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REVIEW ARTICLE

Innovation Technologies for the Financial Sector: An Integrative Review of Value Creation, Market Redesign, and Governance Challenges

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ABSTRACT

Financial innovation has evolved from the digitization of individual services to the redesign of financial infrastructures, organisational boundaries and market relationships. This review brings together recent evidence across five key areas of AI and advanced analytics, blockchain and distributed ledgers, open banking and application programming interfaces, central bank digital currencies, platform-based finance and digitally enabled sustainable finance. Journal articles from 2020-2025 that were published in peer-reviewed journals were subjected to a structured integrative review. The final evidence base consists of 24 studies that were chosen for being topical, clear in terms of methodology, and published in a scholarly journal. All articles were coded by technology domain, the financial function, research design, principal value mechanism, and the predominant risk. The synthesis illustrates how the four foundational mechanisms of innovation—information friction reduction, verification and execution automation, financial services availability expansion, and programmable or data-portable financial market architectures—can generate value. But second order risks are also created, including algorithmic opacity, privacy externalities, platform concentration, cyber dependency, regulatory fragmentation, and new channels of liquidity or systemic stress. While strong evidence exists for blockchain, digital money and open banking, the organizational studies of generative AI, embedded finance, PFTs and quantum-ready financial infrastructure are still in their infancy. The Review builds a governance-based framework on which the financial outcome depends on a combination of technological capability, institutional design, and market structure. It ends with a research agenda focused upon causal evaluation, cross-jurisdictional comparison, resilience metrics and human accountability in increasingly autonomous financial systems.

Keywords: Financial innovation ▪ FinTech ▪ Artificial intelligence ▪ Blockchain ▪ Open banking ▪ Central bank digital currency ▪ Digital finance ▪ RegTech ▪ Financial inclusion

1. INTRODUCTION

Financial technology is not being confined to a layer on top of traditional financial services. It is becoming a significant factor in the generation, assessment, trading, settlement, monitoring and regulation of financial claims. In the last 10 years, cloud computing, mobile platforms, application programming interfaces (APIs), machine learning, distributed ledgers, and digital identity systems have shifted from being experimental uses and moved into the very core of the financial-sector transformation. This shift has changed the nature of the competition between banks and non-bank platforms, broadened the application of alternative data, and facilitated financial products to be integrated into non-financial digital spaces.

The number of publications has increased quickly, but they are scattered throughout the fields of finance, information systems, economics and public policies, as well as innovation research. There are some existing reviews that have created useful taxonomies of FinTech activities and research streams [1, 2, 3]. However, there are three issues to address. First, technology-specific reviews tend to focus on either blockchain or central bank digital currencies (CBDCs) or open banking, when these technologies are becoming more interconnected. Second, many studies focus on adoption or efficiency without considering the institutional conditions that could better facilitate an increase in welfare from innovation. Third, the advantages and dangers of financial innovation are often presented separately from one another, while they stem from a common technical support, which is offered by the innovation. More data portability can help solve the credit competition problem and at the same time generate privacy externalities and new market power [4, 5].

This article addresses these limitations through an integrative review organized around the mechanisms by which technology changes financial activity. Rather than treating innovation as a collection of tools, the analysis examines how digital technologies reshape information, verification, execution, intermediation, and governance. The review answers four questions:

RQ1. Which innovation technologies have received the strongest recent scholarly attention in the financial sector?

RQ2. Through which mechanisms do these technologies create operational, market, and societal value?

RQ3. What risks and governance problems accompany their deployment?

RQ4. Which research directions are most important for the next generation of financial innovation scholarship?

The paper contributes in three ways. It integrates six technology domains into one evidence architecture; it links benefits and risks to common underlying mechanisms; and it proposes a governance-centered research framework that connects technological capability with institutional design and market structure.

2. REVIEW METHOD

2.1 Review design and scope

A structured integrative review was adopted because the research field combines conceptual studies, economic models, empirical analyses, case studies, and systematic reviews. The approach permits comparison across heterogeneous methods while retaining a transparent evidence trail. The temporal window begins in 2020, a period marked by accelerated digital payments, platform finance, experimentation with CBDCs, and rapid institutional adoption of artificial intelligence.

