INOMATEC: Jurnal Inovasi dan Kajian Multidisipliner Kontemporer
Vol. 01, No. 10, Tahun 2026, Hal. 384-396, ISSN: 3123-5573 (Online)

Stablecoins in Retail Payment Systems: A Systematic Literature Review on Adoption, Regulation, and Financial Stability in Indonesia

Firman[1], Hatem Elshreif[2]

[1]Politeknik Indonesia, [2]Ligs University
E-mail: firmansijaya@gmail.com

Article Info

Article history:
Received August 02, 2026
Revised August 10, 2026
Accepted August 15, 2026

Keywords:
Stablecoins, Indonesia, Digital Payments, CBDC, Financial Stability, Technology Acceptance Model.

ABSTRACT

This systematic literature review examines stablecoin adoption in Indonesia's retail payment systems, analyzing regulatory frameworks and financial stability implications based on 65 studies published between 2024 and 2026. Following PRISMA guidelines, the review synthesizes literature from SciSpace, Google Scholar, Scopus, and institutional sources including Bank Indonesia. Key findings indicate stablecoin adoption is driven by perceived transaction efficiency, cost reduction, and financial inclusion potential, aligning with Technology Acceptance Model constructs. Regulatory analysis reveals Indonesia faces critical policy choices between centralized Central Bank Digital Currency implementation and regulated private stablecoin ecosystems. Financial stability risks include liquidity disruption, altered deposit dynamics, and monetary sovereignty challenges from shadow currency effects. The Digital Rupiah emerges as a strategic policy response to maintain monetary control while enabling innovation. Research gaps persist in empirical TAM studies specific to Indonesia, quantitative stress testing of payment systems, and QRIS integration assessments. Policy recommendations emphasize strengthening BI-OJK coordination, developing frameworks inspired by EU MiCA standards, and implementing robust consumer protection mechanisms.

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Stablecoin, Indonesia, Pembayaran Digital, CBDC, Stabilitas Keuangan, Model Penerimaan Teknologi.

ABSTRAK

Tinjauan literatur sistematis ini mengkaji adopsi stablecoin dalam sistem pembayaran ritel di Indonesia, menganalisis kerangka peraturan dan implikasi stabilitas keuangan berdasarkan 65 studi yang diterbitkan antara tahun 2024 dan 2026. Mengikuti pedoman PRISMA, tinjauan ini mensintesis literatur dari SciSpace, Google Scholar, Scopus, dan sumber institusional termasuk Bank Indonesia. Temuan utama menunjukkan adopsi stablecoin didorong oleh efisiensi transaksi yang dirasakan, pengurangan biaya, dan potensi inklusi keuangan, selaras dengan konstruksi Model Penerimaan Teknologi (Technology Acceptance Model/TAM). Analisis regulasi mengungkapkan Indonesia menghadapi pilihan kebijakan kritis antara implementasi Mata Uang Digital Bank Sentral yang terpusat dan ekosistem stablecoin swasta yang diatur. Risiko stabilitas keuangan meliputi gangguan likuiditas, perubahan dinamika deposito, dan tantangan kedaulatan moneter dari efek mata uang bayangan. Rupiah Digital muncul sebagai respons kebijakan strategis untuk mempertahankan kontrol moneter sekaligus memungkinkan inovasi. Kesenjangan penelitian masih ada dalam studi TAM empiris khusus untuk Indonesia, pengujian stres kuantitatif sistem pembayaran, dan penilaian integrasi QRIS. Rekomendasi kebijakan menekankan penguatan koordinasi BI-OJK, pengembangan kerangka kerja yang terinspirasi oleh standar MiCA Uni Eropa, dan implementasi mekanisme perlindungan konsumen yang kuat.

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Corresponding Author:
Firman[1], Hatem Elshreif[2]
[1]Politeknik Indonesia, [2]Ligs University
E-mail: firmansijaya@gmail.com

INTRODUCTION

Southeast Asia has witnessed unprecedented digital payment transformation, with Indonesia emerging as a regional fintech leader. The payment ecosystem, anchored by QRIS and widespread e-wallet adoption, has fundamentally altered retail transaction patterns (Prihandini et al., 2025). This transformation provides critical context for examining stablecoin integration prospects and challenges within Indonesia's established payment infrastructure.

Stablecoins offer fiat currency stability combined with blockchain advantages (Chen, 2025). Their potential role in retail payments has attracted global policy attention. For Indonesia, stablecoins present opportunities enhanced payment efficiency and cross-border capabilities alongside significant challenges to monetary sovereignty and financial stability (Sulistiyono et al., 2024).

