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RESEARCH ARTICLE

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Redefining Banking through Decentralised Finance (DeFi): A Pathway towards Viksit Bharat 2047

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Abstract

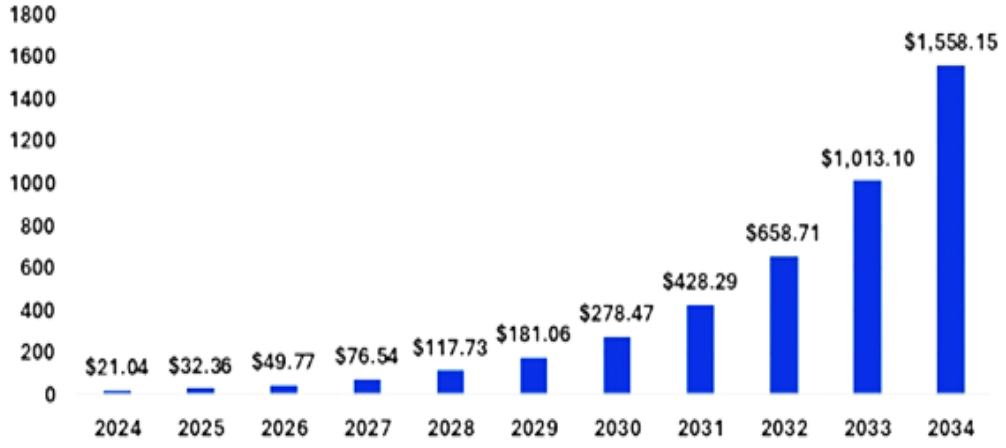
The financial landscape of India is evolving in consonance with the theme of Digital India. The banking sector is also frequently integrating new technologies in order to ensure ease in banking and accessibility for all. As India aims to build a stronger financial ecosystem in consonance with Viksit Bharat 2047, emerging technologies like Decentralised Finance (DeFi) are redefining the banking sector. In this backdrop, this study examines the associated risks, potential prospects, and challenges of adopting Decentralised Finance (DeFi) in the Indian Scenario. Besides, this paper also seeks to determine how banks can adopt DeFi and Blockchain Technologies, thereby boosting innovation in line with the concept of Viksit Bharat 2047. The discussions indicate that India is well-positioned to adopt DeFi protocols to ensure easy access, data security, and enhanced financial inclusion.

1 INTRODUCTION

The concept of 'Viksit Bharat 2047' revolves around the vision of building a strong financial ecosystem for India, which is one of the most important criteria of a developed nation. The quest for building a strong financial ecosystem of a country hinges on continuous innovation in its banking sector (Zaloznaya, 2022). Decentralised Finance (DeFi) is increasingly positioning itself as an alternative to conventional banking systems within the rapidly evolving global financial landscape. Built upon blockchain technology, DeFi enables peer-to-peer financial transactions without relying on traditional intermediaries such as banks or payment processors, thereby promoting greater transparency, efficiency, and accessibility in activities such as lending, borrowing, and digital payments (Adwani & Rao, 2025). For India, a country with over 1.4 billion people and a rapidly digitising economy, the potential of DeFi is enormous. It cannot only redefine financial services but also democratise access to capital and foster greater financial inclusion.

Globally, DeFi markets have significantly expanded, with a market value of around USD 24 billion in 2023, projected to rise to approximately USD 48 billion in 2025, reflecting a CAGR of 9.04% from 2023 to 2031 (Kumar et al., 2025). The predicted values for the next ten years are presented in Figure 1. This meteoric rise reflected both investor interest and the transformative potential of blockchain-based finance. While growth slowed in developed markets due to regulatory tightening, emerging economies like India now stand at a decisive moment. A combination of expanding digital literacy, growing fintech penetration, and increasing smartphone usage creates fertile ground for integrating decentralised financial systems into mainstream economic activity.

