A Qualitative Comparison of Cross-Border QRIS and Global Card Networks

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ABSTRACT
This study examines the strategic role of Cross-Border Quick Response Code Indonesian Standard (QRIS) as a transformative alternative to conventional international payment systems, specifically comparing its operational efficiency and cost structure against Visa and Mastercard networks. Employing a descriptive qualitative method and secondary data synthesis from 2020–2025, the study explores linkages between Indonesia, Malaysia, and Singapore within ASEAN's digital payment ecosystem. Findings demonstrate that Cross-Border QRIS significantly reduces transaction costs through lower Merchant Discount Rates (MDR) and accelerates settlement under the Local Currency Settlement (LCS) framework. Additionally, it contributes to regional "dedollarization" and enhances digital sovereignty by fostering domestic control over payment infrastructure and transaction data. Despite these advantages, card networks remain superior in global coverage and fraud prevention. The research concludes that an optimal payment ecosystem requires a hybrid adoption model combining QRIS efficiency with the international reach of card schemes.

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1. Introduction

The evolution of financial technology has transformed the global payment landscape, reshaping the mechanisms through which economic transactions are conducted and regulated. Over the past two decades, international card networks such as Visa and Mastercard have maintained dominance in cross-border payments, providing extensive infrastructure for international commerce and consumer protection through standardized global systems (World Bank, 2021). Although these networks deliver transactional reliability and fraud prevention through mechanisms such as chargeback systems and tokenization, they have also established a structure that reinforces high operational costs. The Merchant Discount Rate (MDR) applied by international card schemes, which ranges between 1.5 and

3.5 percent, creates barriers for small merchants and micro-enterprises seeking access to international markets (Bank Multiarta Sentosa, 2023).

In response to this structural imbalance, many developing economies have sought to design inclusive and efficient domestic payment systems. In Indonesia, this effort materialized in the form of the Quick Response Code Indonesian Standard (QRIS), introduced by Bank Indonesia in 2019. The QRIS framework aims to establish a unified national payment standard integrating various digital payment service providers under a single interoperable system. The initiative was developed to achieve the objectives of the Cepat, Mudah, Murah, Aman, and Handal (CEMUMUAH) principle, which translates to Fast, Easy, Cheap, Safe, and Reliable, and forms a central component of Indonesia's Payment System Blueprint 2030 (Bank Indonesia, 2025). By the end of 2023, QRIS had achieved widespread adoption with more than 30 million registered merchants, marking a significant step toward the digitalization of Indonesia's retail economy (Bank Indonesia, 2023a).

Following its domestic success, Bank Indonesia extended the QRIS framework into cross-border use through the establishment of bilateral linkages with neighboring countries. The first implementation of the Cross-Border QRIS was launched with Bank Negara Malaysia through the DuitNow network in May 2023, followed by a similar arrangement with the Monetary Authority of Singapore through NETS in November 2023 (Bank Indonesia, 2023b; MAS, 2023). These linkages enable consumers from participating countries to conduct payments directly using their domestic applications, facilitating real-time settlement between merchants and customers across borders.

The development of Cross-Border QRIS marks a major advancement in regional financial integration and represents a practical realization of the ASEAN Payment Connectivity (APC) initiative (ASEAN Secretariat, 2023). This framework emphasizes the importance of interoperability among national payment systems to support regional trade, tourism, and investment. More importantly, the use of the Local Currency Settlement (LCS) mechanism in these linkages allows for transactions to be executed in local currencies such as the Indonesian Rupiah, Malaysian Ringgit, and Singapore Dollar. This eliminates the need for conversion into U.S. dollars and directly supports regional de-dollarization efforts (Putri, Yusra, & Irawan, 2024).

Theoretically, Cross-Border QRIS can be understood within the framework of disruptive innovation as conceptualized by Christensen (1997). It introduces a low-cost, accessible alternative to traditional international payment networks that primarily serve high-value transactions. QRIS achieves this by leveraging central bank cooperation and regulatory support to establish a simplified, inclusive, and secure mechanism for regional payment interoperability. The Bank for International Settlements (2022) identifies such innovations as key enablers of financial inclusion, emphasizing their role in accelerating economic participation among underbanked populations.

Furthermore, Cross-Border QRIS aligns with the contemporary discourse on digital sovereignty. This concept refers to the capacity of a state to exercise control over its digital infrastructure, data, and technological ecosystems. In the context of payment systems, digital sovereignty entails ensuring that transaction data, payment flows, and settlement processes remain within the jurisdiction of participating nations (Clegg, 2023; Zuboff, 2019). By establishing QRIS linkages through central banks rather than private intermediaries, Indonesia and its regional partners retain a higher degree of autonomy over payment data management and regulatory oversight.

