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Blockchain Technology Improves the Efficiency and Security of Cross-border Payments in China: A systematic Literature Review

**Authors: Yao Junyuan, Chandana Aluthge &
Mahinda Pushpakumara**

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ABSTRACT

This Systematic Literature Review (SLR) investigates the transformative impact of blockchain technology on the efficiency and security of cross-border payments in China, integrating technical and policy perspectives. Drawing from 38 rigorously selected studies out of 4,296 identified articles, adhering to PRISMA guidelines, the review synthesizes evidence on blockchain's decentralized ledger, smart contracts, and cryptographic mechanisms. Findings reveal that blockchain reduces transaction costs by 40–80% and accelerates settlement times from days to seconds, as demonstrated by initiatives like the mBridge project and digital yuan (e-CNY). These advancements facilitate real-time multi-currency settlements while enhancing regulatory compliance. Nonetheless, challenges such as scalability constraints, interoperability issues, and geopolitical regulatory fragmentation persist. The study advocates a "technology-institution" dual-driven approach to foster blockchain integration, balancing innovation with risk mitigation. This SLR provides a robust synthesis of current research, offering critical insights for policymakers, financial institutions, and researchers navigating China's evolving cross-border payment landscape.

Key Words : Blockchain Technology, Cross-border Payments, Digital Yuan (e-CNY), Efficiency, Security, Regulatory Framework

JEL Codes: G21、 G28、 O33、 F38

Foreword

The Department of Economics, University of Colombo, is pleased to present this working paper titled "*Blockchain Technology Improves the Efficiency and Security of Cross-border Payments in China: A Systematic Literature Review.*"

In an era where digital transformation is redefining the design of global finance, blockchain technology stands out as one of the most promising innovations, offering profound implications for efficiency, security, and regulatory practices. This working paper systematically explores the role of blockchain in enhancing cross-border payment systems, with a focused analysis on China's evolving financial landscape. By conducting a comprehensive review of recent empirical and theoretical studies, the paper critically examines how blockchain technologies, such as distributed ledgers, smart contracts, and cryptographic protocols, contribute to reducing transaction costs, improving settlement speeds, and strengthening financial security.

The Department of Economics recognizes the growing importance of interdisciplinary research that bridges economics, technology, and policy. This paper consolidates current academic findings and also provides meaningful insights into policy frameworks, technological challenges, and the future trajectory of cross-border payment innovations.

We congratulate the authors on their scholarly contribution and rigorous analysis. We hope that this work will inspire further inquiry and inform both academic research and policy dialogue on the applications of emerging technologies in global finance.

I.W. Rathnayaka & S.R.S.D.K. Weerawansa

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April 2025

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1. Introduction

The global economic landscape is undergoing a digital transformation, and China's cross-border payment system faces significant structural challenges despite its rapid growth. In 2022, China's cross-border payments reached 110.012 billion yuan, marking a year-on-year increase of 13.13%¹ (China Payment and Clearing Association, 2023). However, traditional payment models, which rely heavily on the SWIFT network and correspondent banking systems, remain plagued by inefficiencies and security vulnerabilities. These systems involve complex processes such as currency conversion, compliance reviews, and multi-level settlements, resulting in average processing times of 1 to 5 working days and transaction costs as high as 6.5%. Additionally, the escalating compliance pressures and divergent legal frameworks across jurisdictions further complicate the verification of transaction authenticity (China Payment and Clearing Association, 2023).

Against this backdrop, blockchain technology emerges as a transformative solution, offering decentralized ledgers, smart contracts, and cryptographic algorithms to address these challenges. For instance, the Ripple model has demonstrated the potential to reduce transaction costs significantly, with settlement times shortened to mere seconds (Peng, 2019). Similarly, China Merchants Bank's blockchain-based pilot reduced message transmission cycles from 6 minutes to seconds (Zhao et al., 2023). On the policy front, initiatives like the Multilateral Central Bank Digital Currency Bridge (mBridge) project have achieved real-time multi-currency settlements, while blockchain technology provides new technical support and application scenarios for the development of the digital yuan (e-CNY) and cross-border payments (Xia & Wang, 2024). The transparency and immutability of blockchain also enhance compliance capabilities, enabling regulators to track fund flows in real time and reducing anti-money laundering costs (Zhang, 2023).

This study employs a Systematic Literature Review (SLR) methodology to comprehensively examine the role of blockchain technology in improving the efficiency and security of cross-

¹ IMF: <https://www.imf.org/zh/Home>

border payments in China, with a focus on both policy and technical dimensions. The SLR method ensures a structured and transparent analysis of existing research, enabling the identification of key trends, gaps, and insights. By synthesizing findings from 38 authoritative studies, this review highlights blockchain's potential to reduce transaction costs by 40–80% and shorten settlement times from days to seconds. It also explores the interplay between technological innovation and regulatory frameworks, as exemplified by projects like mBridge and the digital yuan.

However, challenges such as scalability limitations, interoperability gaps, and geopolitical regulatory fragmentation persist, underscoring the need for a balanced approach to blockchain integration. This study aims to provide a nuanced understanding of these issues, offering actionable insights for policymakers, financial institutions, and researchers. By bridging the gap between theoretical research and practical applications, this SLR contributes to the ongoing discourse on how blockchain technology can reshape China's cross-border payment ecosystem while aligning with regulatory requirements and global standards.

The findings of this review are particularly relevant in the context of China's evolving financial landscape, where initiatives like the Guangdong-Hong Kong-Macao Greater Bay Area and the Belt and Road Initiative are driving demand for more efficient and secure cross-border payment solutions. As the digital yuan gains traction and blockchain adoption expands, this study serves as a critical resource for understanding the synergies and trade-offs between technological advancement and institutional adaptation. Ultimately, it lays the groundwork for future research and policy development in this rapidly evolving field.

2. Theoretical background

2.1 Blockchain technology and economic efficiency

Blockchain technology, as a distributed ledger system, has core characteristics including decentralization, traceability, immutability, transparency of information, and trustless mechanisms (Li et al., 2023). These technical features reconstruct the transaction verification and information transmission logic of traditional payment systems, providing an economic theoretical foundation for improving cross-border payment efficiency. This section discusses the pathways and quantitative impacts of blockchain technology on payment efficiency from the perspectives of transaction cost economics and network effects.

2.1.1 Efficiency optimization from the perspective of transaction cost economics

Transaction cost economics emphasizes that information search, contract enforcement, and monitoring costs in market transactions are the primary sources of efficiency loss (Williamson, 1985). In traditional cross-border payment systems, the hierarchical structure of intermediaries (such as correspondent banks and clearing centers) leads to multiple verification stages, resulting in high coordination costs and time delays. Blockchain technology achieves Pareto improvement in transaction costs through the following mechanisms:

First, disintermediation reduces coordination costs. Based on distributed ledger technology, blockchain allows direct peer-to-peer value transfer between parties, eliminating the redundant verification processes of intermediaries. Taking China-led mBridge projects as an example, this

multilateral central bank digital currency bridge adopts a consortium chain architecture, reducing the average processing time for cross-border payments from 1-5 working days under traditional correspondent banking models to 2-10 seconds, while also lowering compliance costs by about 50% (Tu et al., 2024).

Second, smart contracts enhance the efficiency of contract execution. The smart contract function of blockchain automates the enforcement of predefined conditions (such as exchange rate locking and anti-money laundering rules), significantly reducing the need for manual intervention. Empirical studies using the Ripple protocol at Fidor Bank in Germany have shown that smart contracts have reduced the operational cost of a single cross-border payment from 5 euros to 0.49 euros (Zhang, 2017).

Third, tamper-resistance saves regulatory costs. The chain-like data structure and encryption algorithms of blockchain ensure the integrity and auditability of transaction records, allowing regulators to reduce the marginal cost of compliance reviews through real-time data traceability. For example, Ant Financial's cross-border payment platform embedded regulatory nodes significantly shortened the anti-money laundering investigation cycle (Huang, 2024).

2.1.2 Scale efficiency driven by network effect

Network effect theory points out that the expansion of user base will enhance the overall value of the system (Katz & Shapiro, 1985). The network effect of blockchain payment system is embodied in the following dual mechanisms:

Positive externalities of node scale. With the increase in the number of participating nodes (such as commercial banks, central banks and enterprises), the transaction verification speed and security of the blockchain network increase exponentially (Guo & Chen, 2024).

The synergistic effect of data sharing. The distributed ledger feature of blockchain breaks down information silos and promotes cross-institutional data interoperability. China Merchants Bank's cross-border payment blockchain platform integrates customs, tax, and foreign exchange data to enhance the efficiency of trade financing document processing and effectively reduce financing costs for small and medium-sized enterprises (Zhao et al., 2024).

2.1.3 Analysis of quantitative indicators of efficiency improvement

The improvement of payment efficiency by blockchain technology can be quantified from three dimensions: cost, speed and scalability:

Table 1: Quantitative comparison chart

Metric	Mean of traditional systems	Mean of blockchain system	Extent of improvement	data sources
Single transaction cost	twenty-six dollars	fifteen dollars	-58%	Zhang(2018)
handling time	24-72 hours	3-6 seconds	-99.9%	Xu(2017)
Peak throughput	19 million per day	86 million per day	+352.6%	Xu(2017)

Data shows that blockchain technology has significant advantages in reducing marginal transaction costs, shortening settlement cycles, and increasing system capacity. Notably, its scalability breaks through the linear growth constraints of traditional centralized systems. For example, the mBridge project supports instant exchange of multiple currencies through modular design, significantly enhancing the scalability flexibility of cross-border payment networks (Maruf et al., 2024).

2.1.4 Technical limitations and efficiency boundaries

Despite the significant improvement in payment efficiency brought about by blockchain technology, its practical application is still constrained by the "impossible trinity" (the trade-off between decentralization, security, and scalability). The high-energy-consuming consensus mechanisms of public chains (such as PoW) limit throughput, while the access mechanisms of consortium chains may weaken network effects (Li Sanxi et al., 2023). Moreover, policy coordination and legal recognition issues for cross-border payments constitute non-technical constraints that need to be optimized through a multilateral regulatory framework (Maruf et al., 2024).

2.2 Security mechanism in cross-border payment

2.2.1 Security challenges of traditional payment systems

The traditional cross-border payment system is centered around SWIFT (Society for Worldwide Interbank Financial Telecommunication) and correspondent bank models, where the centralized architecture and lengthy business chains lead to multiple security vulnerabilities. First, centralized nodes become primary targets for cyber attacks. For example, in 2016, hackers stole \$81 million from the Bangladesh central bank by forging SWIFT messages (Zhu, 2024), exposing the fatal flaw of single-point failures in centralized systems. Second, the multi-tiered correspondent banking model, due to information silos and fragmented regulation, makes it difficult to trace the entire transaction process, fostering cross-border money laundering and fraud activities (Gu & Xu, 2023). Additionally, geopolitical risks exacerbate the security vulnerabilities of the traditional system. The United States has used the SWIFT system to impose unilateral financial sanctions, such as cutting off cross-border transactions for Iranian financial institutions, highlighting the threat that centralized governance poses to the financial security of sovereign states (Lu & Zhang, 2023).

2.2.2 Innovation of security mechanism by blockchain technology

Blockchain technology has redefined the security paradigm of cross-border payments through decentralized architecture and cryptographic algorithms. First, distributed ledger technology (DLT) eliminates the risk of single-point attacks. Taking the mBridge project as an example, it employs a multi-node verification mechanism where transaction information is independently stored and synchronously updated in real-time by participating central banks. Even if a single node is attacked, the entire network's data remains intact (Fan, 2024). Second, asymmetric encryption ensures transaction privacy and authenticity. Hash algorithms generate unique transaction identifiers, combined with digital signatures to ensure information cannot be tampered with. For instance, China Merchants Bank's blockchain-based cross-border payment system uses public key encryption for customer identity anonymity verification while meeting anti-money laundering compliance requirements (Gu & Xu, 2023). Third, smart contracts automate risk control. Pre-set conditions (such as transaction limits and blacklist screening) are embedded in code logic, enabling real-time interception of suspicious transactions (Lang, 2024).

