Indonesian Journal of Business Analytics (IJBA)
Vol. 6 , No. 1 (February) 2026: 95-106

Digital Silk Road and Cross-border Payment Integration between Malaysia and China: Policy Synergies, Frictions, and Impacts on SME Transaction Costs

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ARTICLEINFO

Keywords: Digital Silk Road, cross-border payments, DuitNow, QRIS, SMEs

Received : 20, December
Revised : 22, January
Accepted: 12, February

ABSTRACT

This paper examines policy synergies and frictions in Malaysia–China cross-border digital payment integration under the Digital Silk Road. Using document-based policy comparison and a structured literature review, it maps three SME cost-reduction channels—lower search and verification costs, faster clearing and settlement, and improved foreign-exchange transparency—against three governance pillars: data rules, settlement arrangements, and technical standards. The analysis finds that Malaysia's domestic payment readiness has advanced faster than bilateral institutional coordination, creating an "integration gap" that sustains fees, delays, and compliance burdens for SMEs. Policy options include a bilateral regulatory sandbox, harmonised cross-border QR standards, and phased central-bank cooperation on atomic settlement and CBDC-related pilots.

DOI: https://doi.org/10.55927/ijba.v6i1.16182

ISSN: 2808-0718
URL: https://journal.formosapublisher.org/index.php/ijba

INTRODUCTION

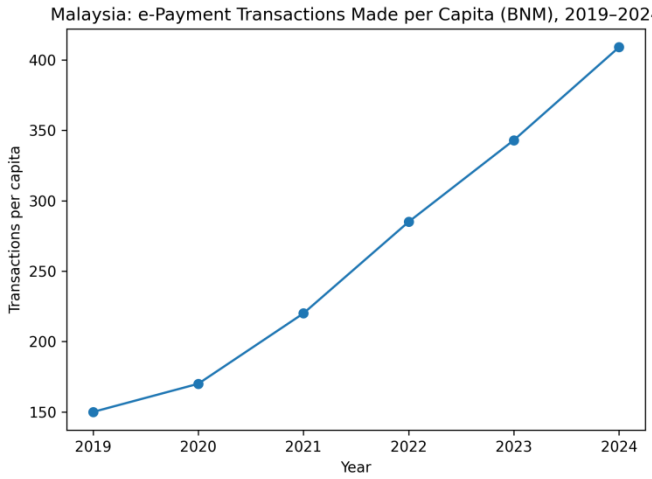
Digital payment integration has become a key pillar of the Digital Silk Road under the Belt and Road Initiative. As interdependence between China and economies in the Association of Southeast Asian Nations (ASEAN) deepens, instant payments and platform-based payments increasingly complement traditional bank cross-border transfers. Malaysia, as a highly open economy with rapid digitalisation, provides a useful setting to examine how cross-border payment connectivity can translate into faster and cheaper transactions for small and medium-sized enterprises (SMEs).

Yet a gap remains between strong domestic readiness and cross-border efficiency. Figure 1 shows that, with support from Bank Negara Malaysia (BNM), domestic electronic payment usage expanded quickly, with per-capita transactions rising from about 150 in 2019 to about 409 by 2024. Despite this momentum, cross-border payments still face frictions stemming from regulatory differences, opaque settlement layers, and uneven standards.

The central challenge is an "integration gap". Although linking systems such as DuitNow with Chinese payment ecosystems (e.g., Alipay-related networks or UnionPay rails) is technically feasible, the policy coordination to govern these flows remains limited. SMEs face three layers of transaction costs: (1) explicit fees generated by multiple layers of intermediaries; (2) exchange-rate spreads and conversion charges; and (3) implicit costs such as delays, information asymmetry, and compliance uncertainty.

Accordingly, this study moves beyond high-level geopolitical narratives to identify concrete policy frictions that shape payment interoperability between Malaysia and China. It asks which regulatory and technical bottlenecks hinder interoperability of digital payment systems and how bilateral cooperation can be designed to reduce SME transaction costs. The paper triangulates transaction trends with policy and standards documents, and maps reform options against internationally recognised targets for enhancing cross-border payments.