Figure 1: Projected Share of Decentralised Finance Market Size (From 2024 to 2034 in USD Billion)



Source: https://www.precedenceresearch.com/decentralized-finance-market

2 REVIEW OF LITERATURE

Aggarwal (2024) discussed ways for enterprises to adopt Decentralised Finance and also examined the use of non-fungible tokens, bitcoin, and other decentralised financial instruments for business. Alamsyah et al. (2024) segmented the DeFi system and conducted a review of DeFi protocols to provide a comprehensive and transparent view of the DeFi ecosystem for potential users. Gramlich et al. (2023) explored the risks and challenges associated with the adoption of DeFi. Results indicated that the adoption of DeFi on a wide scale is affected due to many issues, such as trust deficit, lack of awareness, etc. Aspris et al. (2021) investigated the role of Decentralised Finance in the financial markets and found that investors are more inclined towards traditional banking rather than DeFi.

In the Indian context, the literature on Decentralised Finance (DeFi) and fintech adoption has expanded considerably due to the rapid growth of India's digital economy and financial technology ecosystem. Existing studies have primarily focused on financial inclusion, digital infrastructure, regulatory challenges, and user adoption behaviour. Risius and Spohrer (2019) argued that blockchain technology can improve financial inclusion in India by reducing transaction costs and expanding access to financial services in underserved regions. The study highlighted that decentralised systems may help integrate unbanked populations into formal financial networks through transparent and low-cost digital platforms. In the same spirit, Chhabra (2023) examined the prospects of DeFi in India and observed increasing interest in decentralised lending, digital assets, and blockchain-based financial systems. The study emphasised that India's large underbanked population creates significant opportunities for DeFi adoption. However, regulatory uncertainty, cybersecurity concerns, and a lack of institutional trust continue to hinder large-scale implementation.

Asif et al. (2023) explored the role of fintech and digital financial services in enhancing financial inclusion in India. The findings suggested that digital payment systems, mobile banking, and fintech innovations have improved access to financial services, particularly among marginalised populations. Nevertheless, the study noted that digital illiteracy and unequal internet access remain major barriers. Sethi and Manocha (2023) investigated the macroeconomic impact of fintech adoption in India and found that digital financial systems positively contribute to financial deepening and economic growth. However, the authors cautioned that inadequate regulatory oversight may increase systemic and cybersecurity risks. Recent studies have also examined behavioural dimensions of DeFi adoption in India. Sowmiya et al. (2025) found that factors such as perceived usefulness, technological familiarity, and peer influence significantly affect DeFi adoption intentions among Indian users. The study also found that younger, digitally literate individuals are more likely to adopt DeFi platforms, while trust deficits and fraud concerns discourage broader acceptance.

Overall, the Indian literature suggests that DeFi and fintech technologies possess strong potential to promote financial inclusion and transform financial services. At the same time, issues relating to regulation, cybersecurity, digital literacy, and institutional trust remain critical challenges. Despite growing scholarly attention, there remains limited empirical research on the relationship among DeFi adoption, regulatory governance, and financial inclusion in India.

3 RESEARCH QUESTIONS

Not many studies have been conducted on the prospects, risks, and challenges associated with the adoption of Decentralised Finance with respect to the Indian context. Furthermore, hardly any study regarding the adoption of DeFi technologies by Indian banks in line with the Viksit Bharat 2047 vision has been conducted previously.

The following research questions have been addressed in the paper.

1. What are the prospects of DeFi with respect to the financial ecosystem of India?
2. How can DeFi integrate into the banking system of India in consonance with the mission of Viksit Bharat 2047?

3. What are the possible risks and challenges emerging from the growing adoption of DeFi in India?

4 METHODOLOGY AND DISCUSSION

Methodology

The present study is primarily qualitative, analytical, and policy-oriented in nature. It does not empirically test hypotheses or primary survey-based analysis, but rather critically examines the evolving role of decentralised finance, blockchain-based systems, and fintech innovations within the broader transformation of India's financial ecosystem. It adopts a descriptive and an interpretive analytical approach, drawing on secondary data sources, including RBI reports, World Bank publications, industry databases, blockchain market reports, fintech-related policy documents, and emerging discussions on DeFi regulations, digital banking, and financial inclusion.

Methodologically, the paper employs a qualitative SWOC Analytical (Strengths, Weaknesses, Opportunities, and Challenges/Risks) framework to evaluate the prospects and constraints associated with DeFi and fintech expansion in India. The SWOT framework is used as a strategic policy-analysis tool to systematically assess India's digital financial transformation within the broader developmental vision of Viksit Bharat 2047.

