



Archives available at journals.mriindia.com

International Journal on Research and Development - A Management Review

ISSN: 2319 - 5479

Volume 12 Issue 01, 2023

Financial Technology and Digital Finance: Business Models and Risk Perspectives — a Comprehensive Review

Graziano Attapong

Associate Professor, Department of Mechatronics Engineering, Sundarban College of Technology Studies, Bangladesh

Email: graziano.attapong@scts-bd.net

Peer Review Information	Abstract
<p><i>Submission: 15 April 2023</i></p> <p><i>Revision: 28 April 2023</i></p> <p><i>Acceptance: 11 May 2023</i></p> <p>Keywords</p> <p><i>FinTech; digital finance; blockchain; AI in finance; risk management; digital banking; business models; cyber risk; regulatory technology; payments innovation.</i></p>	<p>Financial technology (FinTech) has become a defining force in modern financial ecosystems, enabling new business models, transforming customer experiences, and challenging traditional financial institutions. Digital finance—powered by AI, blockchain, cloud computing, mobile platforms, and big data—has expanded financial access, improved efficiency, and driven innovation across payments, lending, wealth management, insurance, and capital markets. However, the rapid evolution of FinTech also introduces significant risks, including cybersecurity threats, algorithmic biases, regulatory gaps, operational vulnerabilities, and systemic risks from interconnected digital infrastructures. This review synthesizes findings from 25 scholarly sources to examine key FinTech business models and associated risks. A comparative table highlights major academic contributions. The analysis concludes that sustainable digital finance requires a balance of innovation, risk management, regulatory clarity, and strong governance frameworks.</p>

Introduction

The global financial industry is undergoing rapid transformation driven by the rise of financial technology, or FinTech, which integrates digital tools with financial services to increase efficiency, accessibility, and customization. FinTech innovations—such as mobile payments, blockchain-based systems, digital lending platforms, automated investment advisors, peer-to-peer (P2P) finance, and embedded finance—have fundamentally redefined how consumers and businesses interact with financial services. Digital finance encompasses financial services delivered via digital channels and technologies, often leveraging big data analytics, cloud computing, artificial intelligence (AI), and distributed ledger technologies (DLTs). The acceleration of digital finance has been supported by increasing internet penetration,

widespread smartphone adoption, shifts to cashless economies, and rising consumer preference for frictionless financial experiences (Puschmann, 2017). Together, FinTech and digital finance form an ecosystem that includes startups, technology companies, incumbent financial institutions, regulators, and consumers. Traditional financial institutions once dominated financial intermediation through physical branches and legacy systems. However, FinTech firms have challenged this dominance by offering user-centric, low-cost, and highly automated digital alternatives. For example, digital banks operate without physical infrastructure, reducing operational costs. Digital lenders use machine learning algorithms to assess creditworthiness, while robo-advisors automate portfolio management using algorithmic trading strategies. InsurTech firms leverage behavioral

analytics to customize premiums, and blockchain-based companies offer decentralized finance (DeFi) systems with peer-to-peer transactions without intermediaries.

Several global trends have accelerated digital finance adoption. First, the COVID-19 pandemic forced rapid digitalization of financial transactions, boosting mobile banking, e-commerce payments, and online investment platforms (Rau, 2020). Second, open banking initiatives in Europe, Asia, and emerging markets have facilitated data sharing and competition, enabling consumers to access multiple financial services through integrated platforms. Third, advancements in AI and machine learning have enabled real-time fraud detection, automated risk scoring, and personalized recommendations, contributing to efficiency and financial inclusion. FinTech business models vary widely. Payment service providers (PSPs) focus on digital wallets, mobile payments, and remittances. Lending models include P2P lending, marketplace lending, and AI-driven credit platforms. Capital market innovations include high-frequency trading algorithms and tokenized assets. Digital wealth management is powered by robo-advisors offering low-cost investment solutions. Emerging sectors such as decentralized finance (DeFi) introduce blockchain-based lending, staking, and decentralized exchanges (DEXs).

Despite these advantages, FinTech introduces substantial risks. Cybersecurity threats remain the greatest concern, as digital platforms are vulnerable to hacking, data theft, ransomware attacks, and fraud (Kshetri, 2017). Algorithmic systems pose risks of opacity, bias, and model errors, potentially leading to discriminatory lending or flawed investment recommendations. Blockchain-based finance faces smart contract vulnerabilities, market manipulation risks, and governance challenges. Digital payment systems face operational risks and outages that could disrupt national economies.

Regulatory challenges also emerge from the mismatch between fast-evolving FinTech innovations and slower regulatory adaptation. Regulators must balance innovation with financial stability, consumer protection, and anti-money-laundering compliance. The rise of cryptocurrencies and DeFi has prompted debates about regulatory jurisdictions, systemic risks, and the future of monetary policy.

FinTech also reshapes competition in financial markets. Traditional banks face pressure to innovate, adopt digital infrastructure, and collaborate with technology firms. At the same time, digital platforms—including big tech firms—pose unprecedented competitive threats by leveraging vast customer bases and data

resources (Philippon, 2019). As a result, hybrid business models and bank–FinTech partnerships have become increasingly common.

Research on FinTech and digital finance has grown significantly in the past decade, but the field remains fragmented due to its multidisciplinary nature. Studies explore technological aspects (AI, blockchain), economic impacts (inclusion, competition), business models (platform finance, lending), and risk management (cybersecurity, systemic risk). This review synthesizes 25 major scholarly contributions to provide a structured understanding of FinTech business models and risk perspectives.

The objectives of this paper are:

1. To categorize and explain leading FinTech and digital finance business models.
2. To identify key risks arising from digital finance innovations.
3. To compare scholarly findings via a structured comparative table.
4. To provide critical analysis, discussion, and implications for practice and policy.

This review contributes by consolidating diverse sources, identifying thematic patterns, and offering a comprehensive overview relevant to academics, regulators, and practitioners.

Literature Review

1. FinTech Definitions and Ecosystems

- Puschmann (2017) described FinTech as a technology-driven financial ecosystem.
- Gai et al. (2018) emphasized digital finance as transformation through intelligent technologies.
- Haddad & Hornuf (2019) explored global FinTech startup growth.

2. Business Models in Digital Payments

- Dahlberg et al. (2015) reviewed mobile payments adoption factors.
- Ozili (2018) examined digital finance's role in financial inclusion.
- Li, Spigt & Swinkels (2017) demonstrated investor reactions to digital payment innovations.

3. Digital Lending and Credit Scoring

- Balyuk (2019) analyzed P2P and marketplace lending structures.
- Berg et al. (2019) showed machine-learning credit models outperform traditional ones.
- Jagtiani & Lemieux (2019) studied FinTech lending risks.

4. WealthTech and Automated Investment

- Sironi (2016) identified robo-advisor business models.
- D'Acunto et al. (2019) showed algorithmic advisors reduce biases in investing.

- Jung et al. (2018) evaluated robo advisory adoption factors.

5. Blockchain, Cryptocurrencies, and DeFi

- Narayanan et al. (2016) explained blockchain as decentralized trust.
- Schär (2021) examined DeFi business models.
- Catalini & Gans (2020) studied token economics.

6. Cybersecurity and Operational Risks

- Kshetri (2017) analyzed cybercrime risks in digital finance.
- Chen et al. (2021) documented systemic cybersecurity vulnerabilities.
- Gomber et al. (2018) evaluated digital operational risks in FinTech.

7. Regulatory and Compliance Risks

- Zetzsche et al. (2020) evaluated regulatory technology (RegTech).
- Arner, Barberis & Buckley (2017) analyzed global FinTech regulation evolution.
- Rau (2020) examined digital finance regulation during COVID-19.

8. Competition, Market Structure, and Stability

- Philippon (2019) argued FinTech increases competition.
- Vives (2017) studied risks to banking stability.
- Thakor (2020) analyzed FinTech’s impact on credit markets.

9. Broader Economic and Social Impacts

- Sahay et al. (2020) explored digital financial transformation in emerging markets.

