [4], Naik *et al*. (2024) [20], Jena (2022) [13], and Alshari & Lokhande (2022) [1]. SEM enabled these studies to investigate complex relationships between constructs such as perceived ease of use, trust, adoption readiness, and organizational agility. Its strength lies in simultaneously analysing multiple dependent relationships while accounting for measurement error, making it particularly useful in studies involving user perception and behavioural intention related to mobile banking and digital payment platforms.

Panel regression was employed by Verma & Chakrawarty to assess the financial and operational implications of FinTech adoption over time across different banks. This method allows for the control of individual heterogeneity and captures both cross-sectional and time-series dimensions of data. In the context of banking performance, panel regression is instrumental in examining how variables such as digital lending, customer reach, and profitability evolve in response to digital transformation and FinTech integration. Banerjee *et al*. (2024) [3] applied the Chow test and pooled regression techniques to identify structural breaks in bank performance metrics before and after significant digital interventions or crises (such as bank collapses).

The Chow test is particularly valuable in determining whether different time periods reflect significantly different regression models, which is crucial when evaluating the effects of FinTech implementation on traditional banking stability or during high-impact events like the collapse of Silicon Valley Bank. Confirmatory Factor Analysis (CFA), used by Garg *et al*. (2021), served as a validation tool for the constructs used in their FinTech related research. CFA is essential for verifying that the observed variables accurately represent the underlying theoretical constructs, such as perceived usefulness or trust in blockchain systems. This ensures the reliability and validity of the research instruments, particularly in studies assessing behavioural or perceptual dimensions of FinTech usage.

In the realm of financial market analysis, Time-Varying Parameter Vector Autoregression (TVP-VAR) and Volatility Impulse Response Functions were employed by Banerjee *et al*. (2024) [3]. These advanced econometric techniques helped explore the dynamic interdependencies and spillover effects between traditional financial ETFs and FinTech ETFs during periods of market instability. Their use highlights how FinTech innovations influence systemic risk and return behaviour in financial markets, particularly under crisis conditions.

Finally, descriptive and structural modelling was used by Gondesi *et al*. (2024) [10] to lay out frameworks for understanding how FinTech policies and business models evolve. These models offer a macroscopic view of the financial landscape, mapping regulatory structures, stakeholder dynamics, and the interlinkages between different components of the FinTech ecosystem. The diversity in analytical techniques across the reviewed literature reflects the complexity of FinTech's integration into banking. From SEM for behavioural studies to VAR modelling for financial contagion effects, these tools provide a multi-angle understanding of the digital finance transformation. They ensure empirical robustness and open up pathways for nuanced policy and managerial insights, especially in emerging markets like India where FinTech adoption is rapidly accelerating.

Table 5: Key Analytical Techniques

Technique	Authors/Studies
SEM / PLS-SEM	Sharma *et al*. (2025) [4], Naik *et al*. (2024) [20], Jena (2022) [13], Alshari & Lokhande (2022) [1]
Panel Regression	Verma & Chakrawarty (2024) [28]
Chow Test / Pooled Regression	Banerjee *et al*. (2022)
CFA	Garg *et al*. (2021)
TVP-VAR, Volatility Impulse Response	Banerjee *et al*. (2024) [3]
Descriptive & Structural Modelling	Gondesi *et al*. (2024) [10]

Major Findings

The systematic review of FinTech literature within the Indian banking sector revealed several consistent and impactful insights across the studies. A recurring theme is the central role of trust, perceived usefulness, and ease of use in influencing FinTech adoption. These psychological and behavioural factors significantly drive consumer readiness and intention to adopt mobile payment systems, blockchain-enabled banking, and other financial innovations. Another critical finding concerns the transformative potential of blockchain technology. Studies suggest that blockchain contributes to greater transparency, security, and cost-efficiency in banking processes, particularly in areas like inter-bank settlements, regulatory compliance, and digital contract execution. The enhanced security mechanisms are particularly relevant given growing customer concerns around cyberattacks and data breaches.

The adoption of digital currencies and mobile-based financial solutions also shows promising effects on banking outcomes. Digital currencies not only improve customer retention and liquidity management, but also influence pricing strategies, making them a viable tool for competitive differentiation. As neobanks and digital-only banking platforms gain traction, traditional banks face a substantial risk of losing market share unless they implement robust digital transformation strategies.

In the realm of sustainable finance, the integration of green FinTech tools was found to promote ESG (Environmental, Social, and Governance) goals. This leads to improved brand perception and long-term profitability, especially for institutions that strategically align their offerings with sustainability objectives. The role of FinTech in fostering financial inclusion was equally notable, particularly in underbanked and rural areas where mobile banking bridges service gaps left by traditional infrastructure.

