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Tokenization of Real-World Assets and Financial Market Transformation: A Review of Literature

Sibonelo Sibahle Mpanza[(a)]*

(a) Department of Auditing and Taxation, Durban University of Technology, Durban 4000, KwaZulu-Natal, South Africa.

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Abstract

The emergence of tokenization of real-world assets (RWA) has disrupted transformative innovation in global finance, enabling the representation of financial and physical assets on blockchain networks. This study adopts a systematic literature review (SLR) of 25 peer-reviewed research works published between 2015 and 2026, supplemented by authoritative policy and industry reports to explore the implications of RWA tokenization for financial market transformative innovation. Following the guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analysis Framework, this study identifies four main research streams: (1) technical and economic drivers, (2) effects of market transformation, (3) regulatory and governance pressures, and (4) risks and adoption dynamics. According to the review, tokenization enhances efficiency, accessibility, and liquidity through continuous trading, smart contracts, and fractional ownership. However, barriers such as technological risks, governance uncertainty, and regulatory fragmentation remain prominent. The study contributes to the academic discourse by providing a comprehensive synthesis of RWA tokenization and emphasizing its implications for developing markets, in particular, financial inclusion and capital formation. The study concludes that although RWA tokenization holds substantial transformative innovation potential, its long-term impact lies in regulatory harmonization, infrastructure development, and empirical validation.

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1. Introduction

Since the advent of blockchain technology, tokenizing real-world assets (RWA) has emerged as a transformative development in global finance. Tokenization has the potential to significantly influence capital markets by converting traditionally illiquid physical assets and financial assets into digital tokens on a programmable blockchain. This conversion process unlocks significant economic value embedded in previously illiquid assets, which enables fractional ownership, continuous trading, enhanced liquidity, and improved transparency (BlackRock, 2025; Catalini & Gans, 2020; International Monetary Fund, 2025). The RWA has evolved and progressed beyond experimental pilot projects towards institutional mainstream in 2026. Leading asset managers like Goldman, Franklin Templeton, and BlackRock have introduced a tokenized investment product. This product also includes on-chain treasury instruments and real estate funds. Recent projections suggest that tokenized assets have surpassed over $50 billion in total value locked (TVL) across major blockchain platforms. These projections also indicate potential exponential growth over the coming decade (Boston Consulting Group, 2025; McKinsey & Company, 2026). Tokenization is increasingly no longer perceived as a speculative innovation but rather as a structural transformation potentially enhancing capital allocation efficiency, expanding global investment access, and minimizing intermediation costs (Allen et al., 2025; Arner et al., 2023; Bank for International Settlements, 2025; Catalini & Gans, 2020; Cong & He, 2019; Liu & Tsyvinski, 2021).

The transformative implications of RWA tokenization inform multiple dimensions of financial markets. Firstly, tokenization captures longstanding inefficiencies in traditional systems. This includes limited secondary market liquidity, delayed settlement cycles, and high transaction costs (Easley et al., 2012; O'hara, 2015). Fractional ownership minimizes barriers to entry for retail investors, while

* Corresponding author. ORCID ID: 0000-0002-4728-5221 | Email: mpanzass@dut.ac.za
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blockchain-based settlement mechanisms enable near-immediate transactions and continuous market operation (Arner et al., 2023; Catalini & Gans, 2020; Schär, 2021). Secondly, tokenization, particularly in emerging markets, facilitates new forms of capital formation by enabling small and medium-sized enterprises, sovereign issuers, and infrastructural projects to access liquidity pools that were historically constrained to institutional participants (Chainalysis, 2026; World Bank, 2025). Lastly, it supports, particularly through the tokenization of assets such as agricultural land and carbon credits, the broader financial inclusion and sustainable finance mechanism, which can mobilise capital for development and climate-related investments (Bank for International Settlements, 2025; International Monetary Fund, 2025).

Despite its rapid growth and increasing institutional relevance, the academic literature on RWA tokenization remains underdeveloped and highly fragmented. Existing research tends to emphasize technical implementation of smart contracts, case-specific analyses of tokenized assets, and legal and regulatory frameworks, which are isolated dimensions. Despite several conceptual contributions highlighting the potential of transformative innovation of tokenization, there is a notable lack of comprehensive syntheses that emphasize the interplay between market, economic, and regulatory perspectives. Most of the current research either overemphasizes blockchain protocols and cryptography mechanisms or is predominantly descriptive, relying on industry reports with limited empirical validation (Allen et al., 2025; Arner et al., 2015; Arner et al., 2023; Baur et al., 2018; Corbet et al., 2019). This fragmentation creates gaps in understanding the broader implications for financial market transformation, long-term economic, and systemic risk outcomes.

To capture these gaps, the study adopts a systematic literature review of peer-reviewed articles focusing on the tokenization of real-world assets and their implications for financial markets. The review is guided by three main research questions: (1) What are the primary drivers, mechanisms, and economic impacts of RWA tokenization on traditional financial systems? (2) What technical, institutional, and regulatory challenges hinder or facilitate the widespread adoption of tokenized assets? and (3) How does tokenization influence market efficiency, financial inclusion, liquidity, and accessibility in emerging markets?

By systematically mapping and synthesizing the existing literature, this study contributes to the academic discourse in several ways. It provides an integrated framework that captures technical innovation with financial market outcomes. In doing so, it advances understanding of how tokenization is influencing capital markets while identifying unresolved theoretical and practical challenges. The findings provide implications for policymakers, regulators, asset managers, and researchers seeking to navigate the emerging digital finance landscape.

2. Literature Review

2.1 Theoretical Perspectives Underpinning RWA Tokenization

The transformation of financial markets through the tokenization of RWA extends beyond technological innovation and can be better comprehended via multiple theoretical lenses. While blockchain technology offers technological resources allowing tokenization, theories from finance, economics, and organizational research explain the mechanisms through which tokenization influences financial intermediation, market efficiency, institutional adoption, and innovation diffusion.

2.2 Financial Intermediation Theory

Financial intermediation theory explains the role of intermediaries in minimizing information asymmetry, facilitating allocation of capital, and managing transaction risks within financial markets. Traditional financial systems heavily rely on central banks, brokers, custodians, clearing houses, and central securities depositories to facilitate transactions and maintain market participants' confidence (Allen et al., 2025). The emergence of blockchain-centred tokenization significantly changes these conventional intermediation structures by incorporating trust directly into distributed ledger technology via smart contracts (Catalini & Gans, 2020; Cong & He, 2019). Instead of eliminating intermediaries, tokenization transforms their functions by automating settlement, ownership verification, dividend distribution, and compliance procedures. As a result, financial institutions increasingly evolve from transaction facilitators towards governance, regulatory oversight, and risk management providers (Allen et al., 2025; Arner et al., 2023). This theoretical lens explains why tokenization has the potential to enhance market efficiency and reshape the institutional mechanism of modern financial markets.

2.3 Transactional Cost Economics

Transactional Cost Economics suggests that organizations continue to seek governance structure than reduce transaction costs related to searching, negotiating, monitoring, and enforcing contracts. Traditional financial markets often experience significant transaction costs because of multiple intermediaries, manual reconciliation processes, delayed settlement cycles, and extensive documentation (Catalini & Gans, 2020; Easley et al., 2012). RWA responses to these deficiencies through programmable smart contracts that automate contractual action, minimise administrative processes, and facilitate almost real-time settlement (Cong & He, 2019; Harvey et al., 2021). As a result, tokenization reduces operational costs and improves market accessibility and capital allocation efficiency, which underscores the relevance of Transaction Cost Economies for explaining its increasingly growing adoption.

2.4 Market Microstructure Theory

Market Microstructure Theory evaluates how trading mechanisms, liquidity provisions, information flows, and transaction processes impact asset pricing and market efficiency. Tokenized financial markets introduce unprecedented structural changes by allowing continuous trading, transparent ownership records, blockchain-centred settlement, and automated execution mechanisms (Easley et al., 2012; O'hara, 2015). The literature continues to emphasize that tokenization enhances liquidity via fractional ownership, increases market accessibility, and accelerates price discovery (Capponi et al., 2023; Gould et al., 2013). However, fragmentation across blockchain networks and varying market structures may generate unprecedented deficiencies, including arbitrage opportunities and inconsistent liquidity conditions (Makarov & Schoar, 2020). Hence, Market Microstructure Theory provides a relevant framework for comprehending opportunities and limitations related to tokenized asset markets.

2.5 Institutional Theory

Institutional Theory emphasizes that organizational innovation depends not only on technological capability but also on legitimacy, regulatory acceptance, and institutional support. Even though tokenization offers significant efficiency gains, its widespread adoption remains overly dependent on legal assurance, regulatory harmonization, and investor and institutional trust (Arner et al., 2017; Arner et al., 2023). Financial institutions are more likely to adopt tokenized assets when regulatory frameworks provide a clear definition of ownership rights, custody arrangements, compliance obligations, and dispute resolution mechanisms. The absence of harmonized regulation creates institutional uncertainty that restricts cross-border scalability and market integration (Bank for International Settlements, 2025; International Monetary Fund, 2025). As a result, Institutional Theory explains why regulatory development remains a critical prerequisite for the successful expansion of tokenized financial ecosystems.

2.6 Innovation Diffusion Theory

Innovation Diffusion Theory explains how emerging technologies spread through individuals, organizations, and market overtime. Adoption is influenced by perceived usefulness, comparability with already existing systems, complexity, trialability, and observable advantages. Institutional adoption of RWA tokenization has increased as global financial institutions continue to launch tokenized investment products, demonstrating observable economic benefit and operational efficiencies (BlackRock, 2025; McKinsey & Company, 2026). Nonetheless, adoption remains unequal between regions because differences in technology resources, regulatory maturity, digital literacy, and financial markets development influence diffusion rates (Chainalysis, 2026; Demir et al., 2022). As a result, Innovation Diffusion Theory provides a useful framework for explaining the heterogeneous adoption patterns observed across developed and developing markets.

Collectively, these theoretical lenses provide a conceptual grounding for comprehending RWA tokenization. Rather than viewing tokenization solely as a blockchain innovation, the integration of financial, economic, institutional, and innovation perspectives explains how tokenization reshaped financial intermediation, market efficiency, governance structures, and technology adoption (Allen et al., 2025; Arner et al., 2023; Catalini & Gans, 2020; Schär, 2021).

3. Research and Methodology

This study follows a systematic literature review approach to synthesize an increasingly growing body of literature on the tokenization of real-world assets (RWA) and its implications for financial market transformation. Tokenization is an emerging research and interdisciplinary field that underscores the appropriateness of the SLR methodology. This methodology enables the structured identification, evaluation, and integration of existing evidence while mitigating selection bias and enhancing transparency (Denyer & Tranfield, 2009; Tranfield et al., 2003). The fragmented nature of the tokenization literature (i.e., spanning finance, law, and information systems) underscores the need for a systematic approach to develop a unified and comprehensive understanding of the implications of RWA for financial markets. To ensure methodological rigor, replicability, and transparency, the study adopts the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework (Page et al., 2022). The PRISMA framework provides a structured process for identifying, screening, assessing eligibility, and including literature.

3.1 Research Design and Data

The review is exploratory, descriptive, and integrative in nature, mapping the intellectual structure of RWA tokenization research. This approach aids in identifying dominant research themes, evaluating methodological approaches, and highlighting gaps for future research agendas. This SLR adopts a predefined review protocol that enhances reliability and consistency, unlike traditional narratives, which could be subjective and not replicable. This study focuses on peer-reviewed articles and authoritative policy reports published by internationally recognized organizations with demonstrated expertise in financial markets, digital assets, or financial regulation. Although the review focuses on literature published between 2015 and 2026, it intentionally integrates foundational and contemporary studies to provide a comprehensive understanding of the evolution of RWA tokenization. Foundational studies establish the theoretical underpinnings of blockchain technology, market microstructure, financial innovation, and digital asset governance, providing the conceptual basis upon which subsequent research has developed. In contrast, more recent studies offer empirical evidence on the practical implementation of RWA tokenization, including advances in tokenized securities, regulatory frameworks, interoperability, institutional adoption, and market efficiency. Combining foundational and recent literature enables the review to

capture both historical development and the state of current knowledge, ensuring that the synthesis reflects the progression of the field while remaining relevant to contemporary financial markets.

3.2 Literature Search Strategy and Data Sources

To capture the emerging literature on tokenization, RWA, and financial market transformation, a comprehensive and structured search strategy was developed. Key databases included Scopus, Web of Science (SCI-EXPANDED, SCC), IEEE Xplore, EBSCO Business Sources Complete, ScienceDirect, and Google Scholar (as a supplementary search with no discrepancies identified in core literature). These databases were selected because they covered peer-reviewed articles in finance, economics, business, and technology. Moreover, this selection ensures robustness and achieves comprehensive coverage. The search strategy adopted Boolean operators and keyword combinations to capture relevant literature on tokenization and financial markets. The final key search terms included: ("tokenization" OR "tokenized asset" OR "real-world assets" OR "RWA") AND ("distributed ledger" OR "blockchain" OR "DLT" OR "capital markets" OR "financial markets" OR "investment" OR "finance" OR "disruption" OR "transformation" OR "liquidity"). The search was applied to titles, abstracts, and keywords to maximize relevance and minimize irrelevant results. This approach ensured that the resulting dataset included studies explicitly addressing the tokenization of RWA (e.g., real estate, bonds, commodities, infrastructure, and carbon credits) and financial market implications.

3.3 Inclusion and Exclusion Criteria

3.3.1 Peer-reviewed studies

A set of inclusion criteria was applied to ensure the quality and relevance of the studies selected. Firstly, only peer-reviewed journal articles published in English were considered. Secondly, studies were required to be indexed in ABS-ranked or equivalent high-quality journals to ensure academic rigor and credibility. Studies included – specifically address RWA tokenization; explore economic, financial, regulatory, or technological implications; empirical, theoretical, or conceptual contributions relevant to the financial market transformation. This research excluded studies that focused solely on the technical smart contract implementation with limited financial market implications. Additionally, research studies exclusively focusing on cryptocurrency trading, decentralized finance (DeFi), or Non-Fungible Tokens (NFTs) without RWA interconnectedness, and duplicate studies lacking methodological clarity. Non-peer-reviewed sources were excluded to ensure consistency and quality. After applying these criteria, duplicate records identified were removed, and abstracts were screened for relevance. A full-text review was then conducted to confirm eligibility. The final set comprises a curated selection of studies that form the basis for bibliometric and thematic analyses. The application of these criteria enhances the robustness of the methodology, reducing bias and improving the validity of the synthesis.

3.3.2 Authoritative policy and industry reports

The primary evidence base comprised peer-reviewed journal articles, supplemented by authoritative policy and industry reports published by internationally recognized institutions, including the Bank for International Settlements (BIS), International Monetary Fund (IMF), World Bank, BlackRock, Boston Consulting Group (BCG), McKinsey & Company, and Chainalysis. These reports were included because RWA tokenization is a rapidly evolving field in which institutional developments, regulatory frameworks, and market adoption often emerge before being extensively documented in academic literature. The inclusion of these reports provided current evidence on market implementation, institutional adoption, regulatory developments, and industry trends, while peer-reviewed literature provided the theoretical and empirical foundation for the review.

3.4 Data Extraction, Synthesis, and Themes

Data were extracted on the study characteristics, including publication year, methodology, research focus, and/or key findings. Where policy and industry reports were included, information relating to regulatory developments, institutional adoption, market trends, and implementation practices was extracted to complement findings from academic literature. Following the approach of Thomas and Harden (2008), which combines inductive and deductive coding techniques for thematic analysis. This study aims to integrate findings across diverse study designs, which underscores the relevance of this method. The study identified four main research streams or thematic categories: (1) technical and economic drivers of tokenization, (2) financial market transformation effects in terms of liquidity, efficiency, and accessibility, (3) regulatory and governance pressures, and (4) risks, barriers, and adoption challenges.