Figure 1. Malaysia: Per-capita selected retail electronic payment transactions (2019–2024)



Source: authors' compilation based on Bank Negara Malaysia annual reports (2022–2024) and the Financial Sector Blueprint 2022–2026.

THEORETICAL REVIEW

The theoretical logic of cross-border digital payment integration rests on transaction-cost reduction. In institutional economics, transaction costs—including search and information costs, bargaining costs, and enforcement costs—are major frictions in international exchange. As the Digital Silk Road (DSR) pushes economic activity toward digital ecosystems, research increasingly focuses on how digital infrastructures and governance arrangements reduce specific cost channels for SMEs.

Domestic foundations and user behaviour

Research on Southeast Asian payment interoperability suggests that SME benefits depend on trust, clear governance, and user-friendly standards. At the regional level, cross-border quick response (QR) code linkages are often framed as tools to reduce payment frictions for trade- and travel-related transactions, particularly for micro and small merchants (Bank Indonesia, 2022). Political-economy analyses further show that interoperability is not purely a technical project: it is shaped by domestic regulatory preferences and bargaining over standards and compliance responsibilities (Bimantara & Nugraha, 2025).

Standardisation and SME digitalisation

Standardisation is repeatedly identified as a low-cost way to help SMEs integrate into payment systems, because a single QR standard can materially reduce merchant onboarding and acceptance costs. Accordingly, ASEAN's interoperability agenda prioritises QR interoperability and instant payment system (IPS) linkages. Indonesia–Thailand cross-border QR connectivity is a concrete example that moved from pilot to implementation in August 2022 (Bank Indonesia, 2022). In Malaysia, DuitNow QR plays an analogous role domestically; however, extending it to cross-border use requires alignment on operational rules and data and compliance expectations.

Survey and policy evidence from Indonesia indicates that MSME adoption of online marketing, e-commerce platforms, and partnership networks can reduce market-entry and coordination frictions, although diffusion remains uneven (Wicaksono & Simangunsong, 2022; World Bank, 2021).

Governance gaps in cross-border payments

DSR scholarship often focuses on macro-level digital infrastructure and governance spillovers. Political analyses emphasise that DSR expansion intersects with competing models of digital sovereignty and regulatory control (Cheng, 2022). For payments, this matters because interoperability depends on cross-border data flows and trust. International policy work shows that restrictions and uncertainty around cross-border data transfers can become trade barriers, especially for smaller firms that cannot absorb high compliance costs (OECD, 2021; OECD, 2022).

Roadmaps and cost targets for cross-border payments

A complementary literature comes from standard-setting bodies that frame cross-border payment reform explicitly as a transaction-cost problem. The G20 roadmap coordinated by the Financial Stability Board (FSB) and the Committee on Payments and Market Infrastructures (CPMI) diagnoses persistent weaknesses—high cost, slow speed, and limited transparency—and proposes

building blocks to address them (CPMI, 2020; FSB, 2020). Within ASEAN, the Bank for International Settlements (BIS) Innovation Hub's Nexus project extends this logic by proposing a modular approach to link domestic IPS systems through standardised connectors and governance arrangements (BIS, 2024).

METHODOLOGY

This study adopts a qualitative policy-analysis framework based on document review and comparative regulatory mapping. This approach is appropriate because digital payment policy is an emerging domain whose institutional frameworks—laws, central-bank circulars, and bilateral memoranda—evolve faster than longitudinal quantitative datasets can capture. To ensure reproducibility and to avoid reliance on confidential or proprietary datasets, the analysis is restricted to public sources: central-bank reports, policy blueprints, standard-setting body roadmaps, and official press releases on payment interoperability. The paper aims to make an exploratory, policy-oriented contribution rather than an econometric estimate of welfare gains. The practical goal is to identify actionable regulatory and standards bottlenecks that can be addressed through bilateral coordination, with SMEs treated as key stakeholders because they bear a higher share of fixed compliance and reconciliation costs in cross-border trade.