Internally, the studies highlighted that employee empowerment and effective employee relationship management (ERM) are crucial enablers of organizational agility during digital transitions. Empowered employees are better equipped to navigate the complexities of FinTech implementation, ensuring smoother customer service and operational efficiency.

Lastly, demographic variables such as age, income, and education level were found to shape user attitudes towards FinTech usage. Younger and more tech-savvy users tend to be early adopters, while older or less digitally literate populations show greater hesitation. Additionally, the competitive landscape—especially with the rise of NBFCs and FinTech startups—presents both systemic risks and opportunities for innovation and inclusion, emphasizing the need for adaptive regulation and proactive risk management in the evolving financial ecosystem.

Limitations Highlighted in Studies

The reviewed studies, while insightful, are not without notable limitations that affect the generalizability and scope of their findings. A primary concern across multiple papers is the geographic focus, with the majority of research being restricted to India. While this offers rich contextual insights into one of the world's fastest-growing FinTech markets, it limits the comparative applicability to broader regional contexts such as other BRICS nations or global emerging economies, where the regulatory and technological environments may differ significantly. Another common limitation pertains to sample size constraints. Many studies utilized surveys with sample populations ranging between 170 and 435 respondents, which, while adequate for exploratory research, may not offer strong statistical power for generalizations across India's vast and diverse banking population. This issue is particularly pressing when studies aim to draw conclusions on behavioural or demographic trends in FinTech adoption.

The cross-sectional nature of most studies also presents a limitation. Many analyses are based on single-point data collection, lacking longitudinal depth that would allow researchers to observe long-term impacts of FinTech solutions on consumer behaviour, organizational agility, or financial performance. Without longitudinal data, understanding how perceptions and outcomes evolve over time—especially post-implementation—remains a challenge. Additionally, there is a noticeable tech-centric bias across several studies. While technologies like blockchain, AI, and digital currencies dominate the discourse, some studies tend to underemphasize non-technological factors such as legal frameworks, cultural resistance, or infrastructure gaps—all of which play critical roles in the success or failure of FinTech deployments, especially in rural and semi-urban areas. The emergent nature of the technologies being studied also introduces a temporal limitation. Innovations such as blockchain or central bank digital currencies are rapidly evolving, which means that findings based on current capabilities and adoption patterns may become quickly outdated as the technology matures and regulations catch up.

Lastly, for research focusing on venture capital and FinTech startups, particularly neobanks like OPEN Tech, a key limitation lies in the subjectivity of valuation models. Traditional valuation techniques often fall short when applied to new-age tech firms, due to inconsistent revenue streams, intangible assets, and the absence of historical data. This makes it difficult to establish a standardized assessment of investment readiness or risk.

Together, these limitations highlight the need for broader, deeper, and more adaptive research approaches in the future.

Table 6: Limitations Highlighted in Studies

Limitation	Description
Geographic Focus	Most studies are limited to India, with few exploring broader BRICS or global dynamics.
Sample Size Constraints	Sample sizes vary (e.g., 170-435 respondents), limiting generalizability.
Cross-sectional Design	Many studies lack longitudinal data to assess long-term FinTech effects.
Emerging Tech Bias	Blockchain, AI, and digital currencies are evolving—findings may quickly become outdated.
Tech-Centric Bias	Some studies underplay legal, cultural, or infrastructural challenges in adoption.
Venture Capital Challenges	Valuation of new-age firms is subjective and complex due to lack of standard metrics.

Case Studies Highlighted

Several compelling case studies were identified in the reviewed literature, each offering nuanced insights into the evolving FinTech and banking landscape. One of the most prominent case studies centres on Open Financial Technologies, examined by Banerjee *et al*. (2024) [3]. As India's 100th unicorn and a leading neo-banking venture, OPEN's rapid growth serves as a vital example of how FinTech startups attract venture capital and disrupt traditional banking. The case underscores the challenges of valuing new-age companies, particularly where conventional metrics fall short due to the lack of tangible assets and predictable cash flows. It also brings forward the importance of investment readiness and qualitative factors like market vision and technological scalability.

Another significant case study explores neobanks in the UAE, also by Banerjee *et al*. (2024) [3], highlighting how digital-only banks are gaining market share at the expense of conventional institutions. This analysis draws attention to customer-centric innovations, digital onboarding, and 24/7 service delivery as key drivers behind the shift in consumer preferences. The study demonstrates that traditional banks risk obsolescence if they do not accelerate their digital transformation initiatives.