Table 1: Summary of Included Evidence Sources

Study	Methodology	Key Findings/Focus
Arner et al. (2015)	Conceptual review	Examined the evolution of FinTech and its role in transforming financial services and digital finance.
Arner et al. (2017)	Conceptual and policy analysis	Demonstrated how regular sandboxes and RegTech facilitate innovation while maintaining financial stability.

Study	Methodology	Key Findings/Focus
O'hara (2015)	Theoretical review	Explained the importance of market microstructure, liquidity, and information efficiency in financial markets.
Catalini and Gans (2020)	Economic theory	Demonstrated how blockchain reduces transaction costs and improves coordination in digital markets.
Howell et al. (2020)	Empirical analysis	Showed that token issuance provides innovative financing mechanisms and broadens investor participation.
Schär (2021)	Conceptual review	Demonstrated how decentralized finance enables blockchain-based financial markets through smart contracts.
Cong et al. (2021)	Economic modelling	Developed tokenomics theory explaining token adoption, incentives, and valuation mechanisms.
Liu and Tsyvinski (2021)	Empirical financial analysis	Examined the risk-return characteristics and pricing dynamics of digital assets.
Duan et al. (2021)	Empirical econometric analysis	Demonstrated that the digital asset market exhibits evolving efficiency while arbitrage opportunities remain.
Demir et al. (2022)	Quantitative regression analysis	Found that FinTech promotes financial inclusion, although the effects vary.
Capponi et al. (2023)	Quantitative modelling	Identified liquidity dynamics and efficiency challenges in decentralised exchanges.
Almeida and Gonçalves (2024)	Systematic literature review	Synthesised evidence on cryptocurrency market microstructure, liquidity, and price discovery.
Allen et al. (2025)	Conceptual review	Examined the evolving role of banks in digital and tokenized financial systems.
Stroukal and Peterka (2025)	Conceptual analysis	Investigated tokenization, CBDCs, and their regulatory implications.
World Bank (2025)	Policy report	Highlighted the role of tokenization in improving financial inclusion and investment accessibility.
Bank for International Settlements (2025)	Policy report	Examined tokenization in financial markets and the infrastructure needed for safe implementation.
International Monetary Fund (2025)	Policy report	Analysed digital money, tokenization, and implications for financial stability.
BlackRock (2025)	Industry report	Demonstrated institutional adoption and the potential of tokenization to improve capital market efficiency.
Boston Consulting Group (2025)	Industry report	Projected significant growth in tokenized asset markets and increasing institutional participation.
Belkhiria et al. (2026)	Empirical case study	Found that tokenization reduces trading costs, improves settlement efficiency, and lowers carbon emissions in bond markets.
Teng et al. (2026)	Review and policy analysis	Identified governance, cybersecurity, AML/KYC, and operational resilience as critical requirements for digital asset adoption.
McKinsey & Company (2026)	Industry analysis	Estimated substantial growth in tokenized assets and highlighted institutional readiness for market transformation.
Chainalysis (2026)	Industry report	Reported global trends in digital asset adoption, highlighting regional differences in institutional and retail participation.

Source: Author

4. Findings and Discussions

This section presents the results and the discussion of a systematic literature review based on a final set of peer-reviewed studies examining the tokenization of real-world assets (RWA) and its implications for financial market transformative innovation. The synthesis shows a rapidly emerging and interdisciplinary body of knowledge, characterized by conceptual innovation and evolving empirical evidence. According to the dataset, although important divergencies persist with regard to its scalability, feasibility, and long-term systemic implications, there is a strong convergence around the tokenization potential transformation.

4.1 Research Stream 1: Technical and Economic Drivers of Tokenization

The literature consistently identifies three foundational drivers enabling the emergence and growth of RWA tokenization: (1) blockchain programmability, smart contracts, and fractional ownership. These technological features significantly influence how

assets are issued, transferred, and managed. This is done by embedding contractual logic directly into digital assets. Smart contracts significantly reduce reliance on intermediaries and transaction costs by automating core financial processes, such as settlement, coupon payments, and compliance verification (Catalini & Gans, 2020; Cong & He, 2019; Cong et al., 2021; Harvey et al., 2021; Schär, 2021).

From an economic perspective, tokenization introduces a paradigm shift in asset divisibility and market participation. By enabling fractional ownership, high-value and traditionally illiquid assets could be subdivided into smaller units accessible to a larger pool of investors (Allen et al., 2025; Demir et al., 2022). This mechanism improves capital formation by connecting global investors with previously inaccessible investment opportunities and enhances inclusivity. Recent empirical and industry-backed evidence suggests that institutional adoption is increasing rapidly. Tokenized government securities, money market funds, and real estate products have reached a strong scale, with global financial institutions launching on-chain investment vehicles. These developments indicate a transition from experimental pilot to market integration, reinforcing the notion that tokenization represents a structural innovation.

Despite these advancements, the literature also highlights several technical limitations. Interplay between blockchain networks remains limited. Lack of interoperability leads to fragmentation across platforms and reduces overall market efficiency. Furthermore, despite the emerging framework, such as ERC-3643, the lack of standardized token protocols introduces challenges for scalability and regulatory compliance (Arner et al., 2023). These limitations, despite the underlying technology maturing, the supporting infrastructure is still emerging. Collectively, these findings suggest that RWA constitutes a dual technological-economic innovation, capable of transforming infrastructure and the function of capital markets.

4.2 Research Stream 2: Financial Market Transformation Effects in Terms of Liquidity, Efficiency, and Accessibility

Another research stream identified in the literature is the extent to which RWA tokenization influences market microstructure, particularly regarding liquidity, efficiency, and accessibility. To eliminate temporal and geographical constraints, tokenized assets operate continuously on blockchain-centred platforms (Capponi et al., 2023; Gandal et al., 2018; Makarov & Schoar, 2020). This structural shift improves market responsiveness and facilitates more dynamic price discovery mechanisms (Almeida & Gonçalves, 2024; Easley et al., 2012; O'hara, 2015). Empirical studies further suggest that tokenized assets can exhibit improved liquidity characteristics, including narrower bid-ask spreads and increased trading volumes, particularly in secondary markets for tokenized bonds and real estate. These improvements are largely attributed to fractionalization, barriers to entry, broadened investor participation, and enhanced market depth. More recent empirical evidence also indicates that tokenization can reduce trading costs and improve settlement efficiency, particularly in tokenized bond markets (Belkhiria et al., 2026). However, the literature suggests that these benefits are not universal. While Capponi et al. (2023) reports enhanced market liquidity under favourable conditions, Gould et al. (2013) demonstrate that liquidity remains strongly influenced by market designs and order book dynamics, implying that tokenization alone cannot guarantee efficient secondary markets.

In terms of efficiency, blockchain-based transparency mitigates information asymmetries by providing real-time, immutable transaction records that facilitate faster settlement cycles and potentially reduce counterparty risk, aligning with broader financial stability objectives. Nevertheless, the literature consistently identifies cross-platform fragmentation and the lack of interoperability as persistent barriers to efficiency, creating opportunities for arbitrage and reducing overall market integration (Duan et al., 2021; Makarov & Schoar, 2020). These findings suggest that the efficiency gains associated with tokenization depend not only on blockchain technology itself but also on the development of interoperable market resources and supportive frameworks.

Accessibility emerges as one of the most transformative dimensions of RWA tokenization. By reducing minimum investment thresholds, tokenization enables participation by retail investors and underserved populations, particularly in developing economies. This democratization of investments has the potential to improve financial inclusion and broaden access to previously illiquid asset classes. However, the literature cautions that improved accessibility does not automatically translate into meaningful inclusion. Structural barriers, including inadequate digital infrastructure, regulatory uncertainty, and limited financial literacy, continue to constrain adoption (Arner et al., 2017; Demir et al., 2022). As a result, the inclusivity potential of RWA tokenization remains conditional on broader ecosystem development, institutional readiness, and regulatory harmonization. Holistically, the evidence indicates that while tokenization has considerable potential to improve liquidity, efficiency, and accessibility, the magnitude and sustainability of these benefits depend on complementary technological, institutional, and regulatory developments rather than the technology alone.

4.3 Research stream 3: Regulatory and Governance Pressures

Regulatory and governance challenges represent one of the most significant barriers to the widespread adoption of RWA tokenization. The literature consistently highlights the absence of harmonized global regulatory frameworks, with jurisdictions adopting divergent approaches based on their economic, institutional, and legal contexts (Arner et al., 2023). While some countries have implemented innovation-oriented regulatory frameworks and sandbox environments to encourage blockchain adoption, others continue to apply restrictive regulatory policies, creating legal uncertainty for market participants and limiting institutional confidence. This regulatory fragmentation constrains the scalability of tokenized markets, reduces interoperability, and complicates cross-border transactions (Arner et al., 2017). These constraining approaches illustrate the ongoing challenges of balancing financial innovation with investor

protection and financial stability, suggesting that regulatory flexibility must be accompanied by clear certainty to support sustainable market development.

Within emerging markets, regulatory frameworks generally reflect a cautious but progressive approach toward digital assets. Although RWA tokenization presents opportunities to improve financial inclusion, capital formation, and access to global investment opportunities, its successful implementation remains constrained by limited digital resources, inconsistent legal recognition of tokenized assets, regulatory uncertainty, and varying levels of financial and digital literacy (Arner et al., 2017; Demir et al., 2022). As a result, the developmental benefits of tokenization are likely to depend on broader institutional readiness and continued investment in regulatory capacity. Recent studies also suggest that greater regulatory harmonization and interoperable digital financial resources could enhance cross-border investment and strengthen regional capital market integration, particularly when supported by emerging Central Bank Digital Currency ecosystems (Stroukal & Peterka, 2025).

Governance challenges extend beyond formal regulation to encompass on-chain and off-chain coordination mechanisms. In many regions, questions surrounding legal ownership, the enforceability of smart contracts, digital asset custody, and dispute resolution remain unresolved. The literature therefore advocates hybrid governance models that combine the transparency and automation of blockchain technology with established legal and regulatory oversight to strengthen market integrity and investor confidence (Allen et al., 2025; Schär, 2021). More recently, Teng et al. (2026) argue that effective governance should also integrate digital identity verification, regulatory compliance, and operational resilience to ensure the long-term sustainability of the tokenized financial ecosystem. Overall, the evidence suggests that technological innovation alone is insufficient to drive widespread adoption; rather, the future success of RWA tokenization will depend on coordinated regulatory reform, institutional capacity, and governance frameworks that can adapt to rapidly evolving digital financial markets.

4.4 Research Stream 4: Risks, Barriers, and Adoption Challenges

Despite its transformation potential, RWA tokenization introduces a range of technological, market, governance, and institutional risks that may contain widespread adoption. Technological risks include cybersecurity threats, oracle manipulation, and smart contract vulnerabilities, all of which can undermine system integrity, operational resilience, and investor confidence (Katsiampa, 2017). As tokenized financial ecosystems become increasingly interconnected, these vulnerabilities extend beyond technical failures and raise broader concerns regarding the reliability of blockchain infrastructure and digital asset custody. Recent studies argue that effective governance should integrate cybersecurity, regulatory compliance, and operational resilience as interconnected dimensions of digital asset risk management rather than treating them as isolated technological challenges (Teng et al., 2026). Market-related risks include liquidity concentration, market fragmentation, and price manipulation, particularly in tokenized markets characterised by low trading volumes and limited interoperability (Baur et al., 2018; Gandal et al., 2018). These conditions may increase volatility and undermine the financial stability benefits often associated with tokenization (Corbet et al., 2019; Liu & Tsyvinski, 2021). Furthermore, fragmented blockchain ecosystems may reduce market efficiency by creating arbitrage opportunities and limiting the development of deep and liquid secondary markets (Makarov & Schoar, 2020). These findings suggest that efficiency depends not only on tokenization itself but also on the maturity of supporting market resources and regulatory coordination.

Beyond technological and market risks, the literature increasingly highlights governance and regulatory challenges associated with the long-term sustainability of tokenized financial markets. As institutional participation grows, compliance with AML and KYC requirements, digital identity, verification, investor protection, and effective dispute resolution become increasingly important for maintaining market integrity and confidence (Teng et al., 2026). Similarly, legal uncertainty regarding digital asset ownership, custody arrangements, and the enforceability of smart contracts continues to constrain institutional adoption in many regions (Allen et al., 2025; Schär, 2021). These findings reinforce the need for governance frameworks that evolve alongside technological innovation to ensure that efficiency gains are not achieved at the expense of financial stability.