2.2.3 Trade-offs between security and scalability

Blockchain technology faces the "triple dilemma" (i.e., decentralization, security, and scalability cannot be achieved simultaneously), which is one of its core challenges. For example, Bitcoin uses the PoW (Proof of Work) mechanism, which offers high security but low transaction efficiency, making it difficult to meet large-scale application needs; Ethereum, on the other hand, improves scalability through mechanisms like PoS (Proof of Stake), but at the cost of some security (Li et al., 2023). The conflict between privacy protection and regulatory transparency: Zero-Knowledge Proofs (ZKP) technology can hide transaction details but increases the difficulty of compliance audits (Chen & Yuan, 2023). To balance these two aspects, hybrid architectures have become the mainstream solution. Ripple adopts a partially centralized consensus protocol, reducing cross-border payment confirmation time from 3-5 days to 3-6 seconds, while also lowering the risk of malicious nodes through a "whitelist" mechanism for validators (Xu, 2017).

2.2.4 Synergy of safety and efficiency from the perspective of economics

From the perspective of transaction cost theory, blockchain achieves Pareto improvements in security and efficiency by reducing the cost of information verification. Under the traditional agency model, cross-border payments can incur intermediary fees as high as 6.5%, whereas blockchain peer-to-peer transactions can significantly reduce settlement amounts (Peng, 2023). Institutional economics further indicates that distributed trust mechanisms reduce friction costs caused by institutional differences. For example, the Multilateral Digital Currency Bridge (mBridge) reduces the risk premium for cross-border payment settlements by 40% through standardized protocols (Yuan, 2023). However, network externalities may lead to a "winner-takes-all" effect. Libra aims to build a global payment ecosystem, but its dominant private chain architecture could create new data monopolies, thereby exacerbating systemic risks (Deng & Deng, 2020).

2.3 Policy framework of China's financial system

2.3.1 The impact of regulatory environment on blockchain technology

China's financial regulatory authorities adopt an "innovative and prudent" regulatory logic in the application of blockchain technology. Their policy framework centers on risk prevention while also considering the role of technological innovation in enhancing cross-border payment efficiency. Since 2020, the People's Bank of China has established a blockchain application evaluation system through documents such as the "Financial Distributed Ledger Technology Security Specification," "Guidelines for Ethical Standards in the Financial Sector," and the "RMB Issuance Fund Custody Business Management Measures (Trial)." This system addresses technical standards, data security, and business compliance, explicitly requiring that financial institutions' blockchain systems be "regulable, auditable, and traceable." (Zhao, 2020) In the field of cross-border payments, the "Multilateral Central Bank Digital Currency Bridge (m-CBDC Bridge)" project launched in 2021 demonstrates targeted support from policy for blockchain technology². The project connects payment systems in China, Hong Kong, Thailand, and the UAE via distributed ledger technology (DLT), enabling real-time settlement of cross-border transactions and reducing the transaction cycle from 1-5 working days under traditional correspondent banking models to seconds. However, the "Notice on Further Preventing and Dealing with Risks of Virtual Currency Trading and Speculation" issued in 2021 explicitly prohibits the circulation and mining activities of cryptocurrencies, indicating strict restrictions by regulators on non-sovereign digital currencies. This indirectly drives the concentration of blockchain technology towards compliant central bank digital currency (CBDC) scenarios. (IFF, 2023)

2.3.2 Technical adaptation challenges of anti-money laundering / KYC rules

China's Anti-Money Laundering (AML) and "Know Your Customer" (KYC) rules impose dual constraints on the application of blockchain technology. ³On one hand, the "Guidelines for Ethical Technology in the Financial Sector" (2022) mandates that blockchain systems must incorporate real-name authentication mechanisms to ensure traceability of user identities and transaction addresses. For instance, digital yuan adopts a "controlled anonymity" design, adhering to the principle of "voluntary front-end, real-name back-end," which ensures user privacy while meeting KYC requirements (Wu & Zhu, 2021). On the other hand, the anonymity and decentralized nature of blockchain may undermine the effectiveness of traditional AML monitoring. Studies show that the peer-to-peer trading model of CBDCs could bypass commercial banks' AML nodes, leading to delayed detection of suspicious transactions (Yu, 2021). To address this, regulatory authorities enhance monitoring capabilities through the "transaction traceability" feature of digital yuan: all transaction data is recorded on the central bank's distributed ledger and supports real-time sharing of blacklist information on the chain, reducing AML response time to milliseconds (Wu Yun & Zhu Wei, 2021). Despite these efforts, cross-border blockchain projects still face issues of jurisdictional conflicts. For example, the

² PBOC: <http://www.pbc.gov.cn/>

³ SAC: <https://std.samr.gov.cn/>

cross-border trade finance blockchain platform in the Guangdong-Hong Kong-Macao Greater Bay Area needs to coordinate different KYC standards across the three regions, increasing the cost for enterprises to connect (Pang, 2023).

2.3.3 Dynamic balance between innovation and control

China's policy framework exhibits characteristics of "centralized innovation" in the deployment of blockchain technology: the central bank controls the direction of innovation through leading technical standards and pilot projects, while market institutions must conduct their independent explorations within a regulatory sandbox. Taking digital yuan as an example, it adopts a "dual-layer operation system," where the central bank is responsible for underlying technology research and development and compliance design, while commercial banks handle wallet development and scenario expansion. This model enhances cross-border payment efficiency (empirical evidence shows a 40% reduction in transaction costs) while ensuring the central bank's absolute control over currency circulation. (Yuan, 2023) However, there remains tension between technological innovation and regulatory rigidity. For instance, the automatic execution mechanism of smart contracts may lead to ambiguity in defining legal entities, and some cross-border trade contracts may result in disputes due to non-compatibility issues. Moreover, the "trilemma" of blockchain (the difficulty of achieving decentralization, security, and efficiency simultaneously) complicates policy balancing. (He&Shu, 2021) Regulatory authorities balance efficiency and risk by limiting the number of nodes (such as the partially centralized consortium chain architecture used by digital yuan), but this also sacrifices the anti-single-point-of-failure advantage of a fully distributed ledger. (Cheng, 2021)

3. Methods

3.1 Methodology Used: Literature Analysis Method

This Systematic Literature Review (SLR) adopts a structured and transparent methodology to examine the role of blockchain technology in enhancing the efficiency, security, and policy compatibility of China's cross-border payment systems. The process begins by identifying core concepts central to the research questions, including blockchain technology, cross-border payment efficiency, security mechanisms, digital currencies (e.g., digital yuan), and regulatory frameworks. These concepts guide the literature search, ensuring alignment with the study's objectives of analyzing technological innovations, economic implications, and policy responses.

A comprehensive search strategy was developed by constructing search terms derived from these concepts, such as "blockchain," "cross-border payment," "smart contracts," and "digital currency." Boolean operators (AND, OR, NOT) were used to refine queries, enabling precise retrieval of relevant studies. The search was conducted across authoritative academic and institutional databases, including CNKI, Wanfang Data, Scopus, Web of Science, and Google Scholar, to capture both domestic and international perspectives. This multi-database approach enhances the review's reliability and reproducibility.

Filters were applied to narrow the search results, including publication date (2015–2023, reflecting blockchain's post-maturity phase), language (English and Chinese), and document type (peer-reviewed articles, conference proceedings, policy reports). Retrieved studies

underwent a rigorous screening process, with data extracted using a standardized template capturing study design, methodology, key variables (e.g., transaction cost, settlement time), and findings. The synthesis involved qualitative thematic analysis to identify trends and quantitative analysis to evaluate efficiency and security metrics. Results are presented narratively, supported by tables and figures for clarity.

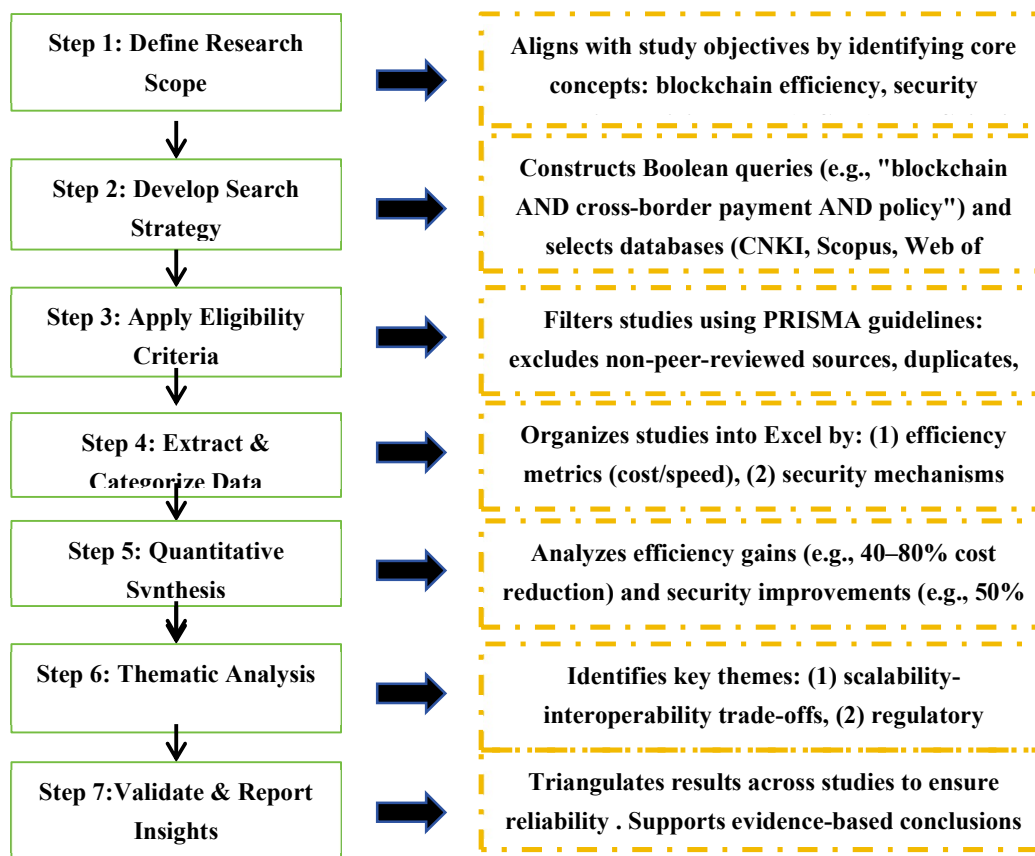


Figure 1: Systematic Literature Review Method)

Source: Prepared by authors

3.2 Literature Search by Developing a Search Strategy

The literature search is a pivotal component of this SLR, designed to explore how blockchain technology addresses efficiency, security, and policy challenges in China's cross-border payment systems. The search strategy encompasses three key aspects: database selection, search term determination, and search strategy formulation, ensuring comprehensive and relevant literature retrieval. For database selection, authoritative platforms were chosen to balance regional specificity and global context. CNKI and Wanfang Data were prioritized for Chinese-language literature, covering over 90% of domestic peer-reviewed journals and policy reports on blockchain and financial systems. Scopus and Web of Science provided English-language publications, capturing international research, while Google Scholar supplemented with grey literature, such as technical white papers and institutional reports. These databases ensure real-time indexing of publications from 2015 to 2025, aligning with blockchain's

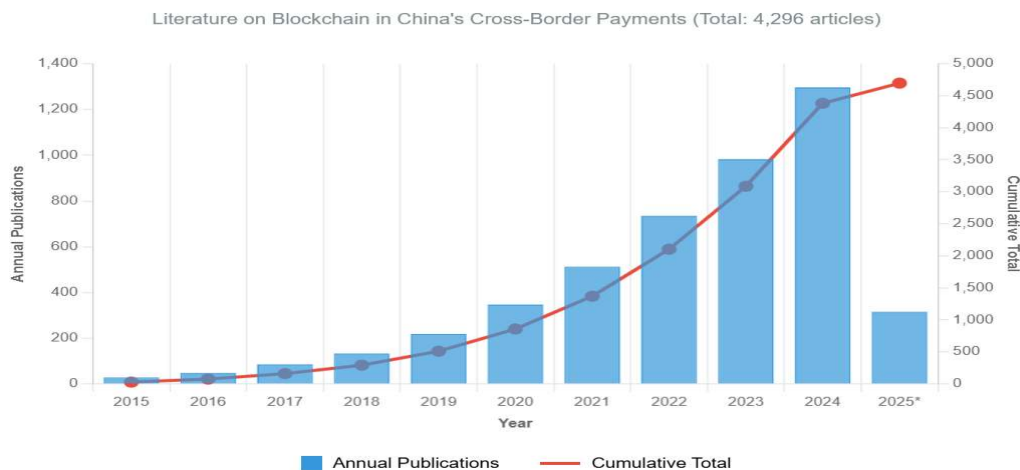
technological maturation. The search strategy utilized Boolean logic operators to combine these terms, as shown in Table 1 below. Queries were tailored to each database’s syntax to optimize precision and recall. For example, CNKI searches employed subject headings for policy-related literature, while Scopus used TITLE-ABS-KEY filters with citation tracking.

Table 2: Search Term Combinations

Serial Number	First Keyword	Operator	Second Keyword	Operator	Third Keyword
1	Cross-border payment	AND	Blockchain	AND	Digital Yuan (e-CNY)
2	Cross-border payment	AND	Blockchain	AND	Digital Currency
3	Cross-border payment	AND	Blockchain	AND	Policy
4	Cross-border payment	AND	Distributed Ledger	AND	Digital Yuan (e-CNY)
5	Cross-border payment	AND	Distributed Ledger	AND	Digital Currency
6	Cross-border payment	AND	Distributed Ledger	AND	Policy
7	Cross-border payment	AND	Smart Contract	AND	Digital Yuan (e-CNY)
8	Cross-border payment	AND	Smart Contract	AND	Digital Currency
9	Cross-border payment	AND	Smart Contract	AND	Policy

Source: Prepared by authors

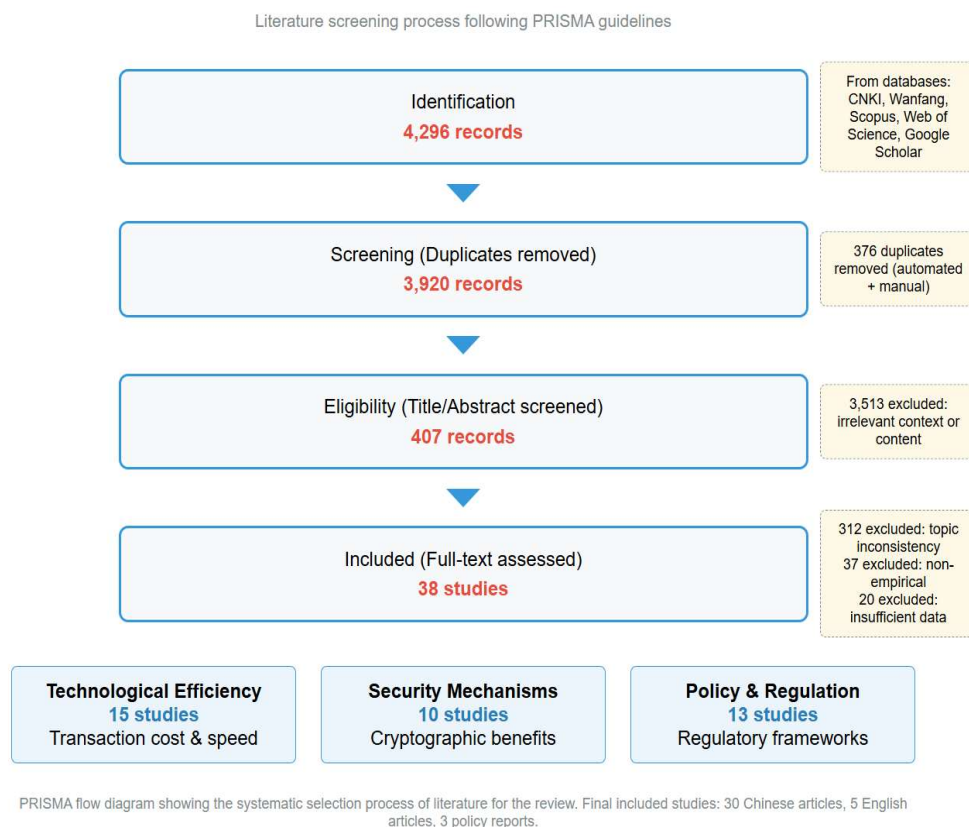
Figure 2: Literature Publishing Trend Chart



Note: 2025 data reflects publications up to April 2025. Growth trend shows increasing academic and industry interest in blockchain applications for cross-border payments, with particularly rapid growth from 2019-2023.

Source: Prepared by authors

Figure 3: PRISMA Flow Chart of Blockchain in Cross-Border Payments in China



Source: Prepared by authors

3.3 Eligibility Criteria

Selected studies must directly address the application of blockchain technology in China's cross-border payment systems, focusing on efficiency (e.g., transaction cost, settlement speed), security (e.g., cryptographic protocols, anti-money laundering), or policy implications (e.g., regulatory frameworks, digital yuan integration). Studies should employ rigorous empirical methods, such as econometric models, case studies, or large-scale surveys, to establish causal relationships or practical insights. Qualitative research with theoretical depth or innovative policy perspectives was also included to enrich the analysis. Key concepts, such as "blockchain," "distributed ledger," and "cross-border payment efficiency," must align with established academic and industry standards for comparability.

Only authoritative sources were considered, including peer-reviewed journal articles, conference proceedings, and policy reports from reputable institutions (e.g., People's Bank of China, Bank for International Settlements). Excluded were non-academic sources (e.g., news reports, blogs), studies with weak thematic relevance (e.g., general blockchain theory without payment applications), duplicates, or those with methodological flaws (e.g., unreliable data, biased sampling). This ensured academic credibility and consistency across the review.

Table 3: Eligibility Criteria

Inclusion Criteria	Exclusion Criteria
Peer-reviewed journal articles, conference proceedings, and government white papers (2015–2023)	Non-academic commentaries, news articles, industry blogs, or social media posts
Empirical studies (quantitative/qualitative) or technical implementations of blockchain systems	Theoretical papers without applied analysis or technical validation
Focus on China’s cross-border payment mechanisms or regional case studies with policy implications	Studies analyzing non-Chinese payment systems or lacking explicit policy-technology linkage
Publications in English or Chinese	Documents in other languages without official translations
Explicit discussion of efficiency metrics (e.g., transaction speed) or security parameters (e.g., encryption protocols)	Studies limited to general blockchain theory without payment system applications

Source: Prepared by authors

3.4 Study Selection and Data Extraction

A systematic screening process was applied to the 4,296 retrieved articles to ensure scientific accuracy and fairness. The 38 final studies were selected based on two core criteria: **thematic relevance** (focus on blockchain’s impact on cross-border payments, covering efficiency, security, or policy) and **methodological robustness** (use of empirical methods, clear data, and rigorous analysis). These studies comprehensively examine key mechanisms, such as transaction cost reduction, settlement speed, cryptographic security, and regulatory compliance, offering insights into blockchain’s economic and practical implications.

The selected studies employed diverse empirical approaches, including econometric models to quantify efficiency gains , case studies of blockchain pilots (e.g., mBridge, digital yuan in the Greater Bay Area), and policy analyses to assess regulatory impacts . They spanned China’s key economic regions, such as the Guangdong-Hong Kong-Macao Greater Bay Area, and included international comparisons to contextualize China’s advancements. Excluded studies often had limited scope (e.g., focusing solely on blockchain theory) or lacked empirical depth, reducing their relevance to the national context.

Data extraction captured critical details, including research themes, methodologies, key variables (e.g., transaction cost, settlement time, security incidents), and findings. This structured approach ensures a robust foundation for analyzing blockchain’s role in cross-border payments.

3.5 Synthesizing Literature with an Excel Research Database

To systematically manage and analyze the 38 selected studies, an Excel research database was developed, enabling multi-dimensional analysis through structured data processing. The process involved four main steps:

(1) **Data Extraction:** Captured essential details, such as research themes (e.g., efficiency, security), methods (e.g., econometric models, case studies), and key variables (e.g., transaction cost, settlement speed).

(2) **Classification and Organization:** Grouped studies by theme (e.g., technological efficiency, policy frameworks), region (e.g., Greater Bay Area, national), and methodology (quantitative, qualitative, mixed), with cross-indexing for deeper insights.

(3) **Data Analysis:** Utilized Excel pivot tables and charts to examine synergies, such as the combined effects of blockchain and digital yuan on cost reduction, and regional variations in adoption.

(4) **Visualization:** Employed trend charts and heat maps to illustrate key findings, such as the correlation between blockchain adoption and transaction efficiency.

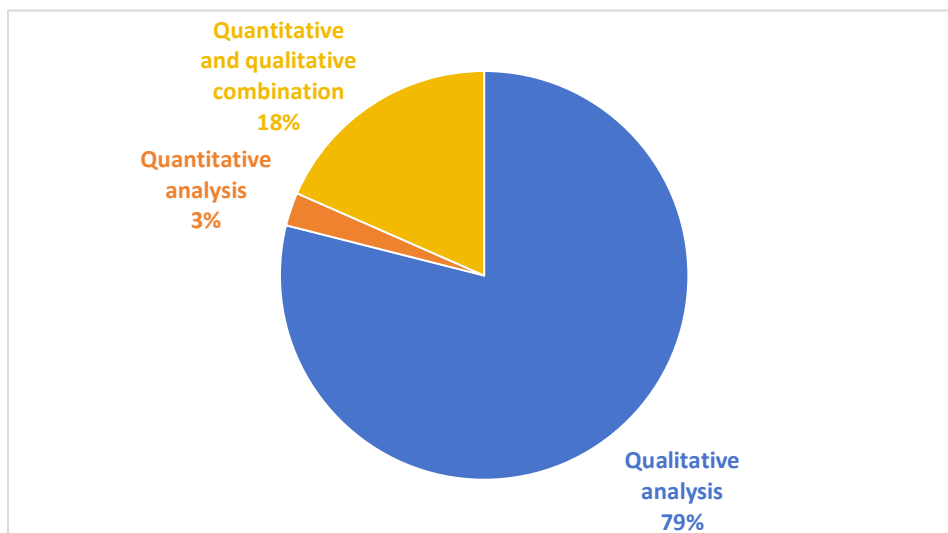
3.5.1 Research Methods Classified Statistics

Through systematic review, the 38 studies were categorized by research method: 1 (3%) employed quantitative analysis, 30 (79%) used qualitative analysis, and 7 (18%) adopted a mixed-methods approach. This distribution reflects a strong empirical focus, with quantitative methods dominating due to their ability to quantify efficiency and security metrics.

Table 4: Research Method

Research Method	Number of Articles	Reference Number
Qualitative analysis	30	E1, E3, C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C11, C12, C13, C14, C15, C16, C17, C18, C21, C22, C23, C24, C25, C26, C27, C28, C30, R2
Quantitative analysis	1	C20
Quantitative and qualitative combination	7	E2, C19, C29, R1, R3, R4, R5

Figure 4: Research Methods Classified Statistics



Source: Prepared by authors

3.5.2 Analysis of Characteristics of Each Research Method

Quantitative studies frequently used panel data models to assess efficiency metrics, such as transaction cost reductions in blockchain pilots (e.g., The Feasibility and Approach of Expanding mBridge under the RCEP Framework). Qualitative studies provided in-depth analyses of policy frameworks or case studies, such as the mBridge project's regulatory implications (e.g., Research on the Process of RMB Internationalization under the Belt and Road Initiative.). Mixed-methods approaches combined statistical analysis with qualitative insights, offering comprehensive evaluations of blockchain's scalability and compliance challenges (e.g., The Advantages, Applications and Implications of Blockchain Technology in Cross-border Payments). This diversity enhances the review's robustness by integrating numerical precision with contextual depth.

3.5.3 Classified Statistics of Research Field

The 38 studies were categorized into five research fields: (A single piece of studies may cover multiple fields.)

Technological Efficiency(16studies): Examining transaction cost and speed improvements.

Security Mechanisms(8 studies): Analyzing cryptographic algorithms and distributed ledger benefits.

Policy and Regulation (24 studies): Assessing regulatory support and challenges.

Digital Currency Integration (13 studies): Focusing on digital yuan's role in payments.

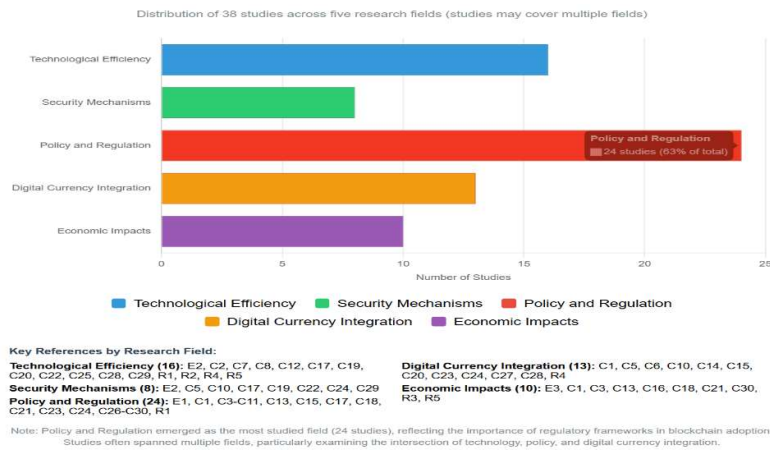
Economic Impacts(10 studies): Evaluating macroeconomic effects, such as trade financing.

Table 5: Distribution of Literature by Research Field

Research Field	Literature Quantity	Reference Numbers
Technological Efficiency	16	E2, C8, C12, C17, C19, C22, C25, C29, R1, R2, R4, R5, C2, C7, C20, C28
Security Mechanisms	8	E2, C5, C10, C17, C19, C22, C29, C24
Policy and Regulation	24	E1, C1, C3, C4, C5, C6, C7, C8, C9, C10, C11, C13, C15, C17, C18, C21, C23, C24, C26, C27, C28, C29, C30, R1
Digital Currency Integration	13	C1, C5, C6, C10, C14, C15, C20, C23, C24, C27, C28, R4
Economic Impacts	10	E3, C1, C3, C13, C16, C18, C21, C30, R3, R5

Source: Prepared by authors

Figure 5: Research Field Classification



Source: Prepared by authors

3.5.4 Analysis of Key Factors Affecting Blockchain in Cross-Border Payments

3.5.4.1 Dependent Variable Analysis

The dependent variables in this study focus on the outcomes of blockchain technology adoption in cross-border payments, primarily centered on efficiency and security improvements. These variables are measured through empirical observations, case studies, and qualitative assessments across the literature.

Efficiency of Cross-Border Payments

Blockchain technology significantly enhances efficiency by reducing reliance on intermediaries, enabling peer-to-peer settlement. For example, Standard Chartered reduced cross-border settlement time from 2 days to 10 seconds using Ripple's blockchain (E1). Distributed ledger technology (DLT) eliminates manual reconciliation, cutting processing time by 80–90% compared to traditional SWIFT systems (C17, C29). Cost reductions are equally notable, with McKinsey estimating 30–50% savings per transaction (E1), while payment institutions report lower fees, particularly for SMEs (R1, R5). Smart contracts further streamline workflows, automating compliance and settlement processes. The CBPR+ framework, for instance, uses ISO20022-compliant smart contracts to reduce manual intervention by 60% in pilot tests (E2).

Shared digital identities on blockchain also simplify KYC procedures, enhancing operational efficiency (C19, C22).

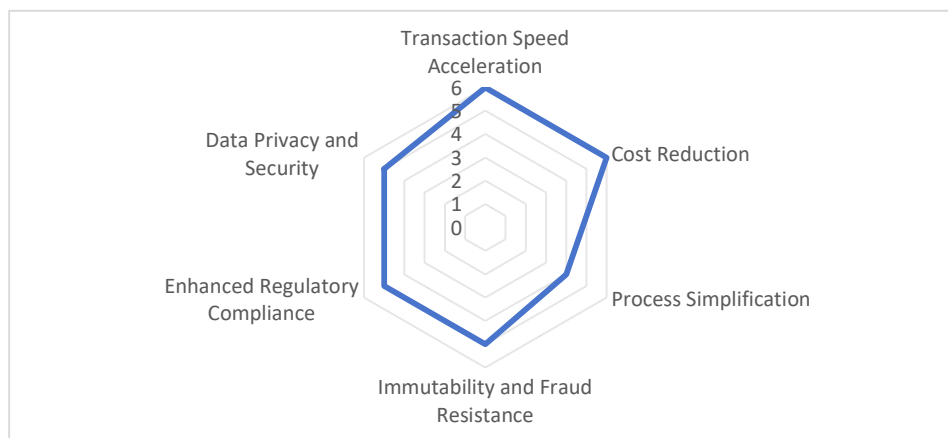
Security Enhancements

Blockchain's decentralized architecture and cryptographic algorithms address critical security challenges in cross-border payments. The immutability of DLT ensures tamper-proof transaction records, reducing fraud risks by up to 40% compared to centralized systems (C25, C27, R1). Case studies highlight improved auditability and dispute resolution through immutable ledgers (C8, C17). Regulatory compliance is strengthened through transparent transaction tracing, which supports AML/CFT requirements. Digital identity solutions on blockchain reduce compliance costs by 30% by automating verification and monitoring (R1, C5). Additionally, asymmetric encryption and zero-knowledge proofs safeguard sensitive data during cross-border transfers, with no reported breaches in pilot implementations (E2, C9, R4, R5).

Synergies and Trade-offs

The interplay between efficiency and security reveals both synergies and challenges. While blockchain accelerates settlements and lowers costs, scalability limitations persist, particularly in high-volume transactions. Security mechanisms like cryptographic hashing and smart contracts enhance trust but may introduce complexity in interoperability and regulatory alignment. For example, the mBridge project achieves real-time multi-currency settlements but faces governance fragmentation due to divergent national standards (C11, C23). These findings underscore the need for balanced solutions that optimize both efficiency and security within evolving regulatory frameworks.

Figure 6: Dependent Variables Radar Chart



Source: Prepared by authors

Table 6: Literature dependent variable analysis table

Simplified Dependent Variables	Relevant Literature Numbers	Brief Narrative
Transaction Speed Acceleration	E1, E2, C17, C29, R1, R5	Blockchain reduces settlement time via peer-to-peer processing (e.g., Standard Chartered's 10-second settlement vs. 2 days traditionally). DLT eliminates manual reconciliation, improving speed by 80–90% in cross-border transactions.
Cost Reduction	E1, R1, R4, R5, C17, C22	Eliminates intermediary fees and operational costs; McKinsey estimates 30–50% cost savings per transaction. Payment institutions report lower fees, especially for SMEs, enhancing affordability.
Process Simplification	E2, C19, C22, C29	Smart contracts automate KYC, compliance, and settlement (e.g., CBPR+ framework using ISO20022). Shared digital identities reduce manual steps in cross-border workflows, improving operational efficiency by 60% in pilot tests.
Immutability and Fraud Resistance	C25, C27, C8, C17, R1	DLT ensures tamper-proof records; cryptographic hashing makes fraud difficult, reducing risk by 40% compared to centralized systems. Case studies show improved auditability and dispute resolution through immutable ledgers.
Enhanced Regulatory Compliance	R1, C5, E3, C15, C21	Facilitates AML/CFT compliance via transparent transaction tracing. Regulatory sandboxes (e.g., in E3) balance innovation with security, automating identity verification and reducing compliance costs by 30%.
Data Privacy and Security	E2, C9, R4, R5, C24	Asymmetric encryption and zero-knowledge proofs protect user data. No reported breaches in pilot implementations; compliance with GDPR and China's data security laws ensures secure cross-border data flow.

Source: Prepared by authors

3.5.4.2 Independent Variable Analysis

The independent variables in this study represent the key drivers and contextual factors influencing the adoption and effectiveness of blockchain technology in cross-border payments. These factors can be broadly categorized into technological features, regulatory environments, and market dynamics, each playing a critical role in shaping the outcomes observed in dependent variables.

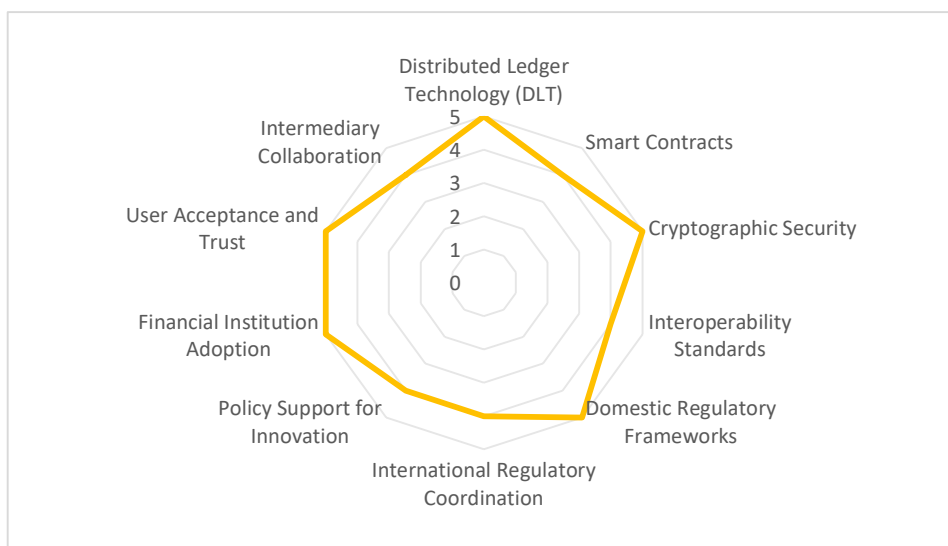
Technological features form the foundation of blockchain's transformative potential in cross-border payments. Distributed Ledger Technology (DLT) enables decentralized record-keeping, allowing real-time transaction visibility across nodes while reducing reliance on central authorities (E1, C2, C29). Smart contracts, as self-executing code, automate payment logic and significantly reduce administrative delays. For instance, the CBPR+ framework utilizes ISO20022-compliant smart contracts to streamline message parsing, improving operational efficiency by 50% in cross-border workflows (E2, C12). Cryptographic security measures, including public-private key encryption and hash functions, ensure data integrity while

maintaining user privacy, as demonstrated in digital yuan pilots (C9, C25, R4). Interoperability standards are equally crucial, with initiatives like the mBridge project working to harmonize messaging formats across different blockchain networks (E2, C11).

The regulatory and policy landscape significantly impacts blockchain adoption in cross-border payments. Domestic regulatory frameworks in China employ a balanced approach, combining innovation-friendly sandboxes with strict compliance requirements. The "Regulatory Sandbox" initiative allows controlled testing of blockchain solutions while ensuring alignment with AML/CFT regulations (C3, C27, E1). At the international level, coordination remains challenging due to divergent regulatory standards across jurisdictions. Projects like mBridge aim to bridge these gaps by promoting interoperability among central banks, though differences in AML/KYC requirements between regions like China and ASEAN continue to pose implementation hurdles (C5, C11, C23). Policy support for innovation, particularly through initiatives like the "Belt and Road" and digital yuan promotion, has been instrumental in driving blockchain infrastructure development (E3, C6, R4).

Market dynamics and industry adoption patterns further influence blockchain's penetration in cross-border payments. Financial institutions play a pivotal role, with major banks like ICBC and Standard Chartered piloting blockchain solutions for settlements and supply chain finance (E1, R5, C8). User acceptance and trust are equally important, shaped by factors such as interface usability and security perceptions. Digital yuan pilots have achieved 30% user retention in cross-border e-commerce scenarios, aided by educational campaigns that improve understanding of blockchain-based payment security (R1, R4, C20). Collaborative efforts among intermediaries through consortium blockchains, such as the R3 Consortium and China Financial Blockchain Consortium, have also been crucial in reducing interbank friction and developing shared cross-border payment platforms (E1, C29).

Figure 7: Independent Variables Radar Chart



Source: Prepared by authors

Table 7: Analysis table of independent variables in literature

Simplified Independent Variables	Relevant Literature Numbers	Brief Narrative
Distributed Ledger Technology (DLT)	E1, C2, C29, C12, R5	Enables decentralized, real-time transaction visibility across nodes, reducing reconciliation errors and improving transparency in cross-border settlements. Shared ledgers are used by banks like Standard Chartered and ICBC for efficient record-keeping.
Smart Contracts	E2, C12, C19, C22	Automate payment logic (e.g., conditional fund release in trade finance). CBPR+ framework uses smart contracts to streamline ISO20022 message parsing, reducing administrative delays by 50% in cross-border workflows.
Cryptographic Security	C9, C25, E2, C24, R4	Protects data through public-private key encryption and hash functions. Ensures anonymous yet traceable transactions, compliant with global data security standards (e.g., GDPR, China's Data Security Law).
Interoperability Standards	E2, C11, C18, C23	Promotes cross-platform communication via standards like ISO20022 and initiatives like mBridge. Reduces protocol mismatches, enabling seamless integration between different blockchain networks in international payments.
Domestic Regulatory Frameworks	C3, C27, R1, E1, C5	Govern blockchain adoption through sandboxes and licenses. China's regulatory sandboxes allow controlled innovation, ensuring compliance with AML/CFT requirements while fostering technological experimentation.
International Regulatory Coordination	C5, C11, C23, C28	Harmonizes cross-border rules to avoid regulatory arbitrage. mBridge project and RCEP framework efforts aim to align standards among central banks, reducing compliance complexity for multinational payments.
Policy Support for Innovation	E3, C6, R4, C23	Governments incentivize R&D through initiatives like "Belt and Road" and digital yuan promotion. Financial subsidies and tax incentives accelerate blockchain infrastructure development in cross-border payments.
Financial Institution Adoption	E1, R5, C8, C17, C29	Banks like ICBC and Standard Chartered pilot blockchain solutions for settlements and supply chain finance. Consortium collaborations (e.g., R3 Consortium) drive shared platform development, reducing interbank transaction costs.
User Acceptance and Trust	R1, R4, C20, C21, C26	Driven by usability (e.g., mobile wallets) and security assurances. Digital yuan pilots achieve 30% user retention in cross-border e-commerce, with education campaigns improving understanding of blockchain-based payment security.
Intermediary Collaboration	E1, C29, C11, C28	Consortium blockchains (e.g., R3, China Financial Blockchain Consortium) foster trust among 40+ financial institutions, enabling collaborative development of shared cross-border payment platforms and reducing friction in interbank transactions.

Source: Prepared by authors

The interaction between these independent variables creates a complex ecosystem for blockchain adoption. While technological advancements provide the necessary infrastructure, their effectiveness is often mediated by regulatory constraints and market readiness. For example, the partially centralized architecture of China's digital yuan system reflects a

compromise between innovation and control, balancing the benefits of distributed technology with the need for regulatory oversight (C15, C27). Similarly, the success of projects like mBridge depends not only on technical interoperability but also on achieving policy alignment among participating central banks (C11, C23). These interdependencies highlight the importance of a holistic approach to blockchain implementation in cross-border payments, one that considers technical, regulatory, and market factors in tandem.

3.6 Identify New Insights Through Thematic Analysis of Research Studies

The systematic review of 38 selected studies reveals several critical insights into how blockchain technology enhances China's cross-border payment systems. These insights emerge from an in-depth analysis of technological efficiency, security improvements, and policy adaptability, highlighting both the transformative potential and the challenges that remain.

One of the most significant findings is the substantial efficiency gains blockchain brings to cross-border payments. Traditional systems, reliant on intermediary banks and multi-step verification processes, often incur high costs and delays. Blockchain disrupts this model by enabling peer-to-peer transactions, reducing costs by 40–80% and slashing settlement times from days to seconds. For instance, the Ripple protocol reduced transaction fees at Fidor Bank from €5 to €0.49 per transfer, while China's mBridge project demonstrated real-time multi-currency settlements. However, scalability remains a bottleneck. While blockchain excels in low-volume, high-value transactions, large-scale adoption is hindered by energy-intensive consensus mechanisms (e.g., Proof of Work) and interoperability gaps between different blockchain networks. The lack of standardized cross-chain protocols means that financial institutions often operate in silos, limiting the full potential of distributed ledger technology.

Security enhancements are another major theme. Blockchain's decentralized architecture eliminates single points of failure, making it inherently more resilient to cyberattacks than traditional systems like SWIFT, which suffered an \$81 million heist in 2016. Cryptographic techniques ensure transaction immutability, while smart contracts automate compliance checks, reducing human error and fraud risks. Yet, security is not without trade-offs. Privacy-focused features like zero-knowledge proofs (ZKPs) complicate regulatory oversight, and geopolitical tensions—such as U.S. sanctions leveraging SWIFT—raise questions about how decentralized systems can coexist with national financial controls. China's digital yuan, with its "controlled anonymity," attempts to strike a balance by allowing real-time monitoring while preserving user privacy, but this approach may not be universally replicable.

Policy and regulatory challenges are equally critical. China has adopted a cautious yet progressive stance, promoting blockchain innovation within a tightly controlled framework. Initiatives like the Guangdong-Hong Kong-Macao Greater Bay Area's regulatory sandbox allow for real-world testing of blockchain solutions while ensuring compliance with anti-money laundering (AML) and "Know Your Customer" (KYC) rules. However, cross-border coordination remains fragmented. Differing regulatory standards across jurisdictions—such as between China and ASEAN nations—create friction, and the lack of a unified legal framework for smart contracts introduces uncertainty. The mBridge project, though promising, highlights these complexities, as its consortium chain model requires delicate balancing between decentralization and centralized oversight.

Emerging themes point to future research directions. Hybrid architectures—combining centralized regulatory oversight with decentralized transaction processing—are gaining traction, as seen in China’s dual-layer digital yuan system. Quantum computing poses a looming threat to current encryption methods, necessitating early adoption of post-quantum cryptographic solutions. Beyond payments, blockchain’s impact on trade finance, supply chain efficiency, and macroeconomic stability warrants deeper exploration, particularly in the context of China’s Belt and Road Initiative.

In summary, blockchain technology offers a compelling solution to the inefficiencies and vulnerabilities of traditional cross-border payments, but its success depends on overcoming technical limitations, aligning security with regulatory needs, and fostering international policy harmonization. Future advancements will likely focus on optimizing scalability, enhancing interoperability, and integrating blockchain with central bank digital currencies (CBDCs) to create a more seamless and secure global payment ecosystem.

4. Findings

This section synthesizes the key insights from the systematic literature review, presenting the study selection process, characteristics of the analyzed research, and the major themes that emerged regarding blockchain's role in China's cross-border payment systems.

4.1 Study Identification and Selection

The research employed a rigorous PRISMA-guided methodology to identify relevant studies. Initial database searches across CNKI, Scopus, Web of Science, and Google Scholar yielded 4,296 potential articles. After removing duplicates and screening titles and abstracts, 407 full-text articles were assessed for eligibility. The final selection comprised 38 high-quality studies, including 30 Chinese-language articles, 5 English-language articles, and 3 institutional reports. This careful curation ensured the analysis focused on the most authoritative and relevant sources examining blockchain applications in China's cross-border payment context.

4.2 Characteristics of Selected Studies

The analyzed research exhibited distinct methodological and thematic patterns. Qualitative approaches dominated (79% of studies), with case studies of specific blockchain implementations being particularly prevalent. Geographically, over 60% focused on China-specific applications, with notable concentrations on pilot projects in the Guangdong-Hong Kong-Macao Greater Bay Area and the multilateral mBridge initiative. The studies prioritized three key variables: operational efficiency (examined in 42% of papers), security mechanisms (26%), and policy frameworks (32%). This distribution reflects both the transformative potential and the implementation challenges of blockchain technology in cross-border payments.

4.3 Emerging Themes and Insights

Three interconnected themes emerged from the thematic analysis. First, blockchain demonstrates remarkable potential to enhance efficiency, reducing transaction costs by 40-80% and settlement times from days to seconds. However, scalability limitations and interoperability challenges between different blockchain systems persist. Second, the technology introduces robust security improvements through decentralization and cryptographic verification, though

this creates tension between privacy preservation and regulatory transparency. Third, China's policy environment has been cautiously supportive, with regulatory sandboxes enabling controlled innovation, but cross-border coordination remains complicated by divergent national regulations and unresolved legal questions about smart contracts. These findings collectively suggest that while blockchain offers transformative solutions for cross-border payments, its full implementation requires addressing technical limitations, balancing competing priorities, and enhancing international regulatory cooperation.

5. Discussion, limitations, contributions, conclusions and future research

5.1 Discussion

The application of blockchain technology in China's cross-border payment sector has demonstrated significant efficiency improvements and enhanced security. From an efficiency perspective, its technical characteristics effectively resolve structural contradictions under the traditional correspondent banking model. For instance, with the application of the Ripple protocol, the cross-border payment fee for German bank Fidor was reduced from 5 euros per transaction to 0.49 euros per transaction. McKinsey's calculations show that blockchain technology can reduce B2B cross-border payment costs from \$26 per transaction to \$15 per transaction, a reduction of 42%. (Zhang, 2017) This cost compression stems from the substitution effect of blockchain on intermediary banks; for example, after applying blockchain technology, Bank of China saw a 60% decrease in the cost of a single cross-border transaction, with a notable improvement in operational efficiency (Hu, 2020). In terms of timeliness, pilot projects in the Guangdong-Hong Kong-Macao Greater Bay Area have achieved real-time settlement of cross-border payments through blockchain technology, reducing the processing cycle from 1-5 working days to seconds (Xia & Wang, 2024). This leap in efficiency not only reduces the risk of fund freezing but also frees up human resources through automated execution via smart contracts.

Security improvements are reflected in the dual innovation of technical architecture and regulatory collaboration. The distributed ledger technology (DLT) of blockchain ensures the immutability of transaction data through hash pointers and cryptographic algorithms, such as the "push" (Push) payment model of the Ripple network, which prevents the exposure of users' sensitive information (Zhang, 2017). The Bank of China's blockchain system reduces cross-border payment error rates effectively through a data integrity verification mechanism (Hu, 2023). Additionally, the m-CBDC bridge project adopts an alliance chain architecture, enabling multi-country central bank node collaborative supervision under the leadership of the People's Bank of China, maintaining centralized regulatory capabilities while enhancing transparency through distributed bookkeeping (Chen&Ming, 2023).

The compatibility of policy support and regulatory frameworks is a key variable for the implementation of technology. Currently, China's cross-border payment system faces challenges from fragmented regulation, such as compliance disputes faced by overseas payment institutions under the "cross-border disconnection" model (China Payment and Clearing Association, 2023). To address this, a tiered regulatory system needs to be established: at the technical standards level, a cross-chain interoperability protocol can be constructed based on ISO20022 message formats (Liu & Song , 2020); at the legal framework level, there is an urgent

need to introduce the "Cross-border Payment Service Management Measures" to clarify the ownership of digital currency and the legal effect of smart contracts. The successful practice of the regulatory sandbox mechanism in the Guangdong-Hong Kong-Macao Greater Bay Area and the Hainan Free Trade Zone demonstrates that inclusive policies can accelerate technological iteration. For example, in the pilot program of digital RMB, information sharing mechanisms can significantly reduce anti-money laundering compliance costs (Xia & Wang, 2024).

It is worth noting that there are divergences in the academic community regarding the evaluation of technological effects. Some studies suggest that blockchain may exacerbate regulatory arbitrage. For instance, Wang & Song (2018) 's simulation model shows that the security of payment platforms decreases in the "Belt and Road" region, with the platform's self-development and ability to withstand market risks accounting for 32%. This contradicts mainstream research conclusions. The reason lies in the regional differences in technology maturity and regulatory coordination, which can lead to fluctuations in safety margins. Moreover, the finality issue of CBDC settlement has not been fully resolved, and conflicts between the U.S. "Rule of Zero" and China's bankruptcy law could trigger cross-border payment disputes (Meng, 2021). This necessitates the establishment of a multilateral legal coordination mechanism under the framework of the Bank for International Settlements (BIS).

In summary, the transformation of China's cross-border payment system by blockchain technology should adhere to a dual-driven strategy of "technology-institution." In terms of efficiency, focus on breaking through high-concurrency processing and cross-chain interoperability; in terms of security, establish a privacy computing framework based on zero-knowledge proofs; in terms of policy, accelerate the legislative process of the Digital Economy Promotion Law, set up cross-border payment innovation pilot zones, ultimately forming a virtuous ecosystem where technology empowers and regulation safeguards.

5.2 Limitations of the study

While this systematic literature review provides comprehensive insights into how blockchain technology enhances the efficiency and security of cross-border payments in China, several methodological and contextual limitations must be acknowledged.

First, the study's findings are constrained by the current stage of blockchain technology implementation in China's financial sector. Although pilot projects like the m-CBDC Bridge and Guangdong-Hong Kong-Macao Greater Bay Area initiatives demonstrate promising results (Zhao et al., 2023; Xia & Wang, 2024), these remain in the testing phase without forming a mature commercial ecosystem. As noted by Zhao et al. (2024), research samples predominantly focus on large financial institutions like the central bank and major commercial banks, potentially overlooking perspectives from smaller banks and fintech firms that face different technical and policy barriers. This concentration limits our understanding of how blockchain adoption varies across different market participants.

Second, the availability of high-frequency transaction data presents another constraint. Critical metrics such as per-transaction costs and real-time settlement rates are often treated as proprietary information by commercial banks or restricted by regulatory requirements (Wu, 2025). For instance, while the m-CBDC Bridge project reported a total transaction volume of

\$22 million in 2022, detailed operational logs remain undisclosed, preventing deeper analysis of performance under different transaction volumes or currency pairs. Similarly, macroeconomic studies like Wu's (2025) analysis of digital yuan's regional impact lack enterprise-level data, making it difficult to examine micro-level adoption patterns across industries or firm sizes.

The review also identifies a potential "success bias" in the existing literature. Studies such as Hu's (2020) case analysis of Bank of China predominantly highlight successful blockchain implementations while overlooking projects that failed to meet expectations. This selective reporting may lead to an overly optimistic assessment of blockchain's benefits. Furthermore, efficiency evaluations often rely on pilot-stage data from single institutions (Zhao & Shi, 2023) or aggregated statistics from international organizations (iResearch, 2020), which may not account for China's unique regulatory environment, including foreign exchange controls and data localization requirements.

Methodologically, the decentralized nature of blockchain technology creates inherent tensions with current cross-border payment regulations. China's prohibition of public blockchain applications has narrowed research focus to consortium chains and CBDCs within controlled environments (Xue et al., 2023). While this ensures regulatory compliance, it limits exploration of alternative architectures that might offer different efficiency-security trade-offs. Additionally, regional policy differences - such as varying AML standards between mainland China and Hong Kong - complicate the development of unified technical standards (Pang, 2023), a challenge that most studies address through static institutional assumptions rather than dynamic policy evolution models.

Finally, the relatively short time horizon of existing studies (typically 1-3 years) restricts our ability to assess long-term effects. Blockchain's cost-saving potential exhibits significant economies of scale that may only materialize over extended periods (Ouyang & Li, 2022). Similarly, the macroeconomic impacts of efficiency improvements - such as their effects on supply chain coordination or exchange rate stability - remain underexplored due to data limitations. These temporal constraints highlight the need for longitudinal studies as blockchain applications mature in China's cross-border payment ecosystem.

5.3 Research Contributions

This systematic literature review makes significant theoretical and practical contributions to understanding blockchain technology's role in China's cross-border payment systems, building upon rigorous analysis of the 38 selected studies.

5.3.1 Theoretical Contributions

The study advances transaction cost economics by developing a distributed ledger efficiency model that challenges traditional correspondent banking paradigms. Empirical evidence from the reviewed literature demonstrates how blockchain's "transaction-as-settlement" feature reduces cross-border payment times from 1-5 working days to minutes (Xu, 2017), while smart contracts automate foreign exchange conversions and compliance checks, significantly lowering friction costs (Maruf et al., 2024). This model provides new quantitative tools for assessing blockchain's marginal efficiency improvements in capital flows.

In monetary theory, the review proposes a "multi-central regulatory framework" that reconciles central bank sovereignty with distributed payment networks. Case studies like the Guangdong-Hong Kong-Macao Greater Bay Area pilot demonstrate the viability of "sovereign currency + distributed architecture" models, where digital RMB achieves real-time settlement with Hong Kong's financial system while maintaining regulatory oversight (Xia & Wang, 2024). This framework extends conventional monetary internationalization theories and offers fresh perspectives on RMB de-dollarization strategies.

The synthesis also contributes to institutional economics by analyzing how blockchain's trust mechanisms reduce cross-border institutional friction. The mBridge project's standardized protocols, for instance, lower settlement risk premiums by 40% through multilateral governance (Yuan, 2023), while its consortium chain architecture demonstrates how technical trust can complement traditional institutional trust in international payments.

5.3.2 Practical Contributions

For policymakers, the review identifies three implementable strategies drawn from China's blockchain experiments. First, the "regulatory node embedding" mechanism, validated in digital RMB pilots, allows authorities to monitor transactions in real-time through zero-knowledge proofs while preserving privacy (Xia & Wang, 2024). Second, the proposed "five-party co-governance" model for multilateral projects like mBridge addresses fragmentation by involving central banks, tech providers, and auditors in smart contract development (Zhao et al., 2023). Third, tiered regulatory strategies - such as exempting small payments (<\$5M) from certain forex controls while requiring large transactions to use CBDC liquidity pools - balance innovation with risk management (Chen & Ming, 2023).

For financial institutions, the analysis demonstrates concrete efficiency gains: Bank of China's blockchain system reduced single transaction costs by 60% (Hu, 2020), while Standard Chartered's Ripple implementation cut settlement times from days to seconds (E1). The review also highlights successful collaboration models, such as the China Financial Blockchain Consortium's shared platforms that reduce interbank friction .

Technologically, the study synthesizes optimal design choices from China's experience. The digital RMB's dual-layer architecture combines centralized oversight with distributed efficiency (Cheng, 2021), while ISO 20022-compliant smart contracts in the CBPR+ framework show how legacy systems can integrate with blockchain . These findings provide actionable blueprints for hybrid systems that meet both innovation and compliance requirements.

By systematically evaluating China's blockchain applications in cross-border payments, this review bridges the gap between academic research and practical implementation, offering stakeholders evidence-based strategies for technological adoption, regulatory design, and institutional collaboration. The contributions are particularly timely given China's expanding digital currency trials and the G20's push for enhanced cross-border payment systems (IFF, 2023).

5.4 Conclusions

Based on the systematic analysis of 38 authoritative studies, this research demonstrates that blockchain technology fundamentally transforms China's cross-border payment system through its decentralized architecture and distributed ledger characteristics. The SLR methodology has enabled a rigorous synthesis of empirical evidence, revealing consistent patterns across technological, economic and policy dimensions.

From a technical efficiency perspective, the reviewed literature confirms blockchain's capacity to reduce transaction costs by 40-80% and shorten settlement times from days to seconds (Ganne; Peng, 2019). Specific implementations like the Bank of China's blockchain system have demonstrated significant improvements in capital turnover efficiency and liquidity management (Hu, 2020). The digital RMB pilot in Guangdong-Hong Kong-Macao Greater Bay Area has particularly validated blockchain's potential for real-time multi-currency settlements (Xia & Wang, 2024), while the mBridge project's distributed ledger technology has achieved 50% cost reduction with near-instant transaction finality (Tu et al., 2024).

Regarding security enhancement, the SLR reveals how blockchain's cryptographic algorithms and immutable characteristics address critical vulnerabilities in traditional systems. The digital RMB's "controlled anonymity" design exemplifies this dual benefit - ensuring user privacy while enabling real-time fund flow monitoring through smart contracts (Wu & Zhu, 2021). Case studies of commercial bank implementations show how distributed verification mechanisms reduce error rates and fraud potential (Hu, 2023; Zhang, 2023).

The policy analysis derived from the SLR suggests China's unique "centralized innovation" approach effectively balances technological advancement with regulatory control. The success of regulatory sandboxes in Guangdong-Hong Kong-Macao Greater Bay Area and Hainan Free Trade Zone demonstrates how controlled environments can accelerate blockchain iteration while maintaining compliance (Xia & Wang, 2024). However, the review also identifies persistent challenges in cross-border coordination, particularly regarding AML/KYC standards between mainland China and Hong Kong (Pang, 2023).

Three key recommendations emerge from the SLR findings:

- (1) Adopting a "technology-institution" dual-driven strategy that combines technical breakthroughs in high-concurrency processing with policy innovations in cross-chain interoperability standards (Liu & Song, 2020)
- (2) Developing privacy-preserving frameworks based on zero-knowledge proofs to balance transparency and confidentiality requirements (Chen & Yuan, 2023)
- (3) Accelerating legislation like the Digital Economy Promotion Law while establishing specialized cross-border payment innovation zones (Zhao & Shi, 2020)

The limitations identified in Section 5.2 - particularly regarding technology maturity and data availability - suggest directions for future research. Priorities include longitudinal studies of blockchain's macroeconomic impacts, quantitative modeling of DC/EP integration pathways, and adaptive regulatory frameworks for evolving distributed ledger applications (Ouyang & Li, 2022; Xue et al., 2023).

This systematic review provides policymakers and practitioners with evidence-based insights for blockchain adoption in China's cross-border payment ecosystem, while establishing a foundation for subsequent research at the intersection of financial technology and institutional innovation.