5 Strengths and Weaknesses

Among the major strengths of India's evolving DeFi ecosystem are the country's rapidly expanding digital public infrastructure, widespread smartphone penetration, strong fintech innovation ecosystem, and globally recognized digital payment architecture led by UPI and India Stack. Applications based on Decentralised Finance are accessible to anyone regardless of their geographical location. DeFi applications facilitate smooth peer-to-peer transactions by eliminating the need for middlemen, thereby reducing counterparty risk. India's large youth population, expanding internet access, and the rising adoption of blockchain and Web3 technologies further create favourable conditions for the growth of decentralised financial systems. Additionally, India's leadership in real-time digital payments and its expanding startup ecosystem provide a strong technological foundation for future DeFi integration.

India's digital financial ecosystem has undergone rapid transformation over the last decade, positioning the country as one of the world's leading fintech economies. Over the last ten years, UPI has demonstrated extraordinary scale and momentum. The press release by the Ministry of Finance on April 30, 2026, reads, "Annual transaction volume expanded from just 2 crore transactions in FY 2016-17 to over 24,162 crore transactions in FY 2025-26, representing an almost 12,000-fold surge in the transaction volume. In parallel, transaction value rose sharply from ₹0.07 lakh crore in FY 2016-17 to approximately ₹314 lakh crore in FY 2025-26, representing more than a 4,000-fold increase" (Ministry of Finance, GoI, 2026). Thus, reflecting the scale of digital payment adoption and financial digitisation in the country. India today accounts for nearly half of global real-time digital payment transactions, driven by initiatives such as Aadhaar, Jan Dhan Yojana, mobile banking, and fintech-led financial inclusion frameworks. These developments have significantly expanded access to digital payments and formal banking services.

Despite substantial progress, financial exclusion remains a major challenge. According to World Bank Global Findex estimates (2025), nearly one-fifth of Indian adults still remain outside the formal banking system, particularly in rural and semi-urban regions where access to formal credit, insurance, and investment opportunities remains limited. Additionally, several other weaknesses continue to constrain the large-scale adoption of DeFi in India. Limited financial literacy, low awareness regarding blockchain-based financial products, and unequal digital access between urban and rural regions remain major barriers. The absence of a comprehensive and stable regulatory framework for cryptocurrencies and decentralised financial platforms has also created uncertainty among investors, institutions, and innovators.

6 INDIA'S FINANCIAL LANDSCAPE: OPPORTUNITIES FOR DEFI

In this context, Decentralised Finance (DeFi) presents important opportunities for improving financial inclusion and thus expanding access to financial services. By leveraging blockchain technology and smart contracts, DeFi platforms can provide low-cost lending, savings, remittance, insurance, and investment services through smartphone-based applications, without relying heavily on traditional banking intermediaries. Given India's rapidly expanding internet penetration and smartphone adoption, DeFi could bridge the gaps in financial access for underserved populations and small businesses.

India's significance in the global remittance ecosystem further strengthens the potential relevance of DeFi. According to World Bank estimates, India emerged as the world's largest recipient of remittances in 2023, with inflows exceeding USD 125 billion (World Bank, 2023). Traditional cross-border payment systems often involve high transaction costs, delays, and intermediary fees. DeFi-enabled remittance systems that use blockchain-based stablecoins and decentralised payment protocols may reduce transaction costs and increase efficiency, particularly for migrant workers and low-income households that depend on international remittance flows.

The expansion of digital entrepreneurship and small businesses also creates space for DeFi-based financial innovation. According to fintech industry reports and Startup India data, India's rapidly growing fintech sector, valued at over USD 100 billion, makes it the third-largest startup ecosystem globally. However, MSMEs continue to face substantial credit gaps due to collateral requirements, limited formal credit histories, and banking inefficiencies. DeFi-based lending mechanisms and tokenised financial systems may help improve access to credit for small firms and entrepreneurs by enabling decentralised, algorithm-driven financing models.

India's demographic structure further supports the emergence of DeFi ecosystems. More than 65% of India's population is under 35, creating a large digitally savvy consumer base increasingly interested in cryptocurrencies, NFTs, blockchain investments, and decentralised applications (Gupta et al., 2024). Reports from industry databases such as Chainalysis and Triple-A indicate that India consistently ranks among the leading countries in global crypto adoption despite regulatory uncertainty. The rapid growth of Web3 developers (Shin, 2023), blockchain startups, and crypto-based innovation hubs reflects growing technological engagement among Indian youth.