The review focused on peer-reviewed journal articles addressing technologies that alter the production or delivery of financial services. Eligible studies examined at least one of the following: artificial intelligence and analytics; blockchain or distributed ledger technology; open banking, APIs, or data portability; CBDCs and digital money; FinTech platforms and digitally mediated intermediation; or digital finance for inclusion and sustainability. Studies were excluded when technology was incidental, when the financial-sector implications were not developed, or when the publication lacked sufficient methodological or bibliographic clarity.

The final evidence base contains 24 studies published between 2020 and 2025. The coding file supplied with this article records the title, year, journal, DOI, technology domain, financial function, method, principal benefit, and principal risk for every included study. The dataset therefore supports direct reproduction of the descriptive figures and tables.

2.2 Coding and synthesis

Each article was coded in two stages. The first stage captured descriptive attributes: publication year, technology domain, financial function, and research method. The second stage used interpretive coding to identify the dominant value mechanism and the most consequential risk. Codes were compared across studies and consolidated into four value mechanisms and six governance challenges. Descriptive counts were generated programmatically from the article-level dataset. The scripts do not infer article quality or fabricate citation indicators; they summarize only the explicitly coded evidence base.

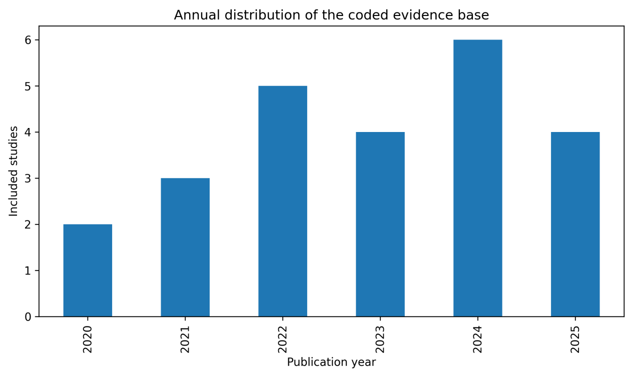

Figure 1. Annual distribution of the coded evidence base.

Figure 1 shows a gradual increase in relevant publications, with particularly strong representation in 2023–2025. The pattern reflects the maturation of research on open banking, CBDCs, sustainable finance, and AI-enabled financial systems.

3. TECHNOLOGY DOMAINS RESHAPING FINANCE

3.1 Artificial intelligence and advanced analytics

Artificial intelligence changes finance primarily by increasing the scale and speed of prediction. Credit scoring, fraud detection, anti-money-laundering surveillance, algorithmic trading, customer support, portfolio construction, and regulatory monitoring can all be recast as data-intensive prediction and classification problems. Recent work describes the emergence of an intelligent financial system in which AI affects both private decision-making and the design of regulation [6].

The operational case for AI is compelling. Models can process high-dimensional and unstructured information, detect patterns that are difficult to identify manually, and personalize services at low marginal cost. In lending, these capabilities may reduce information asymmetry and extend credit assessment to thin-file customers. In compliance, automation can prioritize suspicious cases and reduce the burden of rule-based monitoring. In investment and treasury functions, machine learning can support forecasting and scenario generation.

The governance problem is equally substantial. Financial models operate in environments characterized by distribution shifts, strategic behavior, and high consequences for error. Accuracy in historical data does not guarantee reliability under market stress. Complex models also create challenges for explanation, contestability, and accountability. When AI capabilities are concentrated in a small number of cloud, data, and model providers, firm-level efficiency may be accompanied by system-level dependency. The appropriate unit of analysis is therefore not only model performance, but the resilience of the wider AI supply chain.

3.2 Blockchain, distributed ledgers, and decentralized finance

Blockchain research has developed from early discussions of cryptocurrency toward a broader assessment of distributed trust, programmable assets, and shared financial infrastructures. Reviews identify potential applications in payments, clearing and settlement, trade finance, identity, reporting, audit, and compliance [7, 8, 9]. By creating a synchronized record across organizations, distributed ledgers can reduce reconciliation costs and automate conditional execution through smart contracts.