The review covers 2019–2025 and includes: (i) Malaysian and Chinese central-bank publications and payment-system blueprints; (ii) publicly available laws and regulations on data privacy, anti-money laundering/combating the financing of terrorism (AML/CFT), and payment services; (iii) initiative documents and press releases on payment linkages (e.g., Nexus and QR linkages); and (iv) international standards and targets (CPMI/FSB/BIS). Included documents either specify operating rules for messaging, user registration, settlement, dispute handling, or cross-border data transfer, or provide measurable targets related to cost, speed, access, or transparency.

Using the three pillars of (1) data governance, (2) clearing and settlement, and (3) technical standards coordination as a deductive coding framework, each document was coded for (a) constraining requirements (barriers), (b) enabling provisions, and (c) implementation requirements. Coded items were mapped to SME transaction-cost channels (search/information; settlement/liquidity; foreign-exchange (FX) transparency) to construct the comparative matrix (Table 1) and corridor-level key performance indicators (KPIs) (Table 4). Ambiguous provisions were recorded as "not specified" rather than inferred, to keep the mapping conservative and reproducible.

To anchor the qualitative analysis in empirical context, the study incorporates macro transaction statistics from Bank Negara Malaysia annual reports (2019–2024). These data (Figure 1) establish a domestic readiness baseline and motivate why cross-border policy coordination matters. Triangulating policy documents with observed adoption trends, the paper identifies specific policy frictions that impede SME transaction-cost reduction.

RESULTS

To strengthen descriptive evidence, the policy discussion is benchmarked against the G20/FSB targets for enhancing cross-border payments. These targets provide externally validated dimensions—cost, speed, access, and transparency—that align with the SME transaction-cost channels discussed below.

Malaysia's domestic e-payment maturity

The empirical baseline is Malaysia's strong domestic payment trajectory. As shown in Figure 1, per-capita electronic payment transactions rose from around 150 in 2019 to about 409 in 2024, indicating sustained acceleration in everyday digital payment usage (Bank Negara Malaysia, 2022, 2023, 2024).

However, readiness is not only about transaction volume; it is also about speed and friction. The 2022–2024 acceleration is consistent with the Financial Sector Blueprint 2022–2026, which emphasises e-payment adoption and payment-infrastructure upgrades (Bank Negara Malaysia, 2022). While domestic rails support near-instant Malaysian ringgit (MYR) transfers, cross-border corridors still depend on additional intermediaries, compliance checks, and foreign-exchange arrangements. For SMEs, this translates into slower settlement, higher reconciliation effort, and greater uncertainty about final credited amounts and delivery times.

Policy comparison: Malaysia and China

To identify corridor-specific bottlenecks, differences in regulatory and operational frameworks must be mapped. Table 1 summarises institutional frictions across data governance, settlement arrangements, and technical standardisation, and links them to SME transaction-cost implications.

Table 1. Comparative mapping of cross-border payment regulatory frameworks (Malaysia vs. China)

Policy area	Malaysia (high-level)	China (high-level)	Implications for SME transaction costs
Data privacy and cross-border data flows	Governance anchored in the Personal Data Protection Act (PDPA); conditions for cross-border transfers and sectoral risk-management expectations.	PIPL-centred regime; formal cross-border transfer mechanisms with higher compliance requirements.	Higher onboarding and compliance costs; when data sharing is constrained, dispute handling and risk scoring are slower.
Clearing and settlement (incl. FX)	Domestic real-time rails are mature; cross-border settlement still relies on intermediaries and corridor-specific FX pricing rules.	Large platform ecosystems; cross-border settlement constrained by FX transparency, liquidity management, and compliance screening.	FX spreads, prefunding, and settlement delays increase working-capital needs and reconciliation effort for SMEs.
QR interoperability and standards	DuitNow QR standard; ASEAN	Platform-led QR ecosystems (e.g.,	Partial standards mismatches raise

Policy area	Malaysia (high-level)	China (high-level)	Implications for SME transaction costs
	cross-border QR links are expanding.	Alipay-related networks) coexist with domestic standards.	exception-handling costs (scan failures, refunds), limiting the efficiency gains of a "single QR" experience.

Note: PDPA refers to Malaysia's Personal Data Protection Act 2010; PIPL refers to China's Personal Information Protection Law (2021). This table provides a high-level summary based on publicly available regulatory expectations; implementation details may vary by sector and payment scheme.

To connect corridor design choices to measurable outcomes, the discussion uses the G20/FSB cross-border payment targets as a benchmark for cost, speed, access, and transparency (FSB, 2021). Table 2 summarises retail targets that are particularly relevant for SMEs.

Table 2. Benchmark: G20/FSB retail cross-border payment targets relevant to SMEs (end-2027)

Dimension	Target (retail payments incl. B2B/P2B/B2P/P2P; end-2027)
Cost	Average cost ≤ 1%; no corridor above 3%.
Speed	75% credited within ≤ 1 hour; the remainder within ≤ 1 business day.
Access	All end users (including MSMEs) have ≥ 1 option to send/receive.
Transparency	Up-front disclosure of total cost (fees + FX), expected delivery time, tracking/status, and key terms.

Source: Financial Stability Board (FSB), Targets for addressing the four challenges of cross-border payments (2021).

Table 3 lists selected regional initiatives that provide design experience for governance, consistency testing, and rulebook development.

Table 3. Selected regional interoperability initiatives (illustrative design experience)

Initiative / corridor	What it illustrates	Relevance to Malaysia–China policy alignment
Nexus prototype (Eurosystem–Malaysia–Singapore)	A modular approach to link domestic IPS systems through standardised connectors and governance.	Demonstrates a "connect-the-rails" pathway; requires governance and consistency testing.
Malaysia–Indonesia cross-border QR (QRIS–DuitNow)	Bridges national QR retail acceptance standards with established routing and operating rules.	Provides templates for standards bridging, FX disclosure, and refund/dispute rulebooks.

Source: BIS (2023) Nexus press release; Bank Indonesia (2022, 2023) joint press releases on cross-border QR payment linkages.

During pilot phases, corridor-level key performance indicators (KPIs) can be collected to support continuation decisions and scaling. Table 4 proposes practical KPIs aligned with SME transaction-cost channels.

Table 4. Practical corridor KPIs for evidencing SME transaction-cost reduction (descriptive)

Cost channel	Indicator (simple metric)	Why it matters for SMEs	Policy lever / how to address
Fees	Total fees (as % of transaction value)	Directly affects SME margins	Fee rules; disclosure; sandbox tests
FX spread	Spread to mid-rate (basis points)	Compounds with frequent payments	FX design; disclosure; settlement pilots
Speed	% credited ≤ 1 hour; median time	Reduces working-capital lock-up	Rail linkage; settlement finality
Reliability	Failure/timeout rate (%)	Raises exception-handling cost	Consistency testing; error-code harmonisation
Refunds	Median time to complete refunds/disputes	Cash is trapped for SMEs	Unified refund/dispute rulebook
Onboarding	Time to complete KYC (days); resubmission rate	Fixed compliance costs hit SMEs hardest	Shared KYC/AML expectations; data safeguards

Source: compiled by the authors (descriptive indicators aligned with cross-border payment performance dimensions).

To make the Malaysia–China corridor concrete, three SME-relevant transaction touchpoints illustrate how policy pillars operate in practice. Here, P2M denotes person-to-merchant payments and B2B denotes business-to-business trade settlement.

- Tourism and micro-merchant P2M payments: Chinese tourists pay Malaysian micro-merchants via China-based apps/QR ecosystems. Key issues include merchant onboarding rules (QR payload mapping and merchant identifiers), point-of-sale FX disclosure, and dispute/chargeback handling.
- Cross-border e-commerce and refunds: SMEs often face higher refund/return frequency. Key issues include authorised data transfer between buyer and seller, reverse payment flows (refunds/chargebacks), and audit responsibilities across platforms and banks.
- B2B trade settlement with staged shipments: SME import/export often requires split payments. Key issues include know-your-customer (KYC) and anti-money laundering (AML) documentation, FX conversion transparency, settlement finality, and operating-hours mismatches that affect working-capital needs.

DISCUSSION

The policy frictions summarised in Table 1 translate into concrete economic barriers for SMEs. Drawing on transaction cost economics, three primary channels stand out.

First, search and information costs rise when cross-border QR interoperability and consistent registration rules are absent. Without interoperability across DuitNow QR, Indonesia's QRIS (Quick Response Code Indonesian Standard), and China-based platform QR ecosystems, SMEs may need multiple payment channels and reconciliation processes, which increases fixed administrative costs and error rates.

Second, settlement and liquidity costs increase because cross-border transfers typically involve longer processing and settlement times than domestic instant payments, as funds and information pass through additional intermediaries and compliance checks. International reform roadmaps identify speed and cost as persistent weaknesses, with especially large effects on smaller firms' cash-flow management (CPMI, 2020; FSB, 2020).

Third, FX transparency and conversion costs—an "FX black box"—become a major friction when MYR–CNY pricing and settlement are not directly integrated. SMEs can face opaque spreads and layered conversion fees, and fee opacity is a core driver of perceived cross-border payment cost. Improving transparency is therefore a central objective in international reform targets (CPMI, 2020).

These findings align with broader ASEAN evidence that SME digitalisation, when supported by targeted programmes, can reduce operational frictions and expand market and financing access (ERIA & OECD, 2024; World Bank, 2022).

Overall, Malaysia has developed strong domestic digital payment capabilities, but the final stage of cross-border integration is constrained more by institutional coordination than by core technology. Regional initiatives such as Nexus demonstrate that domestic instant payment systems can be connected through carefully designed governance and scheme rulebooks while respecting regulatory differences (BIS, 2024).

From ASEAN interoperability to a Malaysia–China linkage

ASEAN's ongoing work on payment interoperability provides practical design lessons for Malaysia–China integration. Interoperability tends to proceed incrementally—starting with bounded use cases (e.g., tourism and low-value merchant payments) and expanding as rulebooks, consumer protection, and compliance arrangements mature. In addition, multilateral initiatives show the value of common testing protocols, shared incident management, and transparent disclosure requirements for fees and FX rates. These design lessons can be adapted to a bilateral Malaysia–China corridor through phased pilots and explicit KPI-based evaluation (Table 4).

CONCLUSIONS AND RECOMMENDATIONS

This study assessed Malaysia–China policy alignment in cross-border digital payments through the lens of interoperability and SME transaction-cost reduction. Comparing domestic transaction trends (Figure 1) with regulatory frameworks (Table 1), the analysis suggests that technical readiness has progressed faster than institutional coordination. The resulting "integration gap"

remains a key bottleneck that sustains fees, delays, and compliance burdens for SMEs.

The results indicate that raising cross-border efficiency requires a shift from unilateral digitalisation to bilateral policy convergence. A modular pathway—combining regulatory experimentation, standards alignment, and measurable corridor KPIs—can translate domestic payment maturity into cross-border SME benefits.

Policy recommendations

Based on the identified policy frictions and transaction-cost channels, the paper proposes a three-layer strategy to strengthen Malaysia–China payment integration, with pilots designed around SME-relevant ecosystems and use cases.

1) Establish a bilateral regulatory sandbox

A joint sandbox coordinated by Bank Negara Malaysia (BNM) and the People's Bank of China (PBOC) can run limited-scope pilots (e.g., capped-value SME transactions) to test compliance processes, consumer protection, and operational risk controls before scaling.

- Proportionate compliance: simplify KYC and AML procedures for low-risk, low-value SME transactions with clear thresholds and audit trails.
- Data corridor: enable minimum-necessary data sharing under agreed retention periods and breach-handling procedures that satisfy both jurisdictions' rules.
- Scheme governance: define responsibility allocation, dispute-resolution timelines, and refund/chargeback processes among participants.

2) Harmonise cross-border QR payment technical standards

Malaysia and China should pursue a common set of QR acceptance and operating standards. ASEAN experience indicates that true interoperