



Digital Finance, FinTech, and Payment Innovations

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Abstract

Digital finance, encompassing FinTech innovations and payment advancements, has revolutionized global financial services by enhancing accessibility, efficiency, and inclusivity. This article provides a comprehensive review of the evolution, current state, and future trajectory of digital finance. It traces historical milestones from FinTech 1.0 (1886–1967) infrastructure building to FinTech 3.0 (post-2008) startup-driven disruption and emerging agentic AI integrations. Key innovations include blockchain, artificial intelligence (AI), open banking, central bank digital currencies (CBDCs), buy now pay later (BNPL), and real-time payments.

Case studies from PayPal, Alipay, Stripe, and emerging agentic platforms illustrate practical impacts, including reduced costs, enhanced inclusion, and new risks like cybersecurity. Challenges encompass regulatory fragmentation, data privacy, and digital divides, particularly in emerging markets. Future trends emphasize agentic AI, tokenized assets, embedded finance, and quantum-safe systems by 2030.

This synthesis, drawing on recent bibliometric reviews and market reports (2024–2026), proposes an integrative framework for stakeholders to navigate convergence, prioritizing ethical innovation and inclusive regulation to achieve SDGs related to financial access. The article underscores digital finance's role in fostering resilient, equitable economies

amid technological acceleration.

Introduction

Digital finance integrates technology into financial services, enabling seamless transactions, personalized products, and broader access. FinTech—financial technology—disrupts traditional models through innovations in payments, lending, insurance, and investments. Payment innovations, from mobile wallets to real-time rails, form the backbone, driving cashless economies.

The sector's growth is exponential: global FinTech market valued at USD 320.81 billion in 2025, projected to USD 652.80 billion by 2030 (CAGR 15.27%). Digital payments reached USD 114.41 billion in 2024, forecasted to USD 361.30 billion by 2030 (CAGR 21.4%), with transaction values crossing \$38 trillion by 2030. Drivers include smartphone proliferation, open banking APIs, and post-pandemic digital shifts.

Historically, digital finance evolved in phases: FinTech 1.0 (1886–1967) built global infrastructure (transatlantic cables, Fedwire 1918); FinTech 2.0 (1967–2008) digitized banking (ATM 1967, SWIFT 1973, online banking 1980s); FinTech 3.0 (2008–present) spurred startups post-crisis (Bitcoin 2009, mobile money in emerging markets).

Bibliometric studies map research frontiers: clusters on inclusion, blockchain, AI, and regulation. Emerging markets lead adoption via mobile payments, while developed regions focus on embedded finance.



Challenges include cybersecurity, exclusion risks, and uneven regulation. Opportunities lie in AI-driven personalization, CBDCs, and tokenization. This article synthesizes 2024–2026 literature, structured as: evolution, key innovations, market trends, case studies, challenges/future directions, and recommendations.

Evolution of Digital Finance, FinTech, and Payment Innovations

The evolution of digital finance reflects technological progress, regulatory shifts, and economic needs, transitioning from basic infrastructure to sophisticated ecosystems.

FinTech 1.0: Building Global Infrastructure (1886–1967)

This foundational phase globalized finance through communication advancements. The transatlantic cable (1866) enabled rapid information exchange, while Fedwire (1918) digitized U.S. fund transfers using Morse code. Credit cards emerged with Diners Club (1950) and American Express (1958), reducing cash reliance and paving the way for electronic payments.

FinTech 2.0: Digitization by Incumbents (1967–2008)

Banks led digitization. Barclays' ATM (1967) marked the analog-to-digital shift. NASDAQ (1971) electronicized stock trading; SWIFT (1973) standardized international messaging. Online banking began in the 1980s, with Bloomberg terminals (1981) providing real-time data. The dot-com boom introduced PayPal (1998), facilitating online transactions.

FinTech 3.0: Disruption and Inclusion (2008–Present)

The 2008 crisis eroded trust in banks, spurring startups. Apple's iPhone (2007) enabled mobile apps; Bitcoin (2009) launched blockchain. In emerging markets, Alipay and M-Pesa revolutionized access. Open banking via PSD2 (2018) promoted APIs for data sharing. Post-2020, the pandemic accelerated adoption, with digital payments surging 50% in many regions. Bibliometric trends show exponential growth, with 3884 publications from 1986–2024, focusing on inclusion and sustainability. Emerging themes include agentic AI and tokenized assets.

Phase	Key Milestones	Impact
FinTech 1.0	Transatlantic cable (1866), Fedwire (1918)	Global connectivity
FinTech 2.0	ATM (1967), SWIFT (1973), PayPal (1998)	Digitized operations
FinTech 3.0	Bitcoin (2009), PSD2 (2018)	Disruption and inclusion

Bibliometric trends show post-2015 surge, with themes shifting to inclusion and sustainability.