Three research questions guide this review: RQ1: What are the primary determinants of stablecoin adoption in Indonesia's retail payment context through TAM and DOI frameworks? RQ2: How do different regulatory approaches compare across jurisdictions, and what implications do they hold for Indonesia? RQ3: What are the potential financial stability risks associated with stablecoin integration into Indonesia's payment systems?.

The global regulatory landscape remains fragmented. The EU's MiCA regulation, Singapore's MAS framework, and evolving US responses provide diverse models (Hardjono et al., 2025; Wong et al., 2024). Indonesia's authorities face balancing innovation facilitation with consumer protection and financial stability preservation.

LITERATURE BACKGROUND

1. Digital Payment Ecosystems and Indonesian Context

Indonesia's digital payment transformation represents a significant fintech success story. With population exceeding 275 million and rapid smartphone penetration, Indonesia has become a prime market for digital financial services. QRIS implementation as a unified QR code standard has created interoperability across payment providers, facilitating widespread merchant adoption and consumer acceptance across the archipelago (Prihandini et al., 2025). Digital payments have substantially improved transaction efficiency and financial inclusion, particularly in previously underbanked regions (Ramadhani et al., 2025). The ecosystem encompasses e-wallets (GoPay, OVO, DANA), mobile banking, and emerging fintech services. E-wallet adoption is particularly strong among urban populations and younger demographics, with network effects and merchant acceptance playing crucial roles in driving adoption (Zebua et al., 2024; Modaso et al., 2025). This established infrastructure provides both opportunities and challenges for potential stablecoin integration.

Technology Acceptance Model (TAM) emphasizes perceived usefulness and perceived ease of use as primary drivers of technology acceptance. In digital payment contexts, perceived usefulness relates to enhanced transaction efficiency and cost reduction, while perceived ease of use refers to cognitive effort required to utilize the system (Surjandy et al., 2024). Diffusion

of Innovation (DOI) theory highlights relative advantage, compatibility, complexity, trialability, and observability as key adoption determinants. These frameworks provide foundations for analyzing stablecoin adoption potential in Indonesian contexts. Empirical studies reveal payment system digitalization positively influences transaction velocity and financial system efficiency. Ramadhani et al. (2025) demonstrate e-money adoption significantly impacts money velocity, with Bank Indonesia data showing substantial digital transaction volume increases. Additional research identifies contextual factors influencing adoption trajectories including infrastructural considerations, demographic factors, and cultural dimensions.

2. Stablecoin Architecture and Mechanisms

Chen (2025) identifies three primary stablecoin categories: fiat-backed, crypto-backed, and algorithmic stablecoins, each presenting different risk profiles and regulatory challenges. Fiat-backed stablecoins maintain reserves in traditional banking systems, providing potential transparency and regulatory oversight while introducing counterparty risk and regulatory dependency that may complicate cross-border usage.

For Indonesia's context, a Rupiah-denominated stablecoin presents unique opportunities and challenges. Hardjono et al. (2025) propose a policy-driven ecosystem approach for Indonesian Rupiah stablecoins operating under regulatory oversight while leveraging blockchain technology benefits. This approach aligns with Indonesia's broader digital transformation strategy while addressing monetary sovereignty concerns.

3. Financial Stability Theoretical Framework

Stablecoin integration raises fundamental questions about financial stability and monetary policy effectiveness. Traditional banking theory suggests digital payment innovations can alter deposit dynamics and bank funding structures, potentially creating new systemic risk sources (Cong, 2024). Research on deposit dynamics reveals stablecoin adoption can create disintermediation effects where consumers shift funds from bank deposits to digital payment instruments. Cong's (2024) theoretical analysis demonstrates how stablecoin adoption affects bank deposit stability, with implications for bank liquidity management and credit creation capacity. When consumers hold significant transaction balances in stablecoins rather than bank deposits, banks may face funding pressures affecting lending capacity and overall financial system stability. This concern is particularly salient for emerging market banking systems relying heavily on retail deposits. For Indonesia, where retail deposits constitute substantial bank funding, significant stablecoin adoption could create liquidity management challenges.

Shadow currency theory provides another critical lens. The concept refers to monetary instruments circulating outside official central bank control, potentially undermining monetary sovereignty and policy effectiveness (Sulistiyono et al., 2024). When digital payment instruments achieve substantial scale outside traditional regulatory frameworks, they can function as parallel monetary systems. Sulistiyono et al. (2024) highlight cryptoization trends with 18.83 million crypto investors and IDR 48.82 trillion in transactions, indicating substantial adoption that could affect monetary sovereignty if left unregulated. The study recommends Digital Rupiah implementation to maintain monetary control while addressing digital payment innovation demands.

4. Global Regulatory Approaches

The global regulatory landscape demonstrates significant variation. The European Union's MiCA regulation establishes comprehensive frameworks including reserve

requirements, governance standards, and consumer protection (Hardjono et al., 2025; Wong et al., 2024). Singapore's Monetary Authority of Singapore adopts principles-based approaches emphasizing regulatory clarity while facilitating innovation, focusing on payment token licensing (Sufian et al., 2024). The United States regulatory environment remains fragmented with multiple agencies claiming jurisdiction over different aspects. Recent legislative proposals attempt comprehensive federal frameworks, though implementation uncertainty persists (Gunawan et al., 2024). This fragmentation serves as a cautionary example regarding coordination importance.

METHOD

This systematic literature review follows PRISMA guidelines to ensure comprehensive and transparent literature identification, selection, and analysis. Literature searches were conducted across multiple academic and institutional databases including SciSpace, Google Scholar, Scopus, and Web of Science. Institutional sources included reports from Bank Indonesia, Financial Services Authority (OJK), Bank for International Settlements, International Monetary Fund, World Bank, and OECD.

Inclusion criteria encompassed publications dated 2024-2026, English language or English abstracts, peer-reviewed academic articles and institutional reports, studies addressing stablecoin adoption, regulation, or financial stability implications, and research with direct or indirect relevance to Indonesian contexts or comparable emerging markets. Exclusion criteria included publications predating 2024, non-English without abstracts, opinion pieces, studies focused exclusively on developed markets, and duplicates.

The selection process involved initial screening of titles and abstracts, full-text assessment for methodological quality and substantive contribution, quality evaluation using adapted criteria for finance and economics systematic reviews, and final selection of 65 studies based on relevance, quality, and contribution to research questions. Data extraction focused on adoption factors, regulatory analysis, financial stability implications, and Indonesian context. Thematic analysis employed both deductive coding based on TAM/DOI theoretical frameworks and inductive coding to capture emergent themes.

RESULTS AND THEMATIC ANALYSIS

1. Adoption Drivers: Efficiency, Cost, and Financial Inclusion

The literature reveals three primary adoption drivers aligning with TAM constructs. Surjandy et al. (2024) found perceived benefit significantly impacts cryptocurrency adoption intention among 549 Indonesian consumers, providing empirical evidence for TAM's perceived usefulness construct in Indonesian cryptocurrency contexts. Cross-border payment efficiency emerges as a particularly strong driver, with stablecoins offering significant efficiency advantages over traditional correspondent banking systems (Lin, 2025). For Indonesia, with substantial remittance flows and growing e-commerce integration across Southeast Asia, these efficiency benefits present compelling adoption incentives.

Cost considerations feature prominently. Puhach's (2024) examination identifies cost reduction in international transactions as a key competitive advantage, particularly relevant for Indonesia's large migrant worker population relying on remittance services. Cost benefits extend beyond direct transaction fees to include reduced friction costs, faster settlement times, and improved accessibility for underbanked populations.

Financial inclusion emerges as a significant theme. Research indicates cryptocurrency adoption can enhance financial inclusion when mediated by user satisfaction and perceived

economic empowerment (Research Team, 2025). For Indonesia, where financial inclusion remains a key policy priority, stablecoins' potential to reach underbanked populations presents both opportunities and challenges. The relationship appears complex, influenced by technological literacy, regulatory clarity, and infrastructure availability.

2. Regulatory Framework Comparisons

The EU's MiCA provides comprehensive coverage with reserve transparency and regular auditing requirements, addressing stability concerns relevant for Indonesia's monetary sovereignty objectives (Hardjono et al., 2025). However, framework complexity and compliance costs may present implementation challenges for emerging market regulators with limited supervisory capacity.

Singapore's MAS framework emphasizes innovation facilitation while maintaining prudential oversight through payment token licensing and clear operational requirements (Sufian et al., 2024). Success stems from clear regulatory communication and consistent policy implementation, though Singapore's smaller scale may limit direct applicability to Indonesia's more complex regulatory environment.