An evolving concern highlighted in recent research is the potential impact of quantum computing on blockchain security, particularly regarding future cryptographic vulnerabilities. Although these risks remain largely theoretical, they underscore the importance of developing quantum-resistant cryptographic solutions to strengthen the long-term resilience of tokenized financial resources. Adoption patterns also reveal a clear asymmetry between developed and developing economies. Institutional adoption is concentrated in advanced economies, where digital resources, regulatory clarity, and institutional capacity are more mature. In contrast, emerging markets demonstrate a relatively high level of retail engagement but continue to face significant barriers related to regulatory uncertainty, inadequate digital resources, and limited financial literacy (Chainalysis, 2026; Demir et al., 2022). As a result, the successful adoption of RWA tokenization will depend not only on technological innovation but also on coordinated investment in regulatory modernization, digital resources, institutional capacity, and investor education. Overall, the literature suggests that while tokenization provides substantial opportunities to transform financial markets, its long-term success will ultimately be determined by the ability of policymakers, regulators, and market participants to balance innovation with robust governance, effective risk management, and financial system stability.

5. Conclusion

The tokenization of real-world assets (RWA) represents a fundamental structural transformation in global financial systems. The review demonstrates that RWA tokenization is increasingly transitioning from conceptual experimentation to institutional-scale implementation. According to the findings, tokenization has the potential to unlock the significant value of previously illiquid assets, refine the architecture of modern financial markets, and reshape capital allocation mechanisms. The review identifies four main interrelated thematic dimensions that collectively define the trajectory and current state of RWA tokenization. First, technical and economic drivers, which suggest that smart contracts, programmable blockchains, and traditional ownership reduce settlement periods, intermediation costs, and operational frictions. These innovations improve efficiency and redefine ownership structures and participation in financial markets. Second, the market transformation effects are evident in expanded accessibility, improved price discovery, and enhanced liquidity. The evolving trading environments and fractional investment models are influencing traditional market microstructures and mitigating entry barriers for a broader range of investors. Third, the review highlights that regulatory and governance challenges remain the most significant constraint to large-scale adoption. The absence of a harmonized global framework continues to limit cross-border scalability, institutional integrity, and trust. Fourth, the analysis identifies a range of risks and structural barriers. Risks such as potential market manipulation, liquidity concentration, cybersecurity threats, and smart contract vulnerabilities underscore the need to balance innovation with strong risk management and oversight mechanisms.

From a practical perspective, the findings highlight the strategic importance for asset managers and financial institutions to invest in compliant tokenization infrastructures, including hybrid models that integrate on-chain and off-chain efficiency and legal enforceability. For policymakers, the results highlight the urgency of developing adaptive and harmonized regulatory frameworks that support innovation while safeguarding financial stability and investor interest protection. Such frameworks should prioritize clarity in cross-border interoperability, standardization of token protocols, and legal ownership. For investors, tokenized assets present new diversification and portfolio optimization opportunities. Thus, investors require a more sophisticated understanding of evolving risks, including smart contract vulnerabilities, oracle dependencies, and custody arrangements.

RWA tokenization is a technological advancement and catalyst for profound financial market transformation. By redefining how assets are created, traded, and regulated, tokenization has the potential to enable accessibility to capital, support broader economic development objectives, and enhance market efficiency. However, its transformative potential is not guaranteed. The extent to which tokenization influences global finance is dependent upon a successful resolution of regulatory, technical, and governance pressures.

The agenda for future research should explore longitudinal and data-driven empirical studies to investigate the real-world performance and impact of tokenized assets over time. Comparative cross-jurisdictional analyses, especially focusing on emerging markets, are critical to understand contextual adoption dynamics and regulatory effectiveness. Moreover, there is a need for interdisciplinary research integrating computer science, law, and finance to capture issues such as systematic risk propagation, quantum resilience, governance design, and interoperability.

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