The emergence of Cross-Border QRIS also coincides with the growing international discussion on de-dollarization. Scholars such as Eichengreen (2019) and Prasad (2023) have noted that overreliance on the U.S. dollar exposes emerging markets to external shocks and currency volatility. Through the adoption of LCS arrangements, ASEAN economies are gradually building resilience by conducting trade and financial transactions using local currencies. The QRIS cross-border model operationalizes this principle by creating a payment ecosystem that is both cost-effective and regionally sustainable.

The relevance of this study lies in its contribution to understanding how financial technology can serve as a tool for economic sovereignty and regional integration. By comparing QRIS with established international card networks, this research provides insights into the operational, economic, and strategic implications of digital payment systems in the contemporary financial environment. The study seeks to demonstrate that Cross-Border QRIS is not only an instrument for improving transactional efficiency but also a structural innovation that embodies the broader transformation of the global financial order toward greater inclusivity and regional autonomy.

2. Research Methodology

This study employs a descriptive qualitative research design intended to analyze and interpret the comparative dynamics of international payment systems, specifically focusing on the implementation of Cross-Border QRIS relative to Visa and Mastercard. The qualitative approach was selected because it enables an in-depth exploration of institutional, regulatory, and operational factors that shape the functioning of payment networks (Creswell & Poth, 2018). The study synthesizes secondary data collected from multiple authoritative sources, including central bank publications, academic journal articles, financial reports, and policy documents released between 2020 and 2025.

The primary sources of data include official reports from Bank Indonesia, Bank Negara Malaysia, and the Monetary Authority of Singapore, which provide information on system implementation, policy coordination, and regulatory frameworks. Complementary materials were drawn from the Bank for International Settlements (BIS), the International Monetary Fund (IMF), and the World Bank to capture global perspectives on cross-border payment efficiency and fintech adoption. Academic literature on digital payment innovation, monetary sovereignty, and financial inclusion forms the theoretical foundation of this research (Narula & Kodwani, 2021; Clegg, 2023; Zuboff, 2019).

Data analysis was conducted through thematic categorization and comparative assessment. The analytical framework emphasizes three critical variables that determine international payment efficiency: cost structure, settlement speed, and market coverage. These parameters align with the principles articulated by the G20 and the BIS in the "Enhancing Cross-Border Payments" roadmap, which defines payment systems as effective when they are cheaper, faster, safer, and more transparent (BIS, 2022). Through comparative synthesis, the study identifies how QRIS operates within this global standard and to what extent it addresses inefficiencies found in traditional card network systems.

The conceptual lens guiding this analysis integrates three theoretical perspectives. The first is the theory of Disruptive Innovation (Christensen, 1997), which explains the emergence of QRIS as a lower-cost alternative that redefines competitive dynamics in the payment industry. The second is Monetary Sovereignty Theory, which examines how national payment systems can strengthen domestic control over financial flows and reduce dependence on foreign intermediaries (Eichengreen, 2019). The third is the Digital Sovereignty Framework, emphasizing the protection of national digital infrastructure and data governance (Zuboff, 2019; Clegg, 2023). These frameworks collectively inform the analytical approach used to interpret the empirical findings of this study.

3. Result and Discussion

The findings of this study reveal the operational, economic, and strategic dimensions of the Cross-Border Quick Response Code Indonesian Standard (QRIS) as a regional payment innovation. The analysis was conducted through a review of regulatory publications, financial reports, and academic research from 2020 to 2024. These findings are interpreted within the theoretical context of disruptive innovation, monetary sovereignty, and digital sovereignty to explain the implications of QRIS in the ASEAN financial ecosystem.

The implementation of Cross-Border QRIS demonstrates the ability of national payment systems to achieve interoperability at a regional scale through institutional coordination between central banks. The cooperation between Bank Indonesia, Bank Negara Malaysia, and the Monetary Authority of Singapore represents a practical model of financial integration that enhances the efficiency of cross-border transactions while preserving local monetary autonomy. This model aligns with the objectives of the ASEAN Payment Connectivity (APC) initiative, which promotes payment system linkage as a foundation for trade facilitation and regional financial stability.

From a performance standpoint, the research identifies several measurable advantages of the QRIS framework. Transactions conducted through the Local Currency Settlement (LCS) mechanism are processed almost instantaneously, reflecting a significant improvement in settlement efficiency compared to the conventional card-based model. The direct exchange between Indonesian Rupiah, Malaysian Ringgit, and Singapore Dollar eliminates the need for an intermediary currency, which in traditional card networks typically requires conversion through the United States dollar. This removal of the double-conversion process reduces costs and minimizes exposure to foreign exchange volatility.

