

Blockchain-Based Solution for Non-Banking Financial Companies

DOI: <https://doi.org/10.5281/zenodo.14576275>

Vaivaw Kumar Singh¹, Kunal Sinha²

^{1,2}Department of Commerce and Business Management, Sarala Birla University, Ranchi, Jharkhand, India

Abstract

The factors of increased and spreading influence these entities have about financial inclusion bring out and bring to the forefront the critical necessity for developing innovative and creative solutions that might work effectively towards solving a variety of operational challenges posed by Non-Banking Financial Companies, known as NBFCs. Blockchain technology, in the advent of time, holds the potential of revolutionizing the operations and services by NBFCs, mainly due to their inherently decentralized nature, robust security features, and transparency. This research effort goes deep into blockchain-based solutions specifically aimed at tackling the unique requirements and needs of the operations of NBFCs, such as crucial credit evaluation, the risk management practices, and the workflows of loan processing. Smart contracts can be used by NBFCs to automate processes, reduce operational costs, and increase trust among stakeholders. In addition, the immutability of blockchain records can ensure regulatory compliance while reducing the risk of fraud. Blockchain can potentially enhance data privacy, expedite transactions, and streamline access to financial services from a customer perspective. It allows regulators to monitor the financial system in real time and enhance its stability. This multi-disciplinary analysis gives an overall understanding of how blockchain technology can help NBFCs enhance operational efficiency, customer centrality, and resilience in a changing financial environment that could facilitate sustainable economic growth.

Keywords: *Non-Banking Financial Companies (NBFCs); Blockchain; Financial Environment; Credit Evaluation; Risk Management.*

I. INTRODUCTION

Non-Banking Financial Companies, simply referred to as NBFCs, have played an important role in fulfilling and meeting the financial needs of both the individual and corporate sectors. Traditionally, these two groups have, in general, either not been served at all or have only been partially served by conventional banking institutions that did not satisfy all their financial needs effectively. In recent years, however, a trend of increased regulatory oversight of NBFCs has resulted in increasing borrowing costs for the companies. In response to these new regulations, many NBFCs have increasingly focused on niche markets and specialized products and services in order to remain competitive and sustainable in the emerging financial environment (Ananda et al., 2020). Today, unorganized sectors need NBFCs to focus more on innovative products for the urban customers with low income and have begun to take a business and operational model that works by relying on technologies which ensure smooth designing, launching, implementing, and executing the products and services which they design as per their requirements. Lower customer acquisition costs, servicing existing customers or de-risking the portfolio while trying to overcome increasing formal credit penetration in an

evolving economy are also possibilities for NBFCs because investing in new technologies and strategic partnerships with incumbent financial institutions and FinTechs allows the NBFCs to lower their costs when it comes to increasing their customer base (Basu & Bawa, 2022).

New-age NBFCs are making the most of technology more than ever and leveraging partnership ecosystems across the lead generation value chain of customer onboarding, underwriting, credit/loan disbursement, and collection (Kumar et al., 2022). AI, ML, blockchain, and big data have helped lenders measure individual customer insights and develop alternative credit scoring models. Mobile and smartphone penetration has allowed NBFCs to reach out to the bottom-of-the-pyramid low-income customers to utilize their mobile devices throughout the lending cycle of application, engagement, e-KYC, and e-signature for disbursements (Agarwal et al., 2021). RPA has enabled operational workflows to be streamlined to enhance productivity, accuracy, and cost savings. They are actively exploring and conducting beta tests with distributed ledger technologies in multiple applications, including electronic Know Your Customer (e-KYC), data interchange, loan distribution and retrieval, and

cybersecurity measures. Applications Programming Interface(s) development and testing are ongoing and aim to create resilient ecosystems interconnected with diverse institutions and other relevant stakeholders (Sharma et al., 2021).