Decentralized finance extends these capabilities into market design. Protocols can reproduce functions such as exchange, lending, collateralization, and asset management without relying on a conventional centralized intermediary [10]. The innovation is not simply technical. It changes the allocation of control, the design of incentives, and the boundary between infrastructure and product.

However, replacing institutional trust with code does not eliminate governance. It relocates governance to software development, protocol design, oracle selection, validator incentives, and upgrade procedures. Smart-contract vulnerabilities, fragmented liquidity, legal uncertainty, and the concentration of voting power can undermine claims of decentralization. Enterprise applications face additional barriers involving interoperability, confidentiality, standards, and integration with legacy systems.

3.3 Open banking, APIs, and data portability

Open banking separates customer data from the institution that originally collected it. With customer permission, transaction information can be transferred to competing banks or FinTech firms through standardized APIs. This architecture can improve financial advice, account aggregation, affordability assessment, and credit competition.

Economic analysis demonstrates that access to transaction data can strengthen FinTech screening and reshape competition between incumbents and challengers [4]. Empirical evidence indicates that open-banking policies support FinTech entry and can help consumers and small businesses establish new financial relationships [5]. The resulting ecosystem shifts competition from ownership of customer records toward the quality of analytics, user experience, and complementary services.

Yet data portability does not automatically guarantee consumer benefit. A technically superior challenger may gain market power, while individuals who decline data sharing may face adverse inferences. Consent can become formal rather than meaningful when users cannot evaluate downstream data practices. API ecosystems also increase the number of interconnected entities and therefore the potential attack surface. Effective open banking requires strong authentication, liability rules, data minimization, service continuity standards, and credible mechanisms for revoking access.

3.4 Central bank digital currencies and digital money

CBDCs represent a more fundamental form of innovation because they combine payment technology with the public monetary system. Research has examined design choices involving access, remuneration, anonymity, distribution, and technical architecture [11, 12]. The core policy challenge is to provide safe and efficient digital central-bank money without destabilizing bank intermediation.

Models produce nuanced results. A CBDC may improve payment efficiency, inclusion, and competition, but a highly attractive public digital asset may draw deposits away from commercial banks [13, 14]. Design therefore matters. Remuneration tiers, holding limits, intermediated distribution, and privacy features influence adoption and systemic effects [15]. Other research shows that CBDC flows may provide information that helps authorities identify weak banks, potentially reducing fragility when the system is designed well [16]. Cross-country banking evidence also suggests that CBDC development can be associated with greater stability, although effects differ by type of CBDC and institutional context [17].

CBDCs should consequently be viewed as institutional infrastructures rather than payment applications. Their effects depend on legal status, central-bank mandates, banking structure, offline capability, cyber resilience, and cross-border interoperability.

3.5 Platform finance and the changing boundary of intermediation

FinTech platforms reorganize financial services around digital interfaces, modular infrastructure, and ecosystem partnerships. They can enter narrowly defined segments such as payments or lending and scale without reproducing the full organizational structure of a bank. This modularity places pressure on incumbents while also creating opportunities for partnership, acquisition, and internal innovation.

Evidence suggests that FinTech entry can stimulate innovation by established financial institutions [18], although the effect depends on incumbent capability and competitive structure. FinTech start-ups may improve efficiency and service quality, but they also change risk distribution and may increase pressure on weaker institutions [19]. For small and medium-sized enterprises, platform lending and alternative data can reduce information asymmetry and collateral constraints, but benefits remain uneven where digital infrastructure or regulatory capacity is weak [20].

Embedded finance represents the next stage of this transition. Payments, credit, insurance, and investment services increasingly appear inside retail, mobility, logistics, and enterprise software platforms. This expands convenience but may make financial risk less visible to users and regulators. Research must therefore examine who controls customer relationships, data, pricing, and dispute resolution when financial functions are distributed across non-financial ecosystems.