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Another important result concerns transaction costs. The Merchant Discount Rate (MDR) for QRIS transactions averages 0.3 percent for micro businesses and approximately 0.7 percent for standard merchants, as regulated by Bank Indonesia. In contrast, Visa and Mastercard apply MDRs between 1.5 and 3.5 percent, including additional cross-border and conversion charges. The lower cost structure of QRIS reflects the advantage of its regulatory foundation and public ownership model, which prioritizes accessibility rather than profit maximization.

Table 1. Comparative Characteristics of Cross-Border QRIS and Global Card Networks

Dimension	Cross-Border QRIS	Visa and Mastercard
Merchant Discount Rate (MDR)	Average MDR 0.3% for micro businesses; 0.7% for standard merchants	1.5–3.5% including cross-border and conversion fees
Settlement Mechanism	Real-time settlement through LCS using Appointed Cross-Currency Dealers (ACCD) between central banks	Settlement in T+1 or T+2 days via multiple intermediaries
Currency Conversion	Direct bilateral conversion within LCS; no U.S. dollar intermediary	Double conversion (local currency → USD → destination currency)
Security Architecture	EMVCo standards with QR tokenization; dependent on domestic network oversight	Advanced EMV chip, tokenization, and global fraud protection
Geographic Coverage	Bilateral ASEAN linkages (Indonesia, Malaysia, Singapore, Thailand under development)	Global presence in 200+ countries
Governance and Oversight	Regulated by central banks; domestic data sovereignty retained	Managed by private multinational corporations headquartered in the United States

Source: Author’s synthesis from Bank Indonesia, BIS, IMF, and World Bank reports, 2020–2024.

The data in Table 1 confirm that QRIS achieves superior efficiency and cost performance through reduced intermediaries and centralized settlement channels under the LCS framework. The model aligns with the principle of disruptive innovation described by Christensen (1997), in which new entrants challenge incumbent systems by targeting underserved market segments with simpler and more affordable solutions. QRIS illustrates this process by addressing the needs of micro and small enterprises that are often excluded from traditional card-based payment systems due to high fees and complex registration requirements.

Beyond efficiency, the findings underscore the role of QRIS in supporting digital and monetary sovereignty. Since all QRIS settlement processes are conducted within the jurisdiction of participating central banks, transaction data and currency reserves remain under domestic supervision. This configuration ensures compliance with local regulatory standards and prevents dependency on external data centers or private clearing systems. The outcome aligns with the theoretical foundation of digital sovereignty, which emphasizes national control over digital infrastructure and information management (Clegg, 2023; Zuboff, 2019).

The research further identifies the contribution of Cross-Border QRIS to regional de-dollarization efforts. By facilitating payments directly in local currencies, the LCS mechanism reduces reliance on the U.S. dollar in intra-ASEAN trade and travel. This transition supports the monetary policy objectives of the participating countries by strengthening exchange-rate stability and limiting exposure to global currency fluctuations. The observation corresponds with the analysis of Eichengreen (2019) and Prasad (2023), who argue that diversification of payment channels and local currency usage enhances financial resilience in emerging economies.

At the microeconomic level, the results show that the adoption of QRIS has increased merchant participation in digital financial ecosystems. Data from Bank Indonesia (2023a) indicate that merchants using QRIS experienced higher transaction volumes and improved cash-flow management compared to those relying solely on cash or card payments. The real-time settlement feature allows small enterprises to reinvest revenues more efficiently, thereby contributing to local business sustainability and economic inclusion.

The comparative evidence also reveals a clear distinction between the governance models of QRIS and global card networks. Visa and Mastercard operate under private corporate frameworks that prioritize global interoperability and risk mitigation through advanced technological standards. These features remain advantageous for high-value transactions requiring multilayered fraud prevention and consumer protection. In contrast, QRIS emphasizes regulatory transparency, lower costs, and the empowerment of local financial institutions. Both systems therefore exhibit complementary strengths rather than direct substitutional competition.

The discussion of these results indicates that Cross-Border QRIS functions as a transformative regional payment infrastructure. It combines public governance, central-bank cooperation, and fintech innovation to address the structural inefficiencies inherent in the global card network model. By providing a low-cost and inclusive platform, QRIS advances financial democratization while simultaneously reinforcing ASEAN’s strategic goal of a more integrated and autonomous regional economy. The findings confirm that the success of QRIS lies not only in its technological efficiency but also in its alignment with broader policy objectives of economic sovereignty and sustainable regional connectivity.

4. Conclusions

The findings of this research demonstrate that the Cross-Border Quick Response Code Indonesian Standard (QRIS) represents a significant innovation in the architecture of international payment systems. It addresses the limitations of traditional card-based networks by offering lower transaction costs, faster settlement processes, and improved accessibility for micro, small, and medium enterprises. Through the implementation of the Local Currency Settlement (LCS) mechanism, QRIS enables direct currency exchange among participating countries, thereby supporting regional monetary independence and contributing to de-dollarization efforts within ASEAN.