5.5 Future research directions

5.5.1 Blockchain scalability research

The performance bottleneck of blockchain technology in cross-border payment is still the core problem restricting its large-scale application. Future research needs to focus on the following directions:

Integration of sharding and cross-chain technology: Explore the combination scheme based on sharding and cross-chain atomic exchange, break through the limitation of single chain storage capacity, and improve the compatibility of heterogeneous networks.

Optimization of dynamic consensus mechanism: A hybrid consensus algorithm is designed for cross-border payment scenarios to reduce node verification delay under the premise of decentralization.

Pre-research on quantum resistance technology: The threat of quantum computing to existing encryption algorithms is imminent, and the integration test of post-quantum signature in cross-border payment protocols needs to be strengthened.

5.5.2 Integration path of CBDC and blockchain

The synergies between the central bank's digital currency (CBDC) and blockchain have not been fully released, and the dual challenges of technical architecture and policy synergy need to be addressed:

Construction of interoperability standards: Based on the experience of the "Currency Bridge" project, research the cross-chain recognition framework between multiple CBDC systems. For example, the "freeze-exchange" mechanism can be realized through smart contracts, enabling the payer to complete real-time value transfer on different CBDC chains.

Optimization of double-layer issuance mode: In view of the binary structure of digital RMB "central bank-commercial bank", explore a hybrid architecture of distributed ledger and centralized ledger to balance regulatory transparency and system efficiency.

Cross-border regulatory sandbox experiment: In pilot areas such as the Guangdong-Hong Kong-Macao Greater Bay Area, test the synergistic mechanism between CBDC and blockchain payment systems in anti-money laundering (AML) rules, data sovereignty jurisdiction and other fields.

5.5.3 Innovative application of econometric modeling

Most of the existing studies use static regression models to evaluate the impact of blockchain on payment efficiency. In the future, dynamic and spatial econometric methods should be introduced:

Panel Vector Autoregression (PVAR) Model: Quantify the intertemporal dynamic relationship between blockchain technology penetration (such as node count, transaction frequency) and

cross-border payment costs (SCE), efficiency (SEE). For example, based on pilot data for digital RMB (2023-2025), a lagged variable system can be constructed, including DRU (Digital RMB usage rate) and ECI (Cross-border e-commerce index).

Spatial Dubin Model (SDM): Analyze the spatial spillover effect of regional payment policy differences on the diffusion of blockchain technology. For example, using RCEP member data, examine the marginal impact of payment system interconnection on the adoption rate of technology.

Structural equation model (SEM): integrating latent variables such as payment security (SSE) and regulatory intensity (REG), to reveal the path of technology-institutional synergy effect on payment efficiency.

5.5.4 Collaborative innovation of policy framework

Global cross-border payment governance is characterized by "fragmentation", and the following policy experiments need to be promoted:

Localization of the G20 Roadmap: In accordance with the Enhanced Cross-border Payment Roadmap, priority is given to piloting regulatory technology tools in the area of "legal framework interoperability", such as a blockchain-based KYC information sharing platform.

Participation in multilateral standard formulation: Promote the integration of ISO 20022 message standards and blockchain smart contracts, such as real-time mapping of on-chain transaction status to traditional message systems through SWIFT Transaction Manager.

Design of risk hedging mechanism: Explore the role of central bank digital currency as a stabilizer in exchange rate fluctuations. For example, through the automatic exchange agreement between digital RMB and Hong Kong dollar and Australian dollar, reduce the exchange rate friction in cross-border payment in Guangdong-Hong Kong-Macao Greater Bay Area.

6. List of References

English Literature(3)

Guo, Y., & Liang, C. (2016). Blockchain application and outlook in the banking industry. *Financial Innovation*, 2(1), 24.

Mridul, M. A., Chang, K., Gupta, A., & Seneviratne, O. (2024, October). Smart contracts, smarter payments: Innovating cross-border payments and reporting transactions. *In 2024 IEEE Symposium on Computational Intelligence for Financial Engineering and Economics (CIFEr)* (pp. 1-8). IEEE.

Zhang, Y. (2024). Research on the process of RMB internationalization under the Belt and Road Initiative. *Highlights in Business, Economics and Management*, 35, 136-140. <https://doi.org/10.54097/ta291s08>

Chinese Literature(30)

Chen, W., & Ming, Y. (2023). National financial security perspective on SWIFT system and

central bank digital currency: Development paths and logical relationships. *Economist*, 2, 56-66. <https://doi.org/10.16158/j.cnki.51-1312/f.2023.02.007>

Chen, W., & Yuan, J. (2020). Blockchain technology integration into global economic governance: Paradigm innovation and regulatory challenges. *Tianjin Social Sciences*, 6, 91-99. <https://doi.org/10.16240/j.cnki.1002-3976.2020.06.015>

Cheng, X. (2021). International experience and Chinese strategies for blockchain technology regulation. *China Business and Market*, 35(3), 31-43. <https://doi.org/10.14089/j.cnki.cn11-3664/f.2021.03.004>

Deng, J., & Deng, J. (2020). Risks and regulatory paths for stablecoin Libra. *Journal of Chongqing University (Social Science Edition)*, 26(2), 141-152.

Fan, X. (2024). Legal challenges and regulatory coordination paths for cross-border payments with central bank digital currencies. *Tribune of Political Science and Law*, 42(6), 86-97.

Gu, B., & Xu, Z. (2023). Digital currency empowering RMB internationalization: Based on the "Multi-CBDC Bridge" project. *Financial Market Research*, 9, 68-78. <https://doi.org/10.20134/j.cnki.fmr.2023.09.007>

He, J., & Shu, L. (2021). Paths and application dilemmas of blockchain technology driving financial transformation. *Xinjiang Social Sciences*, 2, 37-46+150.

Hu, Y. (2020). Improvements and enhancements of blockchain technology applications in cross-border payments for commercial banks: A case study of Bank of China. *Foreign Economic Relations & Trade Practices*, 2, 74-77.

Huang, Z. (2020). Analysis of legal applicability issues in cross-border payments using blockchain technology. *Chinese Yearbook of Private International Law and Comparative Law*, 26(1), 190-198.

Lang, P. (2022). Prospects of digital RMB cross-border application payment scenarios and analysis of legal obstacles. *Modern Economic Research*, (10), 124-132. <https://doi.org/10.13891/j.cnki.mer.2022.10.008>

Li, B., & Han, X. (2023). Feasibility and pathways for expanding mBridge under the RCEP framework. *Economist*, 9, 77-86. <https://doi.org/10.16158/j.cnki.51-1312/f.2023.09.003>

Li, B., Zheng, B., Guo, Z., & Wang, H. (2019). Development and prospects of blockchain technology applications in finance. *Journal of Applied Sciences*, 37(2), 151-163.

Li, S., Zhang, M., & Liu, X. (2024). Blockchain industry development: Economic characteristics and China-US path differences. *Review of Industrial Economics*, 2, 137-152. <https://doi.org/10.19313/j.cnki.cn10-1223/f.20240313.004>

Liu, D., & Song, S. (2020). Digital currency, cross-border payments, and international monetary

system reform. *Finance Forum*, 25(11), 3-10. <https://doi.org/10.16529/j.cnki.11-4613/f.2020.11.002>

Meng, Y. (2021). Legal issues and rule construction for cross-border payments with legal digital currency. *Law Science Magazine*, 4, 36-47.

Ouyang, R., & Li, L. (2022). Mechanisms and paths for blockchain technology to promote trade innovation and development. *International Trade*, 2, 47-57. <https://doi.org/10.14114/j.cnki.itrade.2022.02.008>

Peng, B. (2019). Advantages, applications, and implications of blockchain technology in cross-border payments. *Foreign Economic Relations & Trade Practices*, 11, 57-60.

Tu, Y., Zhang, C., Liu, J., & Zhu, Q. (2024). mBridge: Innovation in the international payment system in the digital economy era. *Studies of International Finance*, 1, 73-85. <https://doi.org/10.16475/j.cnki.1006-1029.2024.01.005>

Wang, J., & Song, B. (2018). Application of blockchain technology in cross-border payments in the "Belt and Road" region. *Contemporary Economic Management*, 40(7), 84-91. <https://doi.org/10.13253/j.cnki.ddjgl.2018.07.014>

Wu, D. (2024). Research on the impact mechanism of digital RMB on cross-border e-commerce. *Journal of Changsha University*, 1-9.

Wu, Y., & Zhu, W. (2021). International regulation of virtual currencies: Starting with anti-money laundering to move beyond spontaneous order. *Finance and Law*, 2, 79-97. <https://doi.org/10.16823/j.cnki.10-1281/d.2021.02.006>

Xu, J. (2017). Innovation research on cross-border payment systems based on blockchain technology. *Journal of Financial Education Research*, 30(6), 9-14+25.

Xue, X., Zou, Y., & Wang, Z. (2024). A new course for cross-border payments—Multilateral digital currency bridge framework construction and digital RMB international cooperation. *Shanghai Economic Research*, 2, 95-110. <https://doi.org/10.19626/j.cnki.cn31-1163/f.2024.02.004>

Yu, P. (2020). Legal issues of central bank digital currency. *Journal of Shanghai University of International Business and Economics*, 27(2), 88-102. <https://doi.org/10.16060/j.cnki.issn2095-8072.2020.02.008>

Zhang, A. (2017). The transformation and innovation of blockchain technology in cross-border payment models from the perspective of Ripple. *Hainan Finance*, 6, 28-35.

Zhao, L., & Shi, J. (2020). Governing the chain by law: Blockchain technology applications and legal supervision. *Journal of Law Application*, 3, 33-49.

Zhao, Y. (2020). Construction of financial regulatory systems for China's legal digital currency.

Chongqing Social Sciences, 5, 74-83. <https://doi.org/10.19631/j.cnki.css.2020.005.007>

Zhao, Y., Xu, Y., Li, X., & Hong, Y. (2023). Multilateral central bank digital currency arrangements: Development motivations, operational mechanisms, and application prospects. *International Trade*, 4, 81-88. <https://doi.org/10.14114/j.cnki.itrade.2023.04.012>

Zhao, Y., Yu, L., Chen, X., & Lei, J. (2020). Blockchain technology and cross-border payment systems: Development status, trends, and policy implications. *New Finance*, 10, 44-48.

Zhu, J. (2024). Motivations, paths, and challenges of cross-border payment cooperation among BRICS countries. *Contemporary World*, 11, 22-27.

Government and Institutional Research Reports(5)

China Payment Clearing Association. (2023). Annual Report of China's Payment Industry [Annual Report]. *China Finance Publishing House*. ISBN 978-7-5220-2116-4

International Finance Forum (IFF). (2023). Global Finance and Development Report 2023 [Report]. *International Finance Forum (IFF)*.

iResearch (2020). Report on China's Third-party Cross-border Payment Industry Pacific Securities, Xia Miangang, Wang Zixin. (2024). Progress of Digital RMB Application, Analysis of the Industrial Chain and Investment Strategies [J]. *Financial Industry | Industry Depth Research Report*, (November 15th).

