

The Evolution Of Financial Technology (FinTech) In Driving E-Business: A Systematic Literature Review

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Abstract

Financial Technology (FinTech) has emerged as a disruptive force, fundamentally altering the global e-business landscape by modernizing transaction systems, fostering financial inclusion, and eliminating friction in online buyer-seller interactions (Thakor, 2020). Despite the rapid proliferation of FinTech solutions—ranging from mobile payment gateways and Buy Now, Pay Later (BNPL) schemes to blockchain-based smart contracts—there remains a fragmented understanding of how these innovations systematically drive strategic value creation within e-business models. This study conducts a Systematic Literature Review (SLR) guided by the PRISMA framework to synthesize existing academic literature from the past five years (2021–2026) (Al-Sharafi et al., 2023). By analyzing 25 high-impact, peer-reviewed journal articles across major databases (Scopus, Web of Science, IEEE Xplore, ScienceDirect), this research addresses four key research questions. First, it identifies the dominant FinTech solutions currently shaping e-business ecosystems. Second, it investigates how FinTech adoption enhances operational efficiency, user experience, and transaction security. Third, it outlines the critical strategic and technological challenges—such as cybersecurity vulnerabilities and regulatory compliance—that arise during integration. Finally, it highlights emerging trends and research gaps, notably the rise of AI-driven embedded finance in cross-border e-commerce. The findings culminate in a structural classification matrix that maps FinTech capabilities against e-business performance metrics. This study contributes to the literature by providing a comprehensive conceptual framework and offers actionable managerial guidelines for e-business practitioners seeking to leverage modern FinTech stacks to achieve sustainable competitive advantage.

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1. INTRODUCTION

The rapid digital transformation of the global economy has fundamentally reshaped how businesses operate, interact with consumers, and create value. Central to this paradigm shift is the integration of Financial Technology (FinTech) within E-Business ecosystems. FinTech, a

portmanteau of "financial" and "technology," refers to the application of innovative digital technologies such as mobile applications, cloud computing, artificial intelligence (AI), and blockchain to optimize, automate, and deliver financial services. Over the past decade, the symbiotic relationship between FinTech and E-Business has evolved from simple online payment facilitation to the creation of highly complex, interconnected digital economies (Gomber et al., 2018; Lee & Shin, 2018). As E-Business models expand beyond traditional boundaries, the need for agile, secure, and inclusive financial infrastructure has become paramount. This study aims to provide a comprehensive exploration of how the evolution of FinTech continues to drive and sustain E-Business growth in the contemporary digital era.

Historically, E-Business operations were heavily reliant on traditional banking systems, which often introduced significant friction into the customer journey. High transaction fees, extended processing times for cross-border payments, and stringent credit access limitations hindered the scalability of small and medium-sized enterprises (SMEs) and digital startups. However, the advent of sophisticated FinTech solutions—including integrated payment gateways, digital wallets, micro-financing platforms, and "Buy Now, Pay Later" (BNPL) services—has democratized financial access (Chen et al., 2022; Rahman & Ali, 2023). These technologies empower businesses to offer seamless checkout experiences, thereby significantly reducing cart abandonment rates and enhancing overall customer satisfaction. Furthermore, FinTech innovations have facilitated the rise of new E-Business models, such as platform-based gig economies and subscription services, which require micro-transaction capabilities and real-time revenue splitting.

Despite the evident benefits, the integration of FinTech into E-Business infrastructure is not without profound challenges. Organizations must navigate a complex web of cybersecurity threats, data privacy regulations (e.g., GDPR), and technological interoperability issues (Luo et al., 2023; Molina & Perez, 2024). The rapid pace of FinTech innovation often outstrips existing regulatory frameworks, creating an environment of uncertainty for e-commerce platforms seeking to adopt decentralized finance (DeFi) or blockchain-based smart contracts. Moreover, while there is a wealth of individual studies focusing on specific FinTech applications (such as mobile wallets or cryptocurrency), a holistic synthesis that evaluates the broader strategic impact of multiple FinTech solutions on E-Business value creation remains fragmented (Al-Sharafi et al., 2023). This highlights a critical research gap: the need for a systematized understanding of how different FinTech domains collectively drive operational efficiency and organizational innovation in E-Business.

To address these gaps, this study employs a Systematic Literature Review (SLR) methodology based on the PRISMA framework to meticulously analyze current academic discourse. The research is guided by four pivotal Research Questions (RQs): (RQ1) What are the dominant FinTech solutions currently shaping e-business ecosystems? (RQ2) How does FinTech adoption enhance operational efficiency, user experience, and transaction security in e-business models? (RQ3) What key strategic and technological challenges arise when integrating FinTech within e-business infrastructure? (RQ4) What are the emerging trends and key gaps in FinTech and e-business research that require future empirical investigation? By answering these questions, this paper seeks to provide theoretical clarity and practical insights for scholars and practitioners alike.

The contribution of this study is twofold. Theoretically, it advances the literature on digital business innovation by developing a structural classification matrix that maps distinct FinTech

capabilities against specific e-business performance metrics. This framework bridges the conceptual divide between financial engineering and digital marketing strategy. Practically, the findings offer actionable managerial guidelines for E-Business leaders, particularly in SMEs and startups, enabling them to make informed decisions regarding FinTech stack investments. Ultimately, this research underscores that FinTech is no longer merely an operational support function, but a core strategic driver of sustainable competitive advantage in the digital marketplace.

2. LITERATURE REVIEW

The intersection of FinTech and E-Business is grounded in several theoretical frameworks that explain technology adoption and organizational transformation. A prominent theory frequently utilized in this domain is the Technology Acceptance Model (TAM) and its extensions (such as UTAUT), which elucidate how perceived usefulness and perceived ease of use influence consumer and merchant adoption of digital payment systems (Nguyen & Dang, 2022). In the context of E-Business, the perceived usefulness of FinTech is often tied to its ability to streamline checkout processes, reduce transaction costs, and offer alternative credit solutions like BNPL. Conversely, perceived ease of use relates to the seamlessness of API integrations and the intuitiveness of the user interface provided by payment gateways.

Beyond individual adoption theories, the Resource-Based View (RBV) of the firm provides a macro-level perspective on FinTech as a strategic asset. According to RBV, organizations achieve competitive advantage by leveraging resources that are valuable, rare, inimitable, and non-substitutable. In the modern digital economy, proprietary data analytics capabilities derived from FinTech transactions serve as a critical resource. E-Business platforms that harness AI-driven financial analytics can offer hyper-personalized product recommendations, dynamic pricing, and targeted micro-loans, thereby creating a highly differentiated customer experience that is difficult for competitors to replicate (Sari & Utama, 2024). This strategic deployment of FinTech transitions it from a mere utility to a core component of Business Model Innovation.

Previous literature has extensively documented the evolution of specific FinTech domains. For instance, research on payment infrastructure has shifted from analyzing basic credit card processing to evaluating Open Banking APIs and decentralized ledger technologies (blockchain) (Johnson & Smith, 2023; Kim & Lee, 2022). Open Banking, facilitated by regulatory shifts in various jurisdictions, allows third-party financial service providers open access to consumer banking, transaction, and other financial data through APIs. This has been a catalyst for embedded finance, where non-financial E-Business platforms seamlessly integrate financial services such as insurance, lending, or investment directly into their customer journeys. Despite these advancements, literature reviews systematically comparing the varied impacts of these diverse technologies across different E-Business models (B2B, B2C, C2C) remain scarce, justifying the need for the present study.

Furthermore, the literature highlights a duality in FinTech's impact: while it acts as an enabler of growth, it simultaneously introduces novel risk vectors. Cybersecurity literature emphasizes that as E-Businesses integrate more deeply with FinTech APIs, their attack surface expands (Molina & Perez, 2024). Studies on transaction security frequently cite the ongoing arms race between fraud detection algorithms and sophisticated cybercriminal tactics. Additionally, the regulatory landscape is often cited as a significant barrier. Research on data privacy, particularly concerning the General Data

Protection Regulation (GDPR) and similar frameworks, suggests that the heavy compliance burden can stifle innovation, especially for SMEs (Alaassar et al., 2022). Therefore, a comprehensive review must not only synthesize the benefits but also critically evaluate the technological and strategic challenges identified in recent scholarly work.

3. METHOD

To ensure a rigorous, transparent, and reproducible research process, this study adopts the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) framework. The PRISMA methodology provides a structured approach to identifying, selecting, and critically appraising relevant research, thereby minimizing bias and enhancing the reliability of the findings. The research was conducted in four distinct phases: Identification, Screening, Eligibility, and Inclusion.

During the Identification phase, a comprehensive literature search was executed across five primary academic databases recognized for their robust coverage of technology, business, and information systems: Scopus, Web of Science (WoS), IEEE Xplore, ScienceDirect, and Google Scholar. The search strategy utilized a meticulously constructed Boolean string to capture the intersection of the core themes. The search string deployed was: ("Financial Technology" OR "FinTech" OR "Digital Payments" OR "Payment Gateway" OR "BNPL") AND ("E-Business" OR "E-Commerce" OR "Digital Business" OR "Online Retail") AND ("Adoption" OR "Innovation" OR "Impact" OR "Transformation"). This search was restricted to metadata, including titles, abstracts, and keywords, to ensure high relevance.

In the Screening and Eligibility phases, predefined inclusion and exclusion criteria were rigorously applied. To capture the most contemporary advancements in this rapidly evolving field, the time frame was restricted to the recent five years (2021-2026). Only peer-reviewed journal articles and high-quality conference proceedings written in English were included. Editorials, opinion pieces, book reviews, and non-academic trade magazines were explicitly excluded. Furthermore, studies were required to focus specifically on the application of FinTech within an E-Business or E-Commerce context. Papers that discussed purely technical FinTech algorithms (e.g., cryptographic hash functions) or macro-economic banking policies without a clear link to digital business models were excluded during the full-text review.

Data extraction and synthesis were conducted systematically. A standardized data extraction form was utilized to record key information from each included study, such as author(s), publication year, methodology, specific FinTech application studied, e-business context, and main findings related to the four Research Questions. A thematic synthesis approach was then employed to categorize the extracted data into four central structural dimensions: Enabling Technologies, Value Creation Mechanisms, Organizational & Consumer Outcomes, and Challenges & Risks. This structured analysis forms the basis for the results and discussion presented in the subsequent section.

4. RESULTS AND DISCUSSION

The systematic search initially yielded 845 potential articles. Following the removal of duplicates and initial title/abstract screening, 142 articles remained for full-text assessment. The rigorous application of the eligibility criteria resulted in a final selection of 25 high-quality studies

that form the core of this thematic synthesis. The findings are organized and discussed in direct response to the four formulated Research Questions.

4.1 Dominant FinTech Solutions in E-Business Ecosystems (RQ1)

The literature reveals that the FinTech landscape within e-business has matured beyond standard digital wallets, segmenting into highly specialized solutions designed to optimize specific points in the transaction lifecycle. Four dominant categories emerged from the synthesis:

1. **Next-Generation Payment Gateways and Aggregators:** Studies highlight that modern payment gateways are no longer mere conduits for credit card processing. They act as comprehensive orchestrators that support multi-currency routing, localized alternative payment methods (APMs), and smart routing to minimize transaction failure rates. The integration of Open Banking APIs has allowed these gateways to facilitate direct account-to-account (A2A) payments, significantly lowering merchant discount rates (MDR) for e-business platforms (Hassan, 2024).
2. **Buy Now, Pay Later (BNPL) and Micro-Financing:** BNPL has been identified as a transformative force in B2C e-commerce. By splitting payments into interest-free installments, BNPL solutions lower the psychological barrier to purchase. The literature indicates that BNPL is particularly prevalent among Millennial and Gen Z demographics, serving not just as a payment method, but as a potent customer acquisition and marketing tool for online retailers (Iqbal & Kazmi, 2025).
3. **Embedded Finance:** A significant trend identified in recent papers (2023-2026) is the shift towards embedded finance, where non-financial platforms integrate financial services via APIs. Examples include e-commerce marketplaces offering instant merchant cash advances based on sales data, or gig-economy platforms providing instant payout options and digital debit cards to their contractors (Davis & Maddock, 2023).
4. **Blockchain and Smart Contracts:** While cryptocurrency payments remain niche in mainstream retail, the underlying blockchain technology is increasingly utilized for B2B e-business. Smart contracts automate complex supply chain financing and escrow services, ensuring trustless execution of payments upon verifiable delivery of digital or physical goods, thereby reducing counterparty risk in global trade (Patel & Gupta, 2025).

4.2 Enhancing Operational Efficiency and User Experience (RQ2)

The integration of the aforementioned FinTech solutions translates into measurable enhancements in both operational efficiency and customer value creation.

From an operational standpoint, AI-driven FinTech tools dramatically streamline financial reconciliation. Traditional e-businesses often struggle with the manual matching of invoices to payments across different geographic regions. The literature demonstrates that automated reconciliation software, powered by machine learning, reduces administrative overhead by up to 40% and accelerates the cash conversion cycle (Sari & Utama, 2024). Furthermore, FinTech adoption allows platforms to leverage dynamic, real-time analytics. E-businesses can utilize transaction data to build alternative credit scoring models, enabling them to extend micro-loans to underbanked customers or merchants within their ecosystem.

Regarding user experience (UX), the primary mechanism of value creation is friction reduction. "One-click" checkout processes, biometric authentication (e.g., facial recognition or fingerprint approval via mobile wallets), and invisible payments have drastically reduced cart abandonment rates—a chronic issue in e-commerce. Studies indicate that a seamless, secure payment experience directly correlates with enhanced consumer trust and increased customer lifetime value (CLV). By offering a diverse array of localized payment options, e-businesses also signal cultural competence and customer-centricity in international markets.

4.3 Strategic and Technological Challenges (RQ3)

Despite the immense benefits, the systematic review highlights several critical challenges that impede seamless FinTech integration.

Cybersecurity and Fraud: As e-businesses adopt more FinTech touchpoints, they become lucrative targets for cybercriminals. The literature frequently discusses the rise of sophisticated synthetic identity fraud and account takeover (ATO) attacks (Hassan, 2024; Molina & Perez, 2024). While AI is used for fraud detection, malicious actors also employ AI to bypass these systems, creating a continuous technological arms race. E-businesses must invest heavily in dynamic fraud scoring and tokenization to protect consumer data.

Regulatory Compliance and Fragmentation: The regulatory environment for FinTech is highly fragmented across different jurisdictions. E-businesses operating globally must navigate a complex patchwork of compliance requirements, including Anti-Money Laundering (AML) directives, Know Your Customer (KYC) regulations, and data privacy laws like GDPR in Europe or regional equivalents in Asia (Luo et al., 2023). The cost of maintaining compliance often serves as a significant barrier to entry for smaller e-commerce startups attempting to scale internationally.

Integration and Legacy Systems: Many established e-businesses struggle with technical debt. Integrating modern, API-first FinTech solutions with monolithic legacy e-commerce platforms often leads to integration friction. This requires significant IT investment and can result in prolonged deployment timelines and potential system downtime.

4.4 Emerging Trends and Research Gaps (RQ4)

The synthesis of current literature reveals several emerging trends that are poised to dictate the next wave of FinTech innovation in e-business, alongside corresponding gaps requiring empirical investigation.

A prominent emerging trend is the application of Generative AI within embedded finance, specifically for hyper-personalized financial product recommendations at the point of checkout (Wang & Chen, 2026). Additionally, the concept of Central Bank Digital Currencies (CBDCs) and their potential impact on eliminating cross-border transaction fees in global e-commerce is gaining traction in theoretical literature (Zhang & Liu, 2022).

However, significant research gaps remain. The majority of empirical studies focus on B2C contexts, leaving a dearth of literature regarding FinTech adoption in complex B2B e-business platforms. Furthermore, while the short-term impacts of BNPL on sales volume are well-documented, longitudinal studies examining the long-term effects of BNPL on consumer debt levels and subsequent platform brand reputation are lacking. Finally, there is a need for more research examining FinTech

adoption in emerging economies (such as Southeast Asia and Africa), where mobile-first FinTech solutions are leapfrogging traditional banking infrastructure, creating unique, highly dynamic digital business ecosystems.

Table 1. Structural Classification Matrix of FinTech in E-Business

FinTech Domain	Enabling Technologies	E-Business Impact / Value Creation	Primary Challenges
Digital Payments & Gateways	Open Banking APIs, Tokenization, Biometrics	Reduced cart abandonment, lower MDR, seamless UX	Integration costs, fragmented global standards
Alternative Credit (BNPL)	Alternative data scoring, real-time risk assessment	Increased Average Order Value (AOV), customer acquisition	Regulatory scrutiny, potential for consumer default
Embedded Finance	BaaS (Banking-as-a-Service), Cloud Infrastructure	New revenue streams, enhanced platform stickiness	Complex compliance (KYC/AML), data privacy
Decentralized Finance (DeFi)	Blockchain, Smart Contracts, Cryptocurrencies	Trustless B2B escrow, reduced cross-border fees	High volatility, regulatory uncertainty, UX complexity

5. CONCLUSION

This Systematic Literature Review has comprehensively mapped the transformative role of Financial Technology in driving e-business growth and innovation. By analyzing recent scholarly work (2021-2026), this study demonstrates that FinTech has evolved from a peripheral transaction facilitator into a core strategic asset. Innovations such as BNPL, Open Banking, and embedded finance empower e-businesses to enhance operational efficiency, radically improve customer user experience, and unlock new business models. However, this evolution is accompanied by significant challenges, notably escalating cybersecurity threats, complex regulatory compliance burdens, and integration friction with legacy systems.

The findings offer vital implications for e-business practitioners. To maintain a competitive edge, organizations must adopt an agile approach to FinTech integration, moving beyond basic payment processing to leverage data-driven financial services that add tangible value to the customer journey. Policymakers must also strive to create harmonized regulatory frameworks that protect consumers without stifling digital innovation.

While this review provides a robust synthesis of current knowledge, it is limited by its reliance on published academic literature within specific databases, potentially excluding industry white papers that document cutting-edge, proprietary FinTech developments. Future research should prioritize longitudinal studies on the socio-economic impacts of embedded credit, explore FinTech adoption dynamics in B2B e-commerce, and investigate the integration of emerging technologies like Generative AI and CBDCs within digital business ecosystems.

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7. DATA AVAILABILITY STATEMENT

The data supporting the findings of this systematic literature review are derived from publicly accessible academic databases (Scopus, Web of Science, IEEE Xplore, ScienceDirect). The detailed list of included articles, extraction protocols, and synthesis matrices are available upon reasonable request to the corresponding author.

8. CONFLICT OF INTEREST

The authors declare no conflict of interest regarding the publication of this manuscript. The affiliations with BiloApp Digital Business and Gerbang Nusa News did not influence the research process, interpretation of results, or the formulation of the conclusions presented herein.

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