3.6 Digital innovation for inclusion and sustainability

Financial innovation can widen access by lowering transaction costs, supporting remote onboarding, and using new data sources. Blockchain case evidence highlights the potential for traceability and inclusion in emerging markets, while also emphasizing infrastructure and capability constraints [21]. Digital finance may also support sustainable development by expanding the range of investable environmental projects and improving connections between savers, lenders, and green enterprises [22].

Research on corporate green innovation suggests that digital finance can affect both the quantity and quality of environmental innovation [23]. Nevertheless, inclusion and sustainability should not be treated as automatic consequences of digitization. Digital exclusion, biased scoring, high-cost instant credit, energy-intensive infrastructures, and rebound effects can offset intended benefits. Evaluation should distinguish access from effective use, and product availability from long-term welfare.

4. CROSS-DOMAIN EVIDENCE PATTERNS

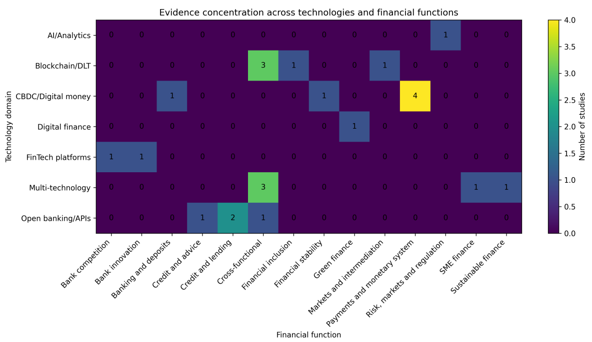

Figure 2. Evidence concentration across technology domains and financial functions.

Figure 2 indicates that the literature is concentrated in cross-functional reviews, monetary-system research, and credit-market studies. AI-specific evidence remains comparatively limited in the selected period because much of the most recent work is conceptual or application-specific. This imbalance suggests that technological diffusion in practice is moving faster than cumulative organizational evidence.

The central insight from Table 1 is that value and risk are co-produced. Information expansion improves screening but enables intrusive inference. Automated verification lowers cost but embeds legal and ethical choices in software. Faster execution increases convenience while accelerating the transmission of shocks. Architectural openness supports entry but can create new gatekeepers. Governance cannot be added after deployment; it must be designed into the innovation mechanism.

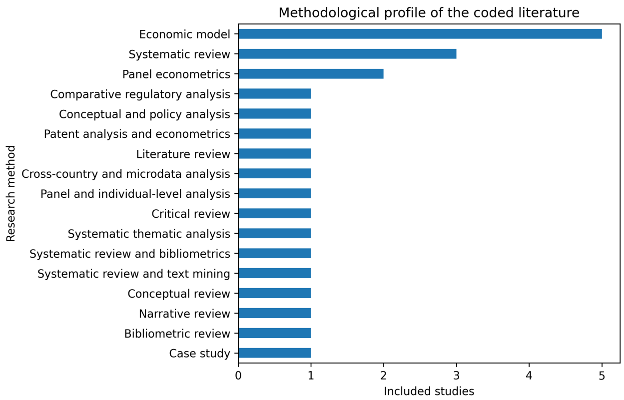

Figure 3. Methodological profile of the coded literature.

Figure 3 shows substantial reliance on reviews and economic models. These methods are valuable for field-building and design analysis, but the evidence base would benefit from more causal empirical studies, field experiments, longitudinal organizational research, and post-implementation evaluations.

5. A GOVERNANCE-CENTERED FRAMEWORK

The synthesis supports a three-layer framework. The first layer is *technological capability*: prediction, programmability, portability, identity, and real-time execution. The second is *institutional design*: ownership rights, consent, liability, auditability, interoperability, and supervisory access. The third is *market structure*: concentration, entry, complementarity, switching costs, and systemic interconnectedness. Financial outcomes arise from interactions among all three layers.

A highly accurate credit model, for example, may not improve welfare if customers cannot contest decisions or if proprietary data reinforce concentration. A technically secure blockchain may fail if legal finality is unclear. An open-banking regime may produce little competition when API quality is poor or dominant platforms control distribution. A CBDC may improve payment resilience but weaken deposit funding if remuneration and access are poorly calibrated. Technology should therefore be assessed as part of an institutional configuration rather than as an independent treatment.