US regulatory fragmentation demonstrates coordination challenges, creating regulatory uncertainty that may hinder innovation (Gunawan et al., 2024). This experience emphasizes the importance of clear, coordinated policy development between Bank Indonesia and OJK. Indonesia's emerging framework focuses on monetary sovereignty preservation through Digital Rupiah implementation (Sulistiyono et al., 2024). Multiple studies recommend coordinated BI-OJK approaches with clear jurisdictional boundaries while ensuring comprehensive oversight.

3. Financial Stability Risks

Liquidity disruption through altered deposit dynamics represents a primary concern. Stablecoin adoption can affect bank funding stability and monetary policy transmission mechanisms (Cong, 2024). For Indonesia's retail deposit-dependent banking system, significant adoption could create disintermediation effects, though quantitative modeling specific to Indonesian banking structures remains limited. Run risk during confidence deterioration periods could create systemic instability if stablecoin reserves are insufficient or illiquid. Indonesian policymakers' concerns about shadow currency effects reflect broader worries about run risk transmission to the broader financial system. Robust reserve requirements and regular auditing could mitigate these risks.

Monetary sovereignty challenges through shadow currency effects are emphasized in multiple Indonesian studies. Sulistiyono et al. (2024) identify substantial crypto adoption that could affect monetary sovereignty. Widespread stablecoin adoption could reduce central bank control over money supply and complicate monetary policy implementation.

4. Indonesia-Specific Findings

Digital Rupiah emerges as strategic response to maintain monetary sovereignty while enabling innovation (Sulistiyono et al., 2024; Novitasari et al., 2024; Widodo et al., 2024). Benefits include enhanced monetary policy transmission, improved financial inclusion, and reduced reliance on private digital payment instruments. Implementation challenges include technological infrastructure requirements, privacy considerations, and potential banking sector disruption.

QRIS integration requires careful technical and regulatory planning. Indonesia's existing QRIS infrastructure provides foundation for digital payment innovation, though

specific analysis of stablecoin integration remains limited (Prihandini et al., 2025). Successful adoption would require careful integration with existing payment rails to maintain interoperability and user experience consistency.

Consumer protection and financial literacy are critical. Research indicates successful technology adoption requires not only technical infrastructure but also consumer understanding and trust (Surjandy et al., 2024; Gunawan et al., 2024). Stablecoin regulation should incorporate comprehensive consumer protection measures including disclosure requirements, dispute resolution mechanisms, and financial literacy education programs.

DISCUSSION

1. Synthesis Across Research Questions

Regarding RQ1, the literature provides partial validation of TAM and DOI frameworks. Perceived usefulness drives adoption, but empirical studies specific to Indonesian stablecoin contexts remain limited. Adoption drivers extend beyond individual acceptance to include broader systemic factors such as regulatory clarity, infrastructure interoperability, and network effects, indicating need for coordinated approaches.

Regarding RQ2, regulatory frameworks significantly influence adoption patterns and stability outcomes. A hybrid approach incorporating MiCA's comprehensive coverage with Singapore's innovation orientation may be most appropriate for Indonesia, requiring substantial BI-OJK coordination to ensure effective implementation while avoiding regulatory fragmentation.

Regarding RQ3, significant financial stability risks exist including deposit dynamics, run risk, and monetary sovereignty challenges. These appear manageable through appropriate frameworks including reserve requirements, operational standards, and supervisory oversight. Quantitative analysis specific to Indonesia's financial structure remains limited.

2. Theoretical Contributions

Traditional TAM and DOI frameworks may require extension to incorporate systemic factors such as regulatory environment, infrastructure interoperability, and monetary policy considerations. Stablecoin adoption decisions involve both individual utility maximization and broader system-level considerations including monetary sovereignty and financial stability, suggesting need for multi-level theoretical frameworks addressing both micro-level adoption factors and macro-level system implications.

3. Policy Implications

Coordinated regulatory development between Bank Indonesia and OJK is essential to avoid fragmentation and ensure comprehensive oversight. Clear jurisdictional boundaries and regular coordination mechanisms are essential. Digital Rupiah implementation should proceed as strategic response to private stablecoin adoption, with careful design consideration of privacy, programmability, and integration with existing payment infrastructure.

Consumer protection requires comprehensive measures including disclosure requirements, dispute resolution mechanisms, and financial literacy programs tailored to Indonesia's diverse population.

International cooperation is necessary given stablecoins' global nature. Indonesia should actively engage in international regulatory coordination while developing frameworks appropriate for specific circumstances.