In the Indian context, Shukla and Dubey (2022) [26] present a case study on FinTech startups operating within regulatory sandbox frameworks. The study reveals the expectations, compliance challenges, and innovation dynamics faced by startups navigating India's evolving FinTech regulation. It highlights how regulatory sandboxes provide a controlled environment for innovation but also place significant demands on firms in terms of transparency and operational resilience.

Lastly, the collapse of Silicon Valley Bank (SVB) is used as a backdrop in Banerjee *et al*. (2024) [3] to compare the resilience of FinTech-focused ETFs and traditional financial sector ETFs. This empirical case offers a rare look into how FinTech firms respond to systemic shocks. The study finds that while traditional banks were net transmitters of risk during the crisis, FinTech firms showed greater agility and recovery potential, underscoring their growing influence and structural differences within the financial ecosystem.

Together, these case studies not only illustrate diverse FinTech applications and challenges but also provide practical insights into regulatory, technological, and strategic adaptations shaping the future of banking.

Table 7: Case Studies Highlighted

Case Study	Focus
Banerjee *et al*., 2024	Neo-banking, venture valuation, investment readiness
Banerjee *et al*., 2022	Market share post-digital transformation in traditional banks
Shukla & Dubey, 2022 [26]	Regulatory sandbox expectations
Banerjee *et al*., 2024 [3]	FinTech vs traditional bank resilience during crisis

Conclusion

This systematic literature review provides a comprehensive overview of the evolving landscape of FinTech in the banking sector, focusing on adoption drivers, research methodologies, key findings, and the challenges faced by financial institutions. Through an analysis of the selected papers, it is evident that factors such as ease of use, perceived usefulness, and trust significantly influence the adoption of mobile payment systems and other digital financial services. The review also highlights the critical role of government policies, technological innovations, and consumer behaviour in shaping the trajectory of FinTech adoption across diverse regions, particularly in emerging markets like India.

The findings underscore the importance of an integrated approach, where financial institutions must balance technological advancements with robust security measures, regulatory compliance, and consumer education to ensure the effective implementation and widespread acceptance of FinTech solutions. Case studies from various parts of the world, particularly from BRICS nations, exemplify both the benefits and the obstacles encountered in this rapidly changing sector. These case studies provide invaluable lessons that can guide future strategies for improving the adoption of FinTech, especially in regions with diverse socio-economic contexts.

However, the review also reveals several limitations in the existing literature, such as a lack of longitudinal studies, insufficient focus on the integration of FinTech with traditional banking models, and limited exploration of consumer trust in emerging technologies. As the FinTech landscape continues to evolve, addressing these gaps will be crucial to advancing both theory and practice in this domain.

Future research directions

While significant progress has been made in understanding the adoption of FinTech, several areas remain ripe for further exploration:

1. There is a need for more longitudinal research to examine how FinTech adoption evolves over time, particularly in emerging markets. Such studies can help identify long-term trends, shifts in consumer behaviour, and the impact of regulatory changes on FinTech uptake.
2. As FinTech services become increasingly integrated into daily life, ensuring consumer trust becomes paramount. Future studies could focus on understanding how trust in digital platforms evolves and the role of cybersecurity measures in enhancing consumer confidence in FinTech solutions.
3. Many studies have focused on the standalone capabilities of FinTech. However, there is a lack of research on how FinTech can be seamlessly integrated with traditional banking systems. Exploring hybrid models could offer insights into how established financial institutions can innovate without compromising their legacy systems.
4. Both artificial intelligence and blockchain have the potential to further disrupt the financial services industry. Future research should investigate how these technologies can be leveraged to enhance security, reduce costs, and improve the overall customer

experience in banking.
5. While FinTech has been widely promoted as a tool for financial inclusion, more research is needed to assess its actual impact in underserved and rural areas. Investigating how mobile payments, digital wallets, and micro-lending platforms can bridge the financial inclusion gap is crucial for designing effective policies.
6. The regulatory landscape for FinTech is still developing. Future research could explore the evolving role of regulators in ensuring consumer protection while fostering innovation. Understanding the regulatory challenges in different regions and their impact on FinTech adoption is essential for shaping future policies.
7. Different regions face unique challenges in adopting FinTech, influenced by cultural, economic, and infrastructural factors. Comparative studies that analyse FinTech adoption across various countries or regions can provide deeper insights into context-specific barriers and drivers.

While the literature on FinTech adoption in banking has made significant strides, there is still much to explore. Future research should focus on longitudinal analyses, integration challenges, emerging technologies, and their implications for financial inclusion and regulation. By addressing these research gaps, scholars can further contribute to the development of a sustainable and inclusive financial ecosystem in the digital age.

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