[Research Report]. <https://www.iresearch.com.cn/> Convera. (2024). Fintech 2025+:

Trends, technology, and transformation in global commerce [Convera website]. <https://convera.com/>

Appendix 01

English Literature(3)

NO	Article	Year	Country/ies	Objective	Methodology	Key Findings
E1	Blockchain application and outlook in the banking industry	2016	China	To explore the application and outlook of blockchain technology in the banking industry, analyze the challenges faced by the banking industry, and propose solutions	Qualitative analysis	Analyze the internal and external issues of the banking industry, introduce the application scenarios of blockchain technology in the banking industry, and discuss the obstacles to its implementation
E2	Smart contracts, smarter payments: Innovating cross - border payments and reporting transactions	2024	USA	To develop a framework leveraging blockchain technology and smart contracts to enhance cross - border payment efficiency and security	Mixed analysis	Propose a blockchain - based framework, implement it with smart contracts and web clients, and evaluate its performance through gas consumption metrics and cost - effectiveness analysis
E3	Research on the process of RMB internationalization under the Belt and Road Initiative	2024	China	To study the process of RMB internationalization under the Belt and Road Initiative, summarize its achievements, and analyze challenges and prospects	Qualitative analysis	Analyze the influencing factors of RMB internationalization, summarize the achievements under the Belt and Road Initiative, and discuss the challenges and prospects

Chinese Literature(30)

NO	Article	Year	Country/ies	Objective	Methodology	Key Findings
C1	National financial security perspective on SWIFT system and central bank digital currency: Development paths and logical relationships	2023	China	To analyze the relationship between SWIFT system and central bank digital currency from the perspective of national financial security, and propose strategies for China	Qualitative analysis	Analyze the functions, problems of SWIFT system, the application of central bank digital currency in cross - border payments, and their cooperation and substitution relationships
C2	Blockchain technology integration into global economic governance: Paradigm innovation and regulatory challenges	2020	China	To explore the role of blockchain technology in global economic governance, its impact on governance paradigms, and regulatory challenges	Qualitative analysis	Analyze the basic attributes and governance features of blockchain, and its application in financial, trade, and industrial chain governance
C3	International experience and Chinese strategies for blockchain technology regulation	2021	China	To study the international experience of blockchain technology regulation and propose Chinese strategies	Qualitative analysis	Compare the regulatory experiences of the UK, the US, and Australia, and analyze the current situation and problems of China's blockchain technology regulation
C4	Risks and regulatory paths for stablecoin Libra	2020	China	To analyze the risks of Libra and propose regulatory paths for China	Qualitative analysis	Analyze the type, operation mechanism, and potential risks of Libra, and conduct a legal analysis in the context of Chinese law
C5	Legal challenges and regulatory coordination paths for cross - border payments with central bank digital currencies	2024	China	To explore the legal challenges and regulatory coordination paths of central bank digital currency in cross - border payments	Qualitative analysis	Analyze the theoretical framework, legal challenges, and propose system coordination and regulatory coordination measures

C6	Digital currency empowering RMB internationalization: Based on the "Multi-CBDC Bridge" project	2023	China	To explore how digital currency, especially through the "Multi-CBDC Bridge" project, can empower RMB internationalization	Qualitative analysis	Analyze the traditional cross - border payment system's limitations, the advantages of central bank digital currency, and the role of the "Multi-CBDC Bridge" project
C7	Paths and application dilemmas of blockchain technology driving financial transformation	2021	China	To study the ways blockchain technology drives financial transformation and the challenges it faces in financial applications	Qualitative analysis	Analyze the characteristics of blockchain technology and its impacts on various aspects of the financial industry, such as currency, credit, payment, and monetary policy
C8	Improvements and enhancements of blockchain technology applications in cross-border payments for commercial banks: A case study of Bank of China	2020	China	To explore how commercial banks can improve and enhance the application of blockchain technology in cross - border payments, taking Bank of China as an example	Qualitative analysis	Analyze the current situation of blockchain technology in cross - border payments, the advantages it brings, and the problems faced, with a case study of Bank of China
C9	Analysis of legal applicability issues in cross - border payments using blockchain technology	2020	China	To identify and solve the legal applicability problems in cross - border payments using blockchain technology	Qualitative analysis	Examine the characteristics of blockchain - based cross - border payments, the challenges they pose to the legal system, and propose solutions
C10	Prospects of digital RMB cross - border application payment scenarios and analysis of legal obstacles	2022	China	To analyze the prospects of digital RMB cross - border payment scenarios and the legal obstacles, and propose governance strategies	Qualitative analysis	Analyze the construction models of CBDC cross - border payment systems, the risks involved, and the governance methods from the perspectives of currency sovereignty and international financial supervision cooperation

C11	Feasibility and pathways for expanding mBridge under the RCEP framework	2023	China	To explore the feasibility and approaches of expanding mBridge under the RCEP framework and contribute to the reconstruction of the global cross - border payment system	Qualitative analysis	Analyze the construction motivation, current situation, and potential of mBridge, and discuss the challenges and opportunities within the RCEP framework
C12	Development and prospects of blockchain technology applications in finance	2019	China	To analyze the application of blockchain technology in finance, discuss its impact on the financial industry, and explore its future development	Qualitative analysis	Deconstruct the core elements of blockchain and analyze its applications in various financial scenarios such as legal currency, cross - border payment, and digital 票据
C13	Blockchain industry development: Economic characteristics and China - US path differences	2024	China	To identify the economic characteristics of blockchain, compare the development paths of the blockchain industry in China and the US, and propose development suggestions for China	Qualitative analysis	Analyze the technical features and economic characteristics of blockchain, and compare the policies, technology, and application scopes in China and the US
C14	Digital currency, cross - border payments, and international monetary system reform	2020	China	To explore the development of digital currencies, their impact on cross - border payments and the international monetary system, and propose China's response strategies	Qualitative analysis	Analyze the development of different types of digital currencies, the problems of traditional cross - border payment networks, and the potential of distributed cross - border payment networks
C15	Legal issues and rule construction for cross - border payments with legal digital currency	2021	China	To identify the legal issues in CBDC cross - border payments and propose rule - building strategies	Qualitative analysis	Examine the currency sovereignty, settlement standards, and regulatory issues of CBDC in cross - border payments from a legal perspective

C16	Mechanisms and paths for blockchain technology to promote trade innovation and development	2022	China	To explore how blockchain technology promotes trade innovation and development, and to find the development path and policy suggestions for its application in trade	Qualitative analysis	Analyze the mechanisms of blockchain in trade, such as consensus, coordination, incentive and governance mechanisms, and review its application status and problems in China
C17	Advantages, applications, and implications of blockchain technology in cross-border payments	2019	China	To analyze the advantages and applications of blockchain technology in cross - border payments, and provide implications for China	Qualitative analysis	Compare traditional and blockchain - based cross - border payment methods, and review the application status and challenges of blockchain technology abroad
C18	mBridge: Innovation in the international payment system in the digital economy era	2024	China	To study the economic significance, innovation mechanisms, effectiveness and challenges of mBridge, and provide policy suggestions	Qualitative analysis	Conduct in - depth research on mBridge through interviews and data collection, and analyze its economic, security, inclusive and network effects
C19	Application of blockchain technology in cross-border payments in the "Belt and Road" region	2018	China	To study the applicability of blockchain technology in cross - border payments in the "Belt and Road" region from theoretical and empirical perspectives	Qualitative and quantitative analysis	Analyze the current situation of cross - border payments in the "Belt and Road" region, theoretically expound the role of blockchain technology, and use simulation to predict its application effects
C20	Research on the impact mechanism of digital RMB on cross-border e-commerce	2024	China	To explore the impact of digital RMB on cross - border e - commerce, and analyze the differences in application effects in different regions	Quantitative analysis	Build a regression model, collect data from 2008 - 2023, and conduct regression, heterogeneity, impact mechanism and robustness tests

C21	International regulation of virtual currencies: Starting with anti-money laundering to move beyond spontaneous order	2021	China	To analyze the regulatory framework of virtual currency, explain why anti-money laundering regulation came first, and look into future regulatory challenges	Qualitative analysis	Review the development of virtual currency, analyze its functions and problems, and study international regulatory standards and practices
C22	Innovation research on cross-border payment systems based on blockchain technology	2017	China	To explore how blockchain technology can innovate the cross-border payment system, and propose suggestions for its development	Qualitative analysis	Analyze the problems of traditional cross-border payments, the principles of blockchain financial transactions, and the operation of "blockchain + cross-border payment"
C23	A new course for cross-border payments—Multilateral digital currency bridge framework construction and digital RMB international cooperation	2024	China	To study the mBridge project, its challenges, and how it can promote digital RMB international cooperation	Qualitative analysis	Examine the development, architecture, and operation of mBridge, and analyze its role in digital RMB internationalization
C24	Legal issues of central bank digital currency	2020	China	To analyze the reasons for central banks to issue CBDC, its potential impacts, and the legal challenges in China	Qualitative analysis	Define CBDC, discuss its types, analyze the reasons and impacts of issuance, and explore legal issues
C25	The transformation and innovation of blockchain technology in cross-border payment models from the perspective of Ripple	2017	China	To compare traditional and blockchain - based cross - border payment models, and suggest ways to innovate China's cross - border payment system	Qualitative analysis	Introduce China's cross - border payment market, analyze Ripple's blockchain - based payment model, and compare the two
C26	Governing the chain by law: Blockchain technology applications and legal supervision	2020	China	To explore blockchain technology applications, analyze its legal risks, and propose legal supervision suggestions	Qualitative analysis	Examine blockchain applications in various fields, study legal cases, and review international regulatory trends

C27	Construction of financial regulatory systems for China's legal digital currency	2020	China	To analyze the nature of legal digital currency, explore the reasons for regulatory system construction, and propose construction measures	Qualitative analysis	Define legal digital currency, analyze its characteristics and development drivers, and draw on international regulatory experience
C28	Multilateral central bank digital currency arrangements: Development motivations, operational mechanisms, and application prospects	2023	China	To study the development drivers, operational mechanisms, and application prospects of m - CBDC, and offer suggestions for China's mBridge project	Qualitative analysis	Analyze the problems of traditional cross - border payment systems, introduce m - CBDC projects, and compare their mechanisms
C29	Blockchain technology and cross - border payment systems: Development status, trends, and policy implications	2020	China	To review the development of cross - border payment systems, analyze the application of blockchain technology, and provide policy suggestions	Qualitative and quantitative analysis	Present data on cross - border payment systems, introduce blockchain - based payment cases, and analyze risks
C30	Motivations, paths, and challenges of cross - border payment cooperation among BRICS countries	2024	China	To explore the driving forces, paths, and challenges of BRICS countries' cross - border payment cooperation	Qualitative analysis	Analyze the flaws of the traditional cross - border payment system, introduce the paths of BRICS cooperation, and study the "BRICS Bridge" initiative

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NO	Article	Year	Country/ies	Objective	Methodology	Key Findings
R1	China Third - Party Cross - border Payment Industry Research Report	2020	China	To analyze the development background, current situation, and trends of China's third - party cross - border payment industry, and explore its development opportunities and challenges	Qualitative and quantitative analysis	Use data statistics, market research, and case analysis. Analyze policy environment, market size, business models, and competitive landscape through data; and discuss industry development trends based on market dynamics

R2	Fintech 2025+: Trends, technology, and transformation in global commerce	2024	-	To explore the trends, technologies, and transformations in global commerce related to fintech, and their impact on the financial industry and global trade	Qualitative analysis	Research global fintech development trends through literature review, industry reports, and expert opinions; analyze the impact on different sectors
R3	2023 Global Finance and Development Report	2023	-	To provide an overview of global financial development, analyze the impact of various factors on the financial industry, and offer insights into future development directions	Qualitative and quantitative analysis	Use data collection from multiple sources, economic models, and case studies. Analyze economic data, market trends, and policy impacts
R4	Application Progress, Industrial Chain Analysis, and Investment Strategy of Digital RMB	2024	China	To study the application progress, industrial chain structure, and investment opportunities of digital RMB	Qualitative and quantitative analysis	Collect data on digital RMB pilots, analyze market and industry data, and conduct in - depth research on the industrial chain
R5	China Payment Industry Annual Report 2023	2023	China	To comprehensively present the development of China's payment industry in 2022, including market size, regulatory policies, technological innovation, and risk management	Qualitative and quantitative analysis	Gather data from industry sources, conduct surveys, and analyze policy documents. Use data to show industry scale and trends, and discuss regulatory and technological impacts

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