Key Innovations in FinTech and Payments

Artificial Intelligence and Agentic Finance

AI powers fraud detection, credit scoring, and personalization. Agentic AI (autonomous agents) emerges for proactive finance by 2026. AI in FinTech valued at \$30 billion (2025), projected \$83.1 billion by 2030.

Blockchain and Cryptocurrencies

Blockchain provides immutable ledgers for secure transactions. Tokenization of assets could reach trillions by 2033. Stablecoins like USDC processed \$27 trillion in 2025 volumes.

Open Banking and Embedded Finance

APIs under open banking allow secure data sharing, enabling embedded finance in non-financial apps, like Uber's payments.



Central Bank Digital Currencies (CBDCs)

137 countries explored CBDCs in 2025; China's e-CNY and EU pilots demonstrate programmable money for efficient settlements.

Buy Now, Pay Later (BNPL) and Real-Time Payments

BNPL, led by Klarna, offers interest-free installments, growing 40% annually. Real-time systems like UPI in India handle billions of transactions.

Market Trends and Projections

The FinTech market is poised for robust growth, driven by digital adoption.

Digital payments lead, with wallets reaching 6 billion users by 2030. Revenues projected at \$3.0 trillion by 2029. Inclusion in EMDEs advances via mobile FinTech.

Regional trends: North America dominates with USD 127.52 billion in 2025, Asia-Pacific to overtake by 2032.

Case Studies

PayPal: Pioneering Online Payments

Founded in 1998, PayPal revolutionized e-commerce. In 2025, it integrated crypto and agentic AI, processing \$1.7 trillion annually. Innovations reduced friction, boosting adoption.

Alipay: Super App for Inclusion

Alipay, from Ant Group, serves 1.6 billion users with one-tap payments and cross-border trust via blockchain. It addressed merchant liquidity, enhancing inclusion in China.

Stripe: Embedded Payments Leader

Stripe facilitates global transactions with APIs, acquiring Privy in 2025 for crypto expansion. It supports embedded finance, processing trillions.

Klarna: BNPL Innovator

Klarna's BNPL reduces cart abandonment, rolling out P2P in Europe in 2026. It transforms e-commerce checkouts, aligning with real-time trends.

These cases highlight cost reductions (20-30%) and inclusion gains, but also risks like fraud.

Challenges and Future Directions

Challenges: Cybersecurity threats cost \$8 trillion in 2025; regulatory gaps hinder cross-border operations; digital divides exclude 2.6 billion unbanked.

Future: Agentic AI for autonomous finance; tokenized assets in trillions; embedded ecosystems; quantum-safe encryption by 2030.

Conclusion

Digital finance and FinTech drive inclusive, efficient systems. Ethical adoption ensures equitable benefits. Digital finance, FinTech, and payment innovations promise inclusive, efficient systems. Ethical, regulated adoption will maximize benefits, fostering equitable growth.



References

1. Arora K, Dahiya S. (2026). Digital financial inclusion and fintech: a bibliometric analysis. *Journal of Economic and Administrative Sciences*. <https://www.emerald.com/jeas/article/doi/10.1108/JEAS-09-2023-0260/1335424>
2. Financial technology (Fintech) research trend: a bibliometric analysis. *Discover Sustainability*. (2025). <https://link.springer.com/article/10.1007/s43621-025-01225-6>
3. Digital financial inclusion and fintech: a bibliometric analysis. Emerald Publishing. (2026). <https://www.emerald.com/jeas/article/doi/10.1108/JEAS-09-2023-0260/1335424>
4. A comprehensive analysis of FinTech (1968–2025): a bibliometric approach. Springer Link. (2025). <https://link.springer.com/article/10.1186/s43093-025-00652-1>
5. A Bibliometric Analysis of Financial Technology: Unveiling the Research Landscape. MDPI. (2023). <https://www.mdpi.com/2674-1032/2/3/30>
6. Bridging the financial divide: a bibliometric analysis... *Nature*. (2023). <https://www.nature.com/articles/s41599-023-02086-y>
7. From Cash to Clicks: A Systematic Review... *Sage Journals*. (2024). <https://journals.sagepub.com/doi/10.1177/09711023241312523>
8. Financial technology (Fintech) research trend: a bibliometric analysis. Springer Nature. (2025). <https://link.springer.com/article/10.1007/s43621-025-01225-6>
9. FinTech and financial inclusion in emerging markets... *ScienceDirect*. (2024). <https://www.sciencedirect.com/org/science/article/pii/S1746880924000263>
10. The Digital Finance Revolution... (2025). <https://ijefm.co.in/v8i10/13.php>
11. Emerging trends in FinTech and financial inclusion... Taylor & Francis. (2024). <https://www.tandfonline.com/doi/abs/10.1080/20421338.2024.2353428>