4. Contradictions and Limitations

Tensions exist between adoption benefits and stability risks, reflecting complex trade-offs inherent in digital payment innovation. Empirical evidence gaps persist, particularly quantitative analysis of adoption patterns, regulatory effectiveness, and financial stability impacts in Indonesian contexts. Most studies rely on theoretical analysis or international examples rather than Indonesia-specific empirical investigation. Regulatory model transferability requires more detailed investigation.

5. Future Research Directions

Empirical priorities include TAM/DOI validation in Indonesian contexts through comprehensive surveys and behavioral studies with rigorous sampling methodologies. Quantitative financial stability modeling requires stress testing frameworks assessing liquidity impacts, deposit dynamics, and systemic risk under various adoption scenarios with Indonesia-specific parameters including banking concentration and monetary policy transmission mechanisms. QRIS integration requires technical interoperability requirements analysis, economic implications for payment service providers, and consumer experience considerations.

Regulatory impact research should develop methodologies for evaluating regulatory framework effectiveness on innovation, stability, consumer protection, and monetary policy. Regulatory transition cost-benefit analysis should assess implementation costs, compliance burdens, and economic benefits across design options. International cooperation framework development should examine optimal frameworks for emerging market regulators including information sharing and supervisory coordination.

Technology and infrastructure research should assess blockchain infrastructure requirements, implementation costs, and development timelines for large-scale adoption. Cybersecurity and operational risk frameworks need development considering Indonesia's capabilities and threat landscape. Interoperability standards require technical examination for seamless integration across payment systems.

Consumer behavior research should assess digital financial literacy across Indonesia's diverse populations and develop targeted education strategies. Behavioral economics approaches should examine cognitive biases and social influences affecting adoption decisions. Financial inclusion impact measurement frameworks need development.

CBDC and stablecoin coexistence research should examine Digital Rupiah design options including privacy, programmability, and integration. Coexistence models need analysis of competitive dynamics and market structure implications. Monetary policy transmission in digital environments requires comprehensive study.

Regional and international research should examine Southeast Asian coordination mechanisms, technical standards harmonization, and policy cooperation frameworks. Emerging market comparative studies would identify transferable lessons. Global financial stability implications of emerging market adoption need examination.

CONCLUSION

This systematic review of 65 studies reveals complex relationships between stablecoin adoption drivers, regulatory frameworks, and financial stability in Indonesia. Perceived usefulness regarding transaction efficiency and cost reduction drives adoption, but social influence and trust are particularly important for Indonesian consumers. Regulatory coordination between BI and OJK is essential, with Digital Rupiah as strategic tool for

maintaining monetary sovereignty while enabling innovation. Financial stability risks—liquidity disruption, run risk, and monetary sovereignty challenges—appear manageable through appropriate frameworks including robust reserve requirements and supervisory oversight.

Immediate policy actions should include coordinated framework development with clear BI-OJK coordination mechanisms, consumer protection implementation including disclosure requirements and financial literacy programs, Digital Rupiah acceleration with careful design consideration, and international engagement in regulatory coordination initiatives. Medium-term initiatives require comprehensive impact assessment of stablecoin adoption on banking liquidity and monetary policy, infrastructure development for effective oversight, and regional coordination for cross-border payment efficiency. Long-term strategy needs adaptive regulation evolving with technological innovation, financial inclusion integration particularly for underbanked populations, and monetary policy evolution for digital payment environments.

The review contributes the first comprehensive synthesis of recent literature on stablecoin implications for Indonesian retail payment systems, extending theoretical understanding by identifying gaps in existing adoption models and proposing enhanced frameworks incorporating regulatory, infrastructure, and monetary sovereignty considerations. However, limitations include the 2024-2026 focus potentially excluding foundational research, publication bias, heterogeneity in methodological approaches complicating synthesis, and limited Indonesia-specific empirical studies necessitating reliance on international examples.

For emerging markets, maintaining monetary sovereignty while facilitating innovation requires proactive central bank engagement including CBDC development and comprehensive private digital currency regulation. Consumer protection and financial literacy are particularly critical in diverse population contexts. International cooperation must balance harmonization with national policy autonomy.

Stablecoins present both significant opportunities and substantial challenges for Indonesia's retail payment system development. Success requires comprehensive approaches addressing technical, regulatory, and social dimensions. Indonesia's QRIS experience demonstrates capacity for successful payment innovation, providing foundation for addressing blockchain-based digital currency challenges. Achieving balance between efficiency, inclusion, and stability requires evidence-based policy development, robust regulatory frameworks, and continued adaptation to technological evolution. Decisions made in the next few years will likely shape Indonesia's digital payment landscape for decades.

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