The prominence of governance and trust in Figure 4 reflects a shift in the literature. Early financial innovation research often asked whether a technology could reduce cost or improve access. The more consequential question is now how innovation can scale without undermining accountability, resilience, and confidence.

6. RESEARCH AGENDA

6.1 From predictive accuracy to accountable financial intelligence

Future AI research should move beyond benchmark accuracy. Studies should report calibration, stability under distribution shift, subgroup performance, explanation quality, override behavior, and the organizational consequences of

Table 1. Innovation mechanisms and their financial implications

Mechanism	Primary value pathway	Associated governance problem
Information expansion	Alternative data, real-time monitoring, improved prediction, and personalized services	Privacy loss, biased inference, opacity, and strategic manipulation
Verification automation	Shared records, digital identity, smart contracts, and automated compliance	Coding errors, oracle dependence, legal ambiguity, and weak contestability
Execution acceleration	Instant payments, automated settlement, API-based service orchestration, and continuous markets	Cyber contagion, operational concentration, liquidity speed, and reduced recovery time
Architectural openness	Data portability, platform entry, programmable money, and modular financial products	Platform power, fragmented accountability, uneven standards, and regulatory arbitrage

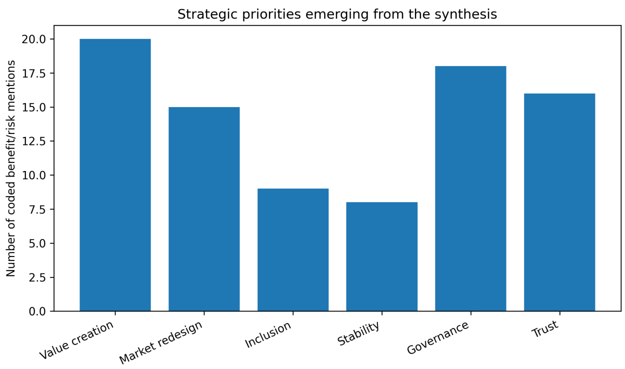

Figure 4. Strategic priorities emerging from the synthesis. Counts represent coded benefit and risk mentions in the included evidence base.

human–AI interaction. Generative AI introduces additional questions regarding hallucination, confidential data, model provenance, and delegation of fiduciary judgment. Research designs should compare full automation, decision support, and human review rather than assuming that more automation is superior.

6.2 Causal evaluation of open and embedded finance

Open banking research should test whether data portability produces durable improvements in price, access, innovation, and consumer welfare. Difference-in-differences designs, staggered regulatory adoption, and matched customer-level data can help separate policy effects from broader digitization. Embedded finance requires new measures of market boundaries because the provider of the interface, the balance sheet, the risk model, and the regulated product may be different organizations.

6.3 Resilience of programmable and tokenized finance

Research on blockchain and tokenization should evaluate end-to-end systems rather than isolated throughput. Relevant outcomes include settlement finality, recovery from software faults, governance during protocol upgrades, liquidity fragmentation, legal enforceability, and interoperability with conventional market infrastructure. Studies should also distinguish permissionless protocols from permissioned institutional networks because their risk structures differ substantially.

6.4 CBDC design under heterogeneous institutions

CBDC findings cannot be generalized without considering banking concentration, financial inclusion, cash dependence, privacy expectations, and central-bank capacity. Comparative work should evaluate retail and wholesale models, remuneration and holding limits, offline functionality, and cross-border arrangements. Empirical research will become increasingly important as pilot programs generate behavioral and operational data.

6.5 Innovation, inclusion, and distributional outcomes

Studies should distinguish formal access, active use, product suitability, and long-term welfare. Digital credit may widen access while increasing over-indebtedness; automated advice may lower cost while excluding users with low digital literacy. Distributional analysis should therefore examine who gains, who bears new risks, and whether technology changes bargaining power among households, firms, platforms, and financial institutions.

6.6 System-level concentration and third-party dependency

Cloud providers, identity services, data aggregators, core banking vendors, and foundation-model developers can become common dependencies across otherwise competing institutions. Future research should map these dependencies and develop measures of correlated operational exposure. Conventional firm-level outsourcing analysis is insufficient when multiple institutions depend on the same technical supplier or model architecture.

7. IMPLICATIONS FOR FINANCIAL INSTITUTIONS AND POLICYMAKERS

Financial institutions should manage innovation as portfolio architecture rather than as disconnected pilots. Investment decisions need to consider data governance, legacy integration, third-party concentration, model risk, cyber recovery, and customer redress from the beginning. A technically successful pilot can create long-term fragility if it depends on proprietary interfaces or cannot be audited after deployment.

Policymakers should pursue functionally consistent but technologically informed regulation. Equivalent financial functions should receive comparable prudential and conduct treatment, while regulation should recognize technology-specific failure modes. Supervisory access to model documentation, API performance, smart-contract controls, and outsourced infrastructure is essential. Regulatory sandboxes are most useful when they generate evidence and clarify transition paths, not when they operate as permanent exemptions.

Both institutions and regulators should treat trust as an engineered property. Trust depends on reliable performance, understandable decisions, enforceable rights, credible recov-

Table 2. Priority research questions and suitable empirical approaches

Area	Priority question	Promising approach
AI governance	When does automation improve decisions without weakening accountability?	Field experiments, model audits, longitudinal human–AI studies
Open banking	Does data portability improve welfare or shift market power to new intermediaries?	Staggered policy designs, customer-level panels, competition measures
Tokenized finance	Which governance and interoperability arrangements support resilient scaling?	Stress tests, event studies, comparative infrastructure analysis
CBDCs	How do design choices affect adoption, deposits, inclusion, and stability?	Pilot data, structural models, cross-country institutional comparison
Embedded finance	Who controls risk, data, and accountability across modular service chains?	Network analysis, contract analysis, ecosystem case studies
Sustainable finance	Does digital finance improve environmental outcomes or only financing volume?	Project-level impact data, causal panels, lifecycle assessment

ery, and clear accountability. These qualities are especially important as financial services become more automated and less visible to users.

8. LIMITATIONS

The review draws on a deliberately focused evidence base, rather than seeking to count every publication containing a FinTech keyword. This enhances interpretive depth but may exclude specialized studies in narrow application areas. The coding captures the dominant benefit and risk in each article, although individual studies may discuss several. The dataset also mirrors the fast development pace of the field; evidence on generative AI, privacy-enhancing computation, tokenized deposits and quantum technologies is likely to grow rapidly. These limitations further emphasize the need for periodic updates with the transparent coding structure supplied with the paper.

9. CONCLUSION

Innovation technologies are changing finance: they are reshaping the way information is generated, trust is built, transactions are brokered, and market access is organised. AI enhances prediction and automation, distributed ledgers enable shared records and programmability, open banking enables the portability of data, CBDCs transform the definition of public digital money, and platforms unbundled the intermediation. In all these areas, the most promising value propositions will be reduced information and transaction costs, new modes of access, quicker transactions and new coordination mechanisms.

The evidence also indicates that innovation neither eradicates financial frictions, but rather transforms them into different ones. Information asymmetry can turn into algorithmic opacity, institutional concentration can turn into platform concentration, and operational delay can turn into cyber-speed contagion. Technology is not the key element, it's the institutional and market structure that makes technology what it is. Value creation, value distribution, accountability, and resilience should be used in tandem to assess financial innovation in the future research and practice.

REFERENCES

[1] P. Choudhary and M. Thenmozhi, "Fintech and financial sector: Ado analysis and future research agenda," *International Review of Financial Analysis*, vol. 93, p. 103201, 2024.

[2] A. Bhatt, M. Joshipura, and N. Joshipura, "Decoding the trinity of fintech, digitalization and financial services: An integrated bibliometric analysis and thematic literature review approach," *Cogent Economics & Finance*, vol. 10, no. 1, p. 2114160, 2022.

[3] G. Kou, Ö. Olgu Akdeniz, H. Dinçer, and S. Yüksel, "Fintech: A literature review of emerging financial technologies and applications," *Financial Innovation*, vol. 11, 2025.