The study also concludes that Cross-Border QRIS functions not only as a technological advancement but also as a strategic instrument for promoting financial sovereignty and regional integration. Its operational design, which relies on cooperation between central banks rather than private intermediaries, reinforces transparency and ensures that transaction data remain within domestic jurisdictions. This characteristic embodies the principle of digital sovereignty and aligns with the broader goals of the ASEAN Payment Connectivity framework.

While QRIS offers clear advantages in efficiency and inclusivity, Visa and Mastercard continue to provide unmatched global interoperability and advanced security infrastructure. Therefore, the coexistence of these systems should be viewed as complementary rather than competitive. A hybrid payment ecosystem that integrates QRIS for regional transactions and card networks for global coverage can deliver both cost efficiency and market reach.

Future expansion of QRIS linkages beyond Southeast Asia will determine its capacity to evolve from a regional initiative into a globally recognized payment infrastructure. Strengthening technical standards, expanding multilateral cooperation, and ensuring interoperability with other digital payment systems will be crucial for sustaining its long-term relevance. Overall, the development of Cross-Border QRIS signifies a progressive step toward an inclusive, efficient, and sovereign financial ecosystem within the ASEAN region.

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References

ASEAN Secretariat. (2023). ASEAN Payment Connectivity Initiative: Advancing Regional Financial Integration. Jakarta: ASEAN Secretariat.

Atoa. (2024). QR vs Credit Card Security: Which Wins for Businesses? Atoa Payments. Retrieved from https://paywithatoa.co.uk

Bank for International Settlements (BIS). (2022). G20 TechSprint on Central Bank Digital Currencies and Cross-Border Payments. Basel: BIS Publications.

Bank Indonesia. (2023a). Tinjauan Kebijakan Moneter Desember 2023. Jakarta: Bank Indonesia.

Bank Indonesia. (2023b, May 8). Indonesia and Malaysia Announce the Commercial Launch of the Cross-Border QR Payment Linkage. Press Release No. 25/116/DKom.

Bank Indonesia. (2025). Blueprint Sistem Pembayaran Indonesia 2030. Jakarta: Bank Indonesia.

Bank Multiarta Sentosa. (2023). Get to Know What MDR QRIS Is and Its New Rates. Bank Mas Blog.

Christensen, C. M. (1997). The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail. Boston: Harvard Business School Press.

Clegg, S. (2023). Power, Technology, and Digital Sovereignty in the Global Economy. London: Routledge.

Creswell, J. W., & Poth, C. N. (2018). Qualitative Inquiry and Research Design: Choosing Among Five Approaches (4th ed.). Thousand Oaks, CA: Sage Publications.

Eichengreen, B. (2019). Globalizing Capital: A History of the International Monetary System (4th ed.). Princeton, NJ: Princeton University Press.

EMVCo. (2020). The What, Why and How of EMV QR Codes. EMVCo Official Report.

International Monetary Fund (IMF). (2022). Cross-Border Payment Systems and Regional Integration in Asia. Washington, DC: IMF Publications.

Monetary Authority of Singapore (MAS). (2023, November 17). Launch of Cross-Border QR Payments Linkage Between Indonesia and Singapore. Singapore: MAS Press Release.

Narula, R., & Kodwani, D. (2021). Financial technology and the digital transformation of emerging economies. Journal of Economic Policy Studies, 28(3), 412–430.

Organisation for Economic Co-operation and Development (OECD). (2022). Digital Financial Inclusion and Economic Resilience in Emerging Markets. Paris: OECD Publishing.

Putri, A. V., Yusra, M., & Irawan, P. (2024). Dampak QR Code Cross Border Payment terhadap Penggunaan Dolar Amerika Serikat di Kawasan Asia Tenggara. PALITO: Journal of Politics, Humanities, and International Relations, 3(2), 253–265.

Panitch, L., & Gindin, S. (2012). The Making of Global Capitalism: The Political Economy of American Empire. London: Verso Books.

Prasad, E. S. (2023). The Future of Money: How the Digital Revolution Is Transforming Currencies and Finance. Cambridge, MA: Harvard University Press.

Wimaya, A. (2023). Sistem Pembayaran Internasional dan Perkembangan Digitalisasi Keuangan. Wimaya: Jurnal Ilmu Ekonomi, 3(2), 168–178.

World Bank. (2021). The Use of Quick-Response (QR) Codes in Payments. Washington, DC: World Bank Group.

Zuboff, S. (2019). The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power. New York: PublicAffairs.