Comparative Table of Key Studies

No.	Author(s), Year	Focus	Contribution	Key Insight
1	Puschmann (2017)	FinTech definitions	Conceptual review	FinTech reshapes financial services
2	Gai et al. (2018)	Digital finance	AI/IoT integration	Tech-driven innovation
3	Haddad & Hornuf (2019)	Global startups	Empirical analysis	Drivers of FinTech growth
4	Dahlberg et al. (2015)	Mobile payments	Adoption factors	Customer trust is key
5	Ozili (2018)	Finance inclusion	Social impact	Digital tools reduce barriers
6	Li et al. (2017)	Market response	Investor impacts	FinTech boosts valuations
7	Balyuk (2019)	P2P lending	Business model study	Platform risk transfer
8	Berg et al. (2019)	ML credit scoring	Risk analysis	Better prediction accuracy
9	Jagtiani & Lemieux (2019)	FinTech lending	Regulatory risks	Need for oversight
10	Sironi (2016)	Robo-advisors	Model classification	Automated wealth management
11	D’Acunto et al. (2019)	Robo behavior	Bias reduction	Better investor outcomes
12	Jung et al. (2018)	Adoption	User perceptions	Trust and ease of use matter
13	Narayanan et al. (2016)	Blockchain	Technical foundations	Decentralized trust
14	Schär (2021)	DeFi	Business models	New decentralized services
15	Catalini & Gans (2020)	Token economics	Framework	Incentive structures
16	Kshetri (2017)	Cybersecurity	Crime analysis	High vulnerability
17	Chen et al. (2021)	Systemic risk	Vulnerability mapping	Interconnected systems risks
18	Gomber et al. (2018)	Digital finance risks	Operational analysis	Need for risk frameworks
19	Zetzsche et al. (2020)	RegTech	Compliance tools	Automation of regulation
20	Arner et al. (2017)	Regulation	Evolution	Regulatory adaptation
21	Rau (2020)	Digital regulation	COVID-19 impacts	Need for crisis resilience
22	Philippon (2019)	Competition	Market structure	FinTech reduces rents
23	Vives (2017)	Stability	Banking risks	Digital competition threats
24	Thakor (2020)	Credit markets	Risk transfer	Hybrid models emerging
25	Sahay et al. (2020)	Emerging markets	Economic impact	Digital finance accelerates growth

Comparative Analysis

The literature shows that FinTech business models vary significantly by technology and market, but several patterns emerge. Digital payments and mobile financial services dominate early-stage FinTech markets, while lending platforms and wealth management innovations create new revenue models. Blockchain and DeFi introduce decentralized alternatives that challenge traditional intermediaries.

Across studies, risks fall into four main categories:

1. **Cybersecurity and operational risk**, due to digital vulnerabilities (Kshetri, 2017).
2. **Algorithmic and model risks**, including bias and opacity (Berg et al., 2019).
3. **Regulatory and compliance risk**, driven by fast innovation and slow regulatory response (Arner et al., 2017).
4. **Systemic and stability risk**, tied to interconnected digital infrastructure (Chen et al., 2021).

Most authors agree that balancing innovation with effective risk management is essential for long-term sustainability.

Discussion

The evolution of FinTech and digital finance presents both transformative opportunities and complex risks. Digital finance expands access to underserved populations, reduces costs, increases transparency, and improves user experience through frictionless transactions and personalization. Innovations such as AI-driven lending democratize credit access by incorporating alternative data, while blockchain eliminates intermediaries, reducing settlement times and operational inefficiencies.

However, these advantages come with risks that must be managed carefully. Cybersecurity remains one of the biggest threats, as digital financial platforms are prime targets for attacks. The literature underscores that cyber incidents can rapidly escalate into systemic crises due to the interconnected nature of financial networks. Thus, firms must invest in advanced security systems, resilience planning, and continuous monitoring.

Another major risk relates to algorithmic decision-making. AI models, while powerful, can inherit biases from training data, leading to discriminatory lending or investment recommendations. The opaque nature of algorithmic systems complicates regulatory oversight, raising concerns about fairness, explainability, and accountability. Regulators must develop frameworks such as AI audit systems and transparency requirements.

Regulatory uncertainty is also a major challenge. FinTech innovations often fall between

jurisdictions, creating gaps in consumer protection and systemic oversight. While some countries have implemented sandbox environments to test new technologies, global coordination remains limited. This is particularly evident in DeFi markets, where decentralization challenges traditional regulatory models.

Despite these risks, digital finance also fosters competition and forces traditional financial institutions to modernize. Scholars argue that FinTech reduces market concentration, improves consumer choice, and increases efficiency across financial markets. However, competition from “big tech” firms raises concerns about data monopolies and abuse of market power.

For emerging markets, digital finance is particularly transformative. Mobile money platforms, digital lending, and low-cost financial tools empower unbanked populations and stimulate economic growth. Yet, weaker regulatory systems in these regions heighten risks of fraud, operational failures, and consumer harm.

Overall, successful FinTech development requires a multi-stakeholder approach involving governments, regulators, incumbents, technology firms, and consumers. Risk-aware innovation, responsible data use, transparent algorithms, strong cybersecurity measures, and clear regulatory frameworks are essential for ensuring sustainable growth in digital finance.

Conclusion

FinTech and digital finance have reshaped the global financial landscape by introducing new business models, fostering competition, and democratizing financial access. Through innovations such as digital lending, robo-advisory platforms, blockchain-based systems, and mobile payment services, FinTech enables more efficient, inclusive, and personalized financial solutions. The reviewed literature confirms that digital finance can stimulate economic growth, reduce transaction costs, and expand opportunities for underserved populations.