At the policy level, India has simultaneously promoted fintech innovation while maintaining cautious regulatory oversight regarding crypto-assets and decentralised financial systems. Government initiatives such as Digital India, India Stack, Open Network for Digital Commerce (ONDC), and account aggregator frameworks have created a robust digital public infrastructure capable of supporting future blockchain and decentralised-finance applications. Projects and initiatives, like Polygon, InstaDApp, Aavegotchi, Opyn, Razor Network, and MyWish, are increasingly making their presence felt in India's constantly evolving DeFi space.

7 ADOPTION OF DEFI IN THE INDIAN BANKING SECTOR

In order to contribute towards the vision of Viksit Bharat 2047, traditional banks must embrace DeFi and Blockchain in their operations. The banking sector has already started incorporating neo-banks, embedded finance, peer-to-peer lending and other Fintech modules. Banks can further integrate the existing digital public infrastructure with DeFi for secured sharing of traditional financial data with on-chain data to create more comprehensive, transparent and inclusive credit profiles of customers. RBI's CBDC can act as a bridge between the conventional banks and the DeFi ecosystem. The digital asset world (like tokenised securities, bitcoins) is susceptible to risks related to hacking. Thus, banks can offer secure custodial services to clients like asset managers and other institutional investors, safeguarding their private keys and therefore enabling secure access to their assets. Therefore, banks can protect the legal

ownership of their clients by acting as a trusted custodian for these digital assets. As per the Global Crypto Adoption Index 2025 published by Chainalysis, India has overtaken all countries in terms of implementation of DeFi. According to a report published by CoinSwitch in 2023, India's crypto investment accounts for more than 17% in utility tokens based on Decentralised Finance.

8 CHALLENGES AND RISKS

The adoption of DeFi in India faces hurdles due to cautious regulation and unresolved legal frameworks, exposing investors to cyber risks such as smart contract vulnerabilities/flash loan attacks, wallet compromises, cyber fraud, privacy breaches, and operational vulnerabilities, as highlighted by global hacks (Bharanitharan & Kaur, 2024). Both the central government and the Reserve Bank of India and the central government have repeatedly emphasised the potential risks these emerging digital financial systems pose to investor safety and financial stability.

Structural issues, including unequal digital literacy and restricted internet access in rural areas, further constrain its widespread use. Besides, the energy-intensive nature of DeFi is a major concern, as its use leads to large amounts of carbon footprint, thereby affecting environmental sustainability (Koemtzopoulos et al., 2025). Furthermore, cryptocurrency volatility weakens financial stability and consequently delays the mainstream adoption of DeFi.

Yet, with balanced regulation, sandboxes, and integration with the Digital Rupee (CBDC), DeFi could evolve into a secure, inclusive, and transformative force in India's financial and economic development.

CONCLUSION

The Fintech Community is driving a transformation in the nation's financial landscape by adopting Decentralised Finance. In the upcoming decade, India is poised to take the lead in the global DeFi ecosystem. This nation is an ideal place for innovation due to its sizable market, robust entrepreneurial culture, and extensive technological expertise.

DeFi promises social empowerment alongside economic growth. India has the potential to harness the revolutionary power of decentralised finance by enhancing security, scalability, and accessibility, while fostering collaboration among industry players, regulators, and technologists. Despite such potentialities, the DeFi ecosystem is still facing a lot of hurdles due to factors like digital divide, lack of financial awareness and literacy. A stable regulatory framework for decentralised financial platforms is the need of the hour for its stakeholders. Despite all these challenges, the banking sector is gradually adopting DeFi in the form of embedded finance, peer-to-peer lending, and neo banks due to its cost-effective services and speedy remittance, insurance, and investment services through smartphone-based applications, without relying heavily on traditional banking intermediaries. The Government has started integrating DeFi into our financial ecosystem by the introduction of CBDC. The DeFi applications emit a lot of energy, which cannot be ignored as environmental sustainability is of utmost importance. Though India is gradually transitioning from a traditional financial ecosystem to a digital financial ecosystem based on DeFi, the question remains: how smooth will the transition be.

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