Blockchain technology will help NBFCs drastically reduce on-boarding and processing costs. Thus, NBFC is keen on reducing its transactions and paper handling. It is working with some technology vendors, financial institutions, and FinTech to implement blockchain tech to make their process efficient, secure, profitable, and valuable. Using blockchain technologies, NBFCs now offer attractive and competitive lending rates to their customers with the help of technology. This will provide a secure and transparent means of data storage and transfer, thereby helping to reduce the risk factors related to fraud and other financial crimes. Blockchain technology can also

speed up some processes, like loan approvals, and make them more efficient (Nizam et al., 2019). The blockchain-based solution will enable Indian banks and non-banking financial companies to conduct customer due diligence on corporate borrowers, assess corporate lending risk, and manage vendors. Blockchain is a decentralized distributed digital ledger collectively maintained by a network of computers known as nodes. Imagine a big shared record book (Aloulou et al., 2024). This security characteristic lies in the fact that alteration of a single individual's data would be required to get unanimous support from all the rest participating in monitoring records. Besides that, the decentralized ledger renders impossible when traditional central databases are being controlled as it does not exist: somebody cannot manipulate the database due to a lack of its exact location. In the above regard, this quality makes blockchain technology so firmly secure against hacking attacks.

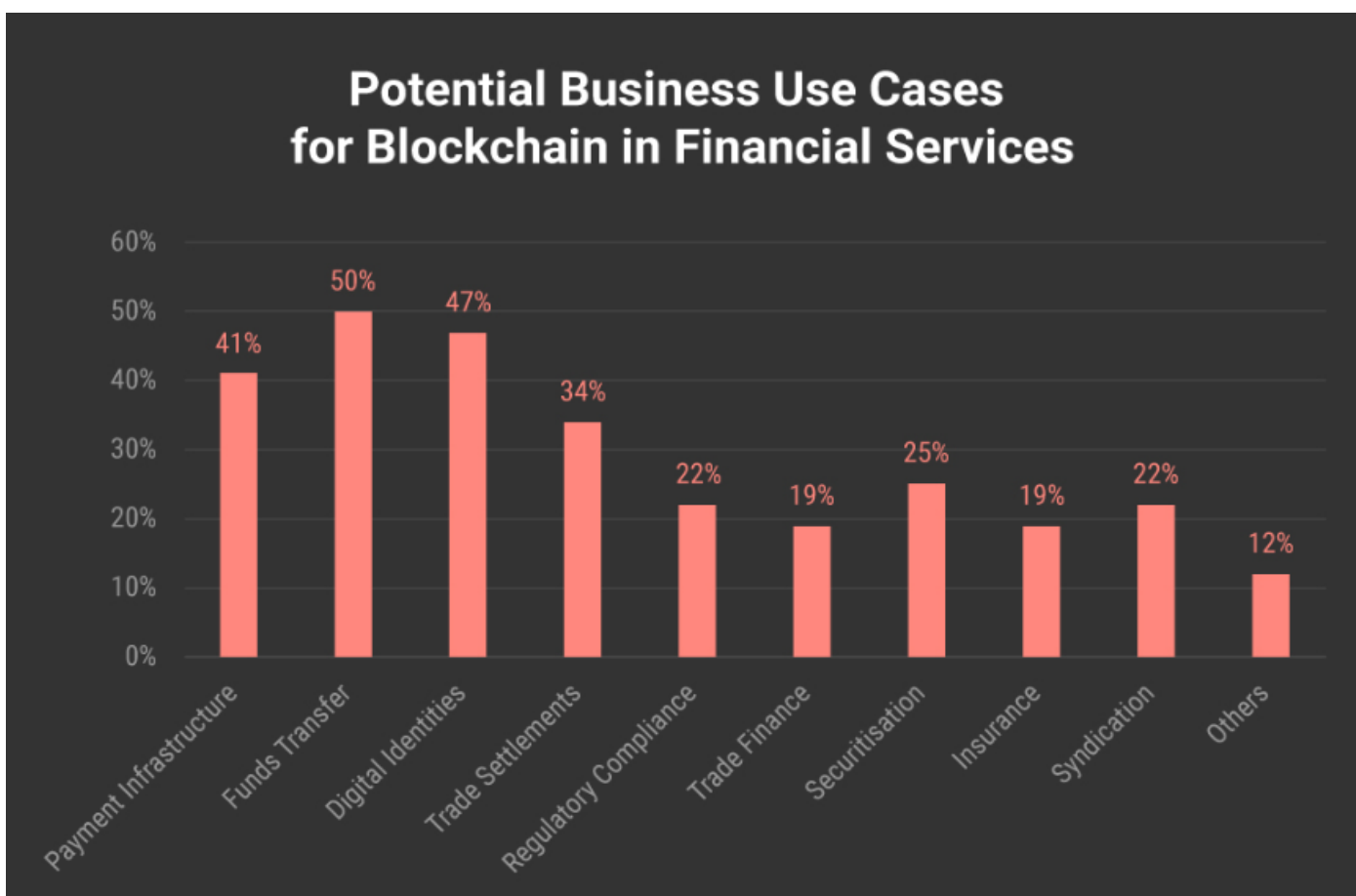


Fig 1 Usage of Blockchain in Financial Services

II. LITERATURE REVIEW

Javaid et al. (2022) examine pertinent papers concerning blockchain in finance and examine blockchain technology and its significance for financial services. The distinctive recording capabilities of blockchain render the current clearing and settlement process obsolete. Financial institutions are implementing blockchain-based identification systems for personal identification. Superior outcomes arise from companies' ability to anticipate upcoming trends in financial blockchain applications and enhance blockchain capabilities—the conveyance of asset ownership and the management of an accurate financial ledger. Accounting experts should concentrate on

measuring, communicating, and analysing financial information. Blockchain clarifies asset ownership and the existence of obligations for accountants, with the potential to enhance productivity (Lalitha & Soujanya, 2019). (Dashottar & Srivastava, 2021) outlines recommendations to enhance the regulatory and reporting framework through the utilisation of regulatory technology (RegTech) to facilitate the integration of existing data within the banking sector. This would enhance the quality of information accessible to lenders, allowing them to make better-informed credit decisions (data-driven finance) throughout the granting and monitoring of loans. Ultimately, it will result in the optimisation of credit risk capital.

(Vashisth et al., 2024) emphasises the capacity of blockchain technology to revolutionise the delivery of financial services. It examines the advantages of blockchain-based financial services for charitable organisations, encompassing transparency, accountability, and efficiency. Apart from this, this chapter specifically elaborates how different microfinance lending programs, which have widely been acknowledged for their effectiveness to reach masses with essential kinds of banking services, particularly have emerged among the most well known today in the world with growing importance. Apart from all these factors, this paper is elaborated on providing non-conventional banking services toward those marginalized communities through their effective uses of digital service provision facilities. Digital Platforms can therefore be considered modernized with a cutting edge towards delivery systems of financial products meant towards the underserved populations since digital platforms provide users the possibility to receive access through handsets leading to convenient opportunities of being associated with financial services offered through this medium. Usually, those digital platforms work to consume much lesser inputs for operational purposes than all conventional banks normally do. Agarwal et al. (2021) assessed the practicality and effectiveness of the adoption of blockchain technology, one which guarantees transparency and traceability, for data storage and transaction management within Indian banking and financial institutions.

Goli & Migliardi (2024) discusses the reasons for the rise of digital payments, such as governmental schemes, one-touch payment mechanisms, internet penetration, and non-banking financial companies. Fiat and stablecoin currencies benefit from the near-term stability of their purchasing power, making them useful to use to buy goods and services. This paper discusses the challenges that the variable value of fungible tokens creates in traditional blockchains. Ramphull and Nagowah (2022) delineated a myriad of intelligent banking systems and frameworks while proposing novel models for banking. It shows how the model works as far as the connection between devices and applications that facilitates the enhancement of communication, data integration, sharing, and analysis. Use Cases Conclusion This chapter ends up with the illustration of various use cases that showcase how the proposed methodology would work in the implementation in Mauritius.

Hota & Hota (2023) presents the ideas of open banking and cybersecurity, outlining the factors contributing to the emergence of open banking. An overview of open banking in India is also provided. In India, non-banking financial enterprises mediate open banking and client consent management. The trend of open banking systems has been illustrated in recent years. A concise overview of many dangers and essential security measures is presented. The necessity and execution of cyber security in open banking are detailed. Kumar et al. (2022) assess issues in current banking financial transactions, comprehend the significance of transparency, and examine the application of blockchain in the banking industry. It proposes a study framework for addressing

financial transaction issues through implementing blockchain technology.

Dos Santos et al. (2022) elucidate the dynamic behavioural patterns among partners arising from the tensions between governance expenses and co-created value inside financial service platforms. Jennath et al. (2021) examines the principal financial services provided in DeFi and compares them to those in the centralised banking sector. The report also addresses several technical and economic hazards related to DeFi investments. Paul et al. (2022) examined the effects of the COVID-19 pandemic announcement on the market valuation and trading volume of supply chain financing (SCF) companies. An event investigation reveals a substantial decline in valuation and increased trading volume for SCF enterprises. Nonetheless, enterprises utilising blockchain-enabled supply chain finance are safeguarded against valuation depreciation and market volatility.

III. FINDINGS OF THE STUDY

A study's recommendations typically focus on how blockchain technology might improve NBFC operations' security, efficiency, and transparency. Transactions are more transparent due to the distributed ledger that blockchain technology uses. This particular ledger serves the very important purpose of recording every single transaction in a way that cannot be modified or changed in any form. This gives regulators, investors, and many other stakeholders a level of transparency greater than that experienced heretofore. It also serves to prevent fraud and inconsistencies that might occur in managing various forms of assets, loan repayment, and the disbursement of loans. Furthermore, the process of Loan Processing is made significantly easier through the use of smart contracts that have the ability to automate the approval processes for loans. In this manner, the involvement of human hands is diminished significantly, which in turn results in fewer delays and a smoother experience in operations procedures. Using blockchain technology to verify borrowers' credentials and credit ratings can make the onboarding process more efficient and trustworthy. The immutable nature of blockchain reduces the number of conflicts and inaccuracies that occur in transaction records, which in turn helps to create confidence among customers. As a result of the reduction in their operational costs, NBFCs can provide more competitive services (Farooq et al., 2022).

With innovative technology in a blockchain, there is minimal need for third-party participation, for instance, audit services, or even more important third parties, like processors of payment, all which increase the associated costs usually paid for during transaction processing as well as to adhere to regulatory demands. The use of smart contracts greatly reduces the number of administrative tasks, especially as regards the automation required (Wang et al., 2023). A consolidated ledger allows NBFCs to handle financial risk and exposure in real time, as there is only one source of truth. This facilitates safe exchange with credit bureaus, hence the evaluation of creditworthiness and fraud protection get improved (Buch

& Goldberg, 2022). It is going to make services related to cross-border lending and repayment even more affordable and efficient for non-banking financial companies (NBFCs) operating worldwide. Blockchain technology provides for the real-time ledger of accounts, making compliance reporting and auditing easier. A tamper-proof and clear record of capability promotes all requirements related to Know Your Customer (KYC), Anti-Money Laundering (AML), among other regulatory requirements.

Facilitation of Integration with Initiatives for Financial Inclusion Through decentralised finance (DeFi) platforms, blockchain-based systems have the potential to offer services to populations that do not have bank accounts or have inadequate bank accounts. Microfinance solutions with low operational expenses are made possible, expanding the reach of NBFCs in rural and underserved areas (Guo & Liang, 2016). The legal frameworks for adopting blockchain technology in financial services are unclear. Concerns Regarding Scalability It is possible that public blockchains would have difficulty managing the vast number of transactions that are typical of NBFCs. A high initial investment may be a barrier for smaller NBFCs because of the expense of establishing blockchain infrastructure (Khanna & Haldar, 2022).

Skill Deficit It is possible that the adoption of blockchain technology will be hampered by limited experience. Case studies and pilot projects are being implemented. Pilot projects that have been successful in the NBFC sector, such as secured asset tracking or blockchain-based loan syndication, demonstrate both feasibility and value addition. It has been demonstrated that working with fintech startups can speed up the adoption and innovation processes (Alzwi et al., 2024).

By implementing blockchain technology, NBFCs can take a revolutionary step towards improving efficiency, transparency, and security. Improved visibility for all parties involved, including investors and regulators, is a direct result of blockchain technology's distributed ledger architecture, which makes all transactions permanent and easy to trace. As a result, inconsistencies and fraud in financial records are less likely to occur. Furthermore, smart contracts automate approval, distribution, and repayment tracking in loan processing, drastically cutting operating costs and delays (Murinde et al., 2022). NBFCs improve overall cost efficiency by eliminating intermediaries, streamlining workflows and saving administrative expenses. Blockchain increases client trust by providing a safe and transparent platform for managing financial transactions. Customers trust the system because blockchain technology guarantees accurate records and real-time information about fees, balances, repayments, etc. Through DeFi solutions, the technology also allows NBFCs to reach out to underserved groups, such as those in rural and semi-urban areas. Customers without access to established banking systems can now use low-cost, quick microfinance services made possible by blockchain technology. By sharing data in real-time, NBFCs may more accurately determine a borrower's creditworthiness and identify signs of fraud, significantly improving risk management. By providing

immutable records for KYC and AML needs, blockchain's capacity to generate a single ledger further streamlines regulatory compliance. This improves conformity with government laws while decreasing the amount of physical labour required for audits. By removing the need for costly intermediaries and capitalising on exchange rate inefficiencies, blockchain technology also helps NBFCs do business on a global scale. Implementing blockchain technology is not easy for NBFCs despite its benefits. Governments and financial agencies are still working on complete legal frameworks for blockchain usage, which creates regulatory risks. Another concern is scalability since public blockchains are not always up to handle the massive amounts of transactions that NBFCs typically see (Goli & Migliardi, 2024). Particularly for smaller businesses, the lack of blockchain expertise and high initial investment costs make adoption even more challenging. Blockchain technology can revolutionise NBFC operations, as seen in pilot projects in microfinance, asset-backed securities, and loan syndication sectors (Ramphull & Nagowah, 2022). Partnerships with IT providers and fintech firms have expedited the adoption of blockchain-based solutions. It is recommended that NBFCs begin with targeted, small-scale blockchain deployments in areas like KYC or loan disbursement in order to leverage the technology entirely. A hybrid solution integrating public and private blockchain components can be considered to meet both the demand for openness and the necessity for security. To successfully adapt, it is essential to invest in staff training and collaborate closely with regulators to guarantee compliance. Once they get over the first hurdles, NBFCs may use blockchain to build a financial ecosystem that is more efficient, transparent, and focused on the consumer ("Blockchain and Cloud Platforms in Banking Services: A Paradox Perspective," 2023).

IV. DISCUSSION OF THE STUDY

In the technology world, blockchain provides non-banking financial institutions with a state-of-the-art infrastructure. The architecture of this system, characterized by decentralization and resistance to tampering, delivers unmatched transparency and security, which are both critical for the execution of financial transactions (Dos Santos et al., 2022). Smart contracts can automatically enable procedures such as disbursing loans and checking for compliance without the need for any intermediary. However, applying blockchain technology to existing NBFC systems is challenging because there is no standardized protocol, processing is costly, and the scale is a problem. In particular, this will affect institutions that process high numbers of transactions (Jennath et al., 2021).

It will help to drastically improve the efficiency of NBFCs as blockchain technology lowers the amount of manual labor required, simplifies compliance procedures, and increases the speed of transactions. For instance, it will save time and reduce errors in operations like Know Your Customer and Anti-Money Laundering if blockchain technology is adopted to automate such operations. Furthermore, the ability of blockchain technology to

provide unalterable records alongside instantaneous updates significantly enhances the efficacy of fraud detection methodologies (Paul et al., 2022). Conversely, achieving operational preparedness may pose a challenge, which may encompass the education of personnel and the adjustment of established procedures. The small-sized NBFCs would not be able to justify the investment cost of installing blockchain technology in comparison to its operational benefits. The use of blockchain technology will help the customers enjoy improved data security, faster service delivery, and higher transparency. The loan processing time for borrowers will be reduced as the implementation of smart contracts becomes automatic. In addition, blockchain-based peer-to-peer lending platforms can potentially provide clients with direct access to lenders, which could eliminate the need for intermediaries and possibly reduce costs. On the other hand, customers may face usability issues, especially if they are not familiar with blockchain technology. Despite the strong security measures intrinsic in blockchain technology, confidentiality about financial information is a very legitimate concern. The basis of this concern is because most blockchains operate publicly and therefore are susceptible to possible outside scrutiny (Javaid et al., 2022).

From a regulatory perspective, blockchain technology is clear in advantages such as smooth auditing process and better financial regulation conformity. The capability to acquire access to tamper proof transaction records in real time allows the regulatory bodies to enforce legislation statutes and reduce financial crimes' occurrence. However, there are also huge challenges. For instance, till date, there are no uniform regulations that the usage of blockchain is recognized as law in all parts. Moreover, issues related to data ownership and confidentiality also prevail in its application (Paul et al., 2022).

Regulators must also design rules governing the extent to which NBFCs can utilize blockchain technology without infringing on the rights of their customers or engaging in monopolistic behavior. Blockchain technology can reduce costs for NBFCs by eliminating intermediaries and fraud-related losses (Javaid et al., 2022). This will raise the profit margin and decrease interest rates for clients. The potential of blockchain technology to enable micro-lending and financial inclusion in areas that are now underserved by banks is very encouraging. However, the initial investment in blockchain technology can be quite large. This expenditure includes infrastructure, training, and integration, among other things. These costs may be prohibitive for NBFCs working on tight budgets, particularly if there is no quick return on investment (Dashottar & Srivastava, 2021). The application of blockchain technology has numerous ethical benefits. They include the element of traceability, ensuring equal practice which significantly reduces fraudulent activities, fraud, and corruption tendencies within the financial services domain. However, data accessibility risks have the potential to breed ethics dilemmas as to what use can be made on these blockchain records.

Public blockchains pose a concern, as uncontrolled public blockchains may allow confidential financial information to leak and raise issues about trade-offs between data protection and openness. The application of blockchain technology can provide non-bank financial institutions with a significant competitive advantage in the increasingly competitive financial marketplace (Saji et al., 2019). By improving operational efficiency, reducing costs, and providing services faster, these companies can gain more customers. In addition, in customer service and regulatory compliance, blockchain technology leaders may establish new standards, forcing their competitors to follow suit (Agarwal et al., 2021). Nevertheless, smaller NBFCs would face difficulty competing with bigger firms that could pay for the high cost of the use of blockchain technology. This could result in market consolidation.

V. CONCLUSION

This move of bringing in blockchain technology into the NBFCs is a revolutionary one, especially regarding improvement in the efficiency, transparency, and trustworthiness of the financial ecosystem. From the technological aspect, blockchain offers an immutable ledger that does not support fraudulent activity, simplifies the process, and keeps the financial transaction safe. It improves data integrity and enhances the operational efficiency. The technology does help the NBFC to reduce their operational cost while improving access to capital with the increased confidence of investor and quickening the pace of credit disbursal process. It is a tremendous financial advantage. The regulators see a great potential for blockchain technology in ensuring that there is compliance through automation, like with smart contracts, which are capable of making audits, reporting, and compliance even easier. Moreover, the technology of blockchain enhances the user experience from the point of view of customers as it allows for faster, more secure, and more transparent services. This advancement is particularly beneficial for marginalized groups as it promotes their financial inclusion. Even though scaling is a difficulty, regulatory uncertainty, and implementing costs could be a bottleneck, adopting blockchain technology to NBFCs marks one of the biggest steps taken towards more innovation, on the route to a far more stable and inclusive future for finances.

REFERENCES

- [1]. Agarwal, A., Parihar, M., & Shah, T. (2021). Feasibility of Adoption of Blockchain Technology in Banking and Financial Sector of India. *Advances in Intelligent Systems and Computing*, 1189, 479–487. https://doi.org/10.1007/978-981-15-6067-5_54
- [2]. Aloulou, M., Grati, R., Al-Qudah, A. A., & Al-Okaily, M. (2024). Does FinTech adoption increase the diffusion rate of digital financial inclusion? A study of the banking industry sector. *Journal of Financial Reporting and Accounting*, 22(2), 289–307. <https://doi.org/10.1108/JFRA-05-2023-0224/FULL/PDF>

- [3]. Alzwi, A. S., Jaber, J. J., Rohuma, H. N., & Omari, R. Al. (2024). Evaluation of Total Risk-Weighted Assets in Islamic Banking through Fintech Innovations. *Journal of Risk and Financial Management* 2024, Vol. 17, Page 288, 17(7), 288. <https://doi.org/10.3390/JRFM17070288>
- [4]. Ananda, S., Devesh, S., & Al Lawati, A. M. (2020). What factors drive the adoption of digital banking? An empirical study from the perspective of Omani retail banking. *Journal of Financial Services Marketing*, 25(1–2), 14–24. <https://doi.org/10.1057/S41264-020-00072-Y/METRICS>
- [5]. Basu, S., & Bawa, J. (2022). *Shadow Banking and Non-banking Financial Companies in India: An Overview* (pp. 187–204). Springer, Singapore. https://doi.org/10.1007/978-981-16-7668-0_10
- [6]. Blockchain and cloud platforms in banking services: A paradox perspective. (2023). *Journal of Entrepreneurship, Management and Innovation*, 19(4), 12–47.
- [7]. Buch, C. M., & Goldberg, L. S. (2022). Complexity and riskiness of banking organizations: Evidence from the International Banking Research Network. *Journal of Banking & Finance*, 134, 106244. <https://doi.org/10.1016/J.JBANKFIN.2021.106244>
- [8]. Dashottar, S., & Srivastava, V. (2021). Corporate banking—risk management, regulatory and reporting framework in India: a Blockchain application-based approach. *Journal of Banking Regulation*, 22(1), 39–51. <https://doi.org/10.1057/S41261-020-00127-Z/METRICS>
- [9]. Dos Santos, S., Singh, J., Thulasiram, R. K., Kamali, S., Sirico, L., & Loud, L. (2022). A New Era of Blockchain-Powered Decentralized Finance (DeFi) - A Review. *Proceedings - 2022 IEEE 46th Annual Computers, Software, and Applications Conference, COMPSAC 2022*, 1286–1292. <https://doi.org/10.1109/COMPSAC54236.2022.00203>
- [10]. Farooq, S., Ahmad, A., Liaqat, F., & Ali, F. H. (2022). Understanding Relevance of Business Environment for Financial Performance: The Case of Asian Non-Banking Microfinance Institutions. *Vision: The Journal of Business Perspective*, 097226292210819. <https://doi.org/10.1177/09722629221081915>
- [11]. Goli, G. P., & Migliardi, M. (2024). The Problem of Payments in E-Health and E-Prescriptions Systems. *Lecture Notes on Data Engineering and Communications Technologies*, 225, 230–241. https://doi.org/10.1007/978-3-031-72322-3_22
- [12]. Guo, Y., & Liang, C. (2016). Blockchain application and outlook in the banking industry. In *Financial Innovation* (Vol. 2, Issue 1). SpringerOpen. <https://doi.org/10.1186/s40854-016-0034-9>
- [13]. Hota, L., & Hota, D. C. (1 C.E.). Cyber Security at the Heart of Open Banking: An Existing and Futuristic Approach. <https://Services.Igi-Global.Com/Resolvedoi/Resolve.aspx?Doi=10.4018/978-1-6684-3448-2.Ch010>, 182–201. <https://doi.org/10.4018/978-1-6684-3448-2.CH010>
- [14]. Javaid, M., Haleem, A., Singh, R. P., Suman, R., & Khan, S. (2022). A review of Blockchain Technology applications for financial services. *BenchCouncil Transactions on Benchmarks, Standards and Evaluations*, 2(3), 100073. <https://doi.org/10.1016/J.TBENCH.2022.100073>
- [15]. Jennath, H. S., Anoop, V. S., Asharaf, S., & Saji, G. (2021). ChitChain: a blockchain-based technology framework for trust enablement in decentralized chit funds. *CSI Transactions on ICT* 2021 9:4, 9(4), 215–224. <https://doi.org/10.1007/S40012-021-00340-9>
- [16]. Khanna, P., & Haldar, A. (2022). Will adoption of blockchain technology be challenging: evidence from Indian banking industry. *Qualitative Research in Financial Markets*, 15(2), 361–384. <https://doi.org/10.1108/QRFM-01-2022-0003/FULL/PDF>
- [17]. Kumar, A. S., Katta Lakshmi Narayan Setty, V., & Ravi, G. (2022). How blockchain enables financial transactions in the banking sector. *International Journal of Business and Globalisation*, 31(1), 1–6. <https://doi.org/10.1504/IJBG.2022.124545>
- [18]. Lalitha, N., & Soujanya, D. (2019). Financial sector Innovations: Empowering Microfinance through the application of KYC Blockchain technology. *Proceeding of 2019 International Conference on Digitization: Landscaping Artificial Intelligence, ICD 2019*, 237–243. <https://doi.org/10.1109/ICD47981.2019.9105874>
- [19]. Murinde, V., Rizopoulos, E., & Zachariadis, M. (2022). The impact of the FinTech revolution on the future of banking: Opportunities and risks. *International Review of Financial Analysis*, 81, 102103. <https://doi.org/10.1016/J.IRFA.2022.102103>
- [20]. Nizam, E., Ng, A., Dewandaru, G., Nagayev, R., & Nkoba, M. A. (2019). The impact of social and environmental sustainability on financial performance: A global analysis of the banking sector. *Journal of Multinational Financial Management*, 49, 35–53. <https://doi.org/10.1016/J.MULFIN.2019.01.002>
- [21]. Paul, S., Adhikari, A., & Bose, I. (2022). White knight in dark days? Supply chain finance firms, blockchain, and the COVID-19 pandemic. *Information & Management*, 59(6), 103661. <https://doi.org/10.1016/J.IM.2022.103661>
- [22]. Ramphull, B., & Nagowah, S. D. (2022). *A Model for Smart Banking in Mauritius*. 43–60. https://doi.org/10.1007/978-3-031-15420-1_3
- [23]. Saji, A. C., Nandakishore, V. V., & Syla, L. B. (2019). A Blockchain based Investment and Collective Support Mapping for Emerging Businesses. *2019 10th International Conference on Computing, Communication and Networking Technologies, ICCCNT 2019*. <https://doi.org/10.1109/ICCCNT45670.2019.8944821>
- [24]. Sharma, A., Rastogi, S., & Elmagrhi, M. H. (2021). Impact of Efficiency on Voluntary Disclosure of Non-Banking Financial Company—Microfinance Institutions in India. *Journal of Risk and Financial*

Management 2021, Vol. 14, Page 289, 14(7), 289.
<https://doi.org/10.3390/JRFM14070289>

- [25]. Vashisth, A., Salako, K., & Pinto, P. (2024). Non-traditional banking services for the underserved. *Leveraging Blockchain Technology: Governance, Risk, Compliance, Security, and Benevolent Use Cases*, 170–183.
<https://doi.org/10.1201/9781003462033-13/NON-TRADITIONAL-BANKING-SERVICES-UNDERSERVED-ANKITA-VASHISTH-KOLAWOLE-SALAKO-PRAMITHA-PINTO>
- [26]. Wang, C.-K., Masukujjaman, M., Syed, S., Alam, I., Ahmad, C.-Y., Lin, Y.-H., Ho, 2023, Shah Alam, S., Ahmad, I., Lin, C.-Y., & Ho, Y.-H. (2023). The Effects of Service Quality Performance on Customer Satisfaction for Non-Banking Financial Institutions in an Emerging Economy. *International Journal of Financial Studies* 2023, Vol. 11, Page 33, 11(1), 33. <https://doi.org/10.3390/IJFS11010033>