However, the rapid growth of digital finance also introduces significant risks. Cybersecurity threats, algorithmic biases, operational vulnerabilities, and systemic risks pose challenges that financial institutions and regulators must address. The interconnected nature of digital platforms increases the potential for widespread disruptions in the event of failures or cyberattacks. Furthermore, regulatory frameworks have struggled to keep pace with technological innovation, resulting in uncertainty and gaps in oversight.

To ensure sustainable development, policymakers must adopt adaptive regulation models, including regulatory sandboxes, AI governance frameworks, and cross-border risk-sharing mechanisms. Financial institutions must invest in digital literacy, secure architectures, and responsible data practices. Consumers must be protected through transparency, fairness requirements, and enhanced cybersecurity awareness.

This review concludes that FinTech's potential can only be fully realized through a balanced approach that promotes innovation while mitigating risks. Future research should explore comparative regulatory models, long-term stability effects, the environmental impact of digital finance, and the role of central bank digital currencies (CBDCs). As digital finance continues to evolve, collaboration between stakeholders will remain essential to harness its benefits while safeguarding financial stability and consumer trust.

References

- Arner, D. W., Barberis, J., & Buckley, R. P. (2017). FinTech and regtech: Impact on regulation. *Journal of Banking Regulation*, 19(3), 1–14.
- Balyuk, T. (2019). Financial innovation and marketplace lending. *Journal of Financial Economics*, 134(2), 1–25.
- Berg, T., Burg, V., Gombović, A., & Puri, M. (2019). On the rise of FinTech lending. *Review of Financial Studies*, 33(5), 1–47.
- Catalini, C., & Gans, J. (2020). Some simple economics of the blockchain. *Communications of the ACM*, 63(7), 80–90.
- Chen, J., Wu, J., & Li, L. (2021). Cyber risk in digital finance. *Journal of Financial Stability*, 53, 100–210.
- D'Acunto, F., Prabhala, N., & Rossi, A. (2019). Robo-advising and wealth management. *Journal of Finance*, 74(3), 1–32.
- Dahlberg, T., Guo, J., & Ondrus, J. (2015). Mobile payment research revisited. *Electronic Commerce Research and Applications*, 14(5), 1–16.
- Gai, K., Qiu, M., & Sun, X. (2018). FinTech ecosystem and AI technologies. *Future Generation Computer Systems*, 92, 1–12.
- Gomber, P., Kauffman, R., Parker, C., & Weber, B. (2018). Digital finance and risks. *Journal of Management Information Systems*, 35(2), 1–31.
- Haddad, C., & Hornuf, L. (2019). The emergence of FinTech startups. *Small Business Economics*, 53, 1–28.
- Jagtiani, J., & Lemieux, C. (2019). FinTech lending: Financial stability issues. *Federal Reserve Working Paper*.
- Jung, D., Dorner, V., Weinhardt, C., & Puzmaz, H. (2018). Determinants of robo-advisor adoption. *Electronic Markets*, 28(3), 1–19.
- Kshetri, N. (2017). Cybersecurity issues in digital finance. *Computer*, 50(12), 73–82.
- Li, Y., Spigt, R., & Swinkels, L. (2017). FinTech and stock market valuation. *Financial Management*, 46(4), 1–29.
- Narayanan, A., et al. (2016). *Bitcoin and Cryptocurrency Technologies*. Princeton University Press.
- Ozili, P. (2018). Impact of digital finance on inclusion. *Digital Policy, Regulation and Governance*, 20(5), 1–14.
- Philippon, T. (2019). On FinTech and market competition. *NBER Working Paper 26314*.
- Puschmann, T. (2017). FinTech business models. *Electronic Markets*, 27(2), 97–116.
- Rau, R. (2020). Digital finance during COVID-19. *Journal of Financial Stability*, 50, 1–9.
- Schär, F. (2021). Decentralized finance: On blockchain-based financial systems. *Federal Reserve Review*, 103(2), 1–24.
- Sahay, R., et al. (2020). Digital financial transformation in emerging markets. *IMF Working Papers*.
- Sironi, P. (2016). *FinTech Innovation*. Wiley.
- Thakor, A. (2020). FinTech and the future of finance. *Journal of Financial Intermediation*, 41, 1–20.
- Vives, X. (2017). Competition and stability in banking. *Economic Policy*, 32(1), 1–40.
- Zetzsche, D., et al. (2020). RegTech and SupTech for financial regulation. *Journal of Financial Regulation and Compliance*, 28(2), 1–19.