[4] Z. He, J. Huang, and J. Zhou, "Open banking: Credit market competition when borrowers own the data," *Journal of Financial Economics*, vol. 147, no. 2, pp. 449–474, 2023.

[5] T. Babina, G. Buchak, and W. Gornall, "Customer data access and fintech entry: Early evidence from open banking," *Journal of Financial Economics*, vol. 166, p. 103770, 2025.

[6] I. Aldasoro, L. Gambacorta, A. Korinek, V. Shreeti, and M. Stein, "Intelligent financial system: How ai is transforming finance," *Journal of Financial Stability*, p. 101364, 2025.

[7] O. Ali, M. Ally, P. Clutterbuck, and Y. K. Dwivedi, "The state of play of blockchain technology in the financial services sector: A systematic literature review," *International Journal of Information Management*, vol. 54, p. 102199, 2020.

[8] M. Javaid, A. Haleem, R. P. Singh, R. Suman, and S. Khan, "A review of blockchain technology applications for financial services," *Blockchain: Research and Applications*, vol. 3, no. 3, p. 100073, 2022.

[9] G. D. Sharma, A. K. Tiwari, M. Jain, A. Yadav, and M. Srivastava, "Past, present, and future of blockchain in finance," *Journal of Business Research*, vol. 177, p. 114758, 2024.

[10] Y. Chen and C. Bellavitis, "Blockchain disruption and decentralized finance: The rise of decentralized business models," *Journal of Business Venturing Insights*, vol. 13, p. e00151, 2020.

[11] Y. H. Hoang, V. M. Ngo, and N. B. Vu, "Central bank digital currency: A systematic literature review using text mining approach," *Research in International Business and Finance*, vol. 64, p. 101889, 2023.

[12] L. Dionysopoulos, M. Marra, and A. Urquhart, "Central bank digital currencies: A critical review," *International Review of Financial Analysis*, vol. 91, p. 103031, 2024.

[13] J. Fernández-Villaverde, D. Sanches, L. Schilling, and H. Uhlig, "Central bank digital currency: Central banking for all?" *Review of Economic Dynamics*, vol. 41, pp. 225–242, 2021.

[14] D. Andolfatto, "Assessing the impact of central bank digital currency on private banks," *The Economic Journal*, vol. 131, no. 634, pp. 525–540, 2021.

[15] I. Agur, A. Ari, and G. Dell'Ariccia, "Designing central bank digital currencies," *Journal of Monetary Economics*, vol. 125, pp. 62–79, 2022.

[16] T. Keister and C. Monnet, "Central bank digital currency: Stability and information," *Journal of Economic Dynamics and Control*, vol. 142, p. 104501, 2022.

[17] H. N. Luu, C. P. Nguyen, and M. A. Nasir, "Implications of central bank digital currency for financial stability: Evidence from the global banking sector," *Journal of International Financial Markets, Institutions and Money*, vol. 89, p. 101864, 2023.

[18] D. Caragea, A. Dobre, and B. Moinescu, "Does entry encourage innovation? evidence from the rise of fintech start-ups," *Review of Quantitative Finance and Accounting*, 2024.

[19] C. Haddad and L. Hornuf, "How do fintech start-ups affect financial institutions' performance and default risk?" *European Financial Management*, vol. 29, no. 5, pp. 1761–1792, 2023.

[20] B. Sanga and M. Aziakpono, "Fintech and smes financing: A systematic literature review and bibliometric analysis," *Digital Business*, vol. 3, no. 2, p. 100067, 2023.

[21] D. Di Prisco and D. Strangio, "Technology and financial inclusion: A case study to evaluate potential and limitations of blockchain in emerging countries," *Technology Analysis & Strategic Management*, 2021.

[22] M. Hasan, A. Hoque, M. Z. Abedin, and D. Gasbarro, "Fintech and sustainable development: A systematic thematic analysis using human- and machine-generated processing," *International Review of Financial Analysis*, vol. 95, p. 103473, 2024.

[23] S. Rao, Y. Pan, J. He, and X. Shangguan, "Digital finance and corporate green innovation: Quantity or quality?" *Environmental Science and Pollution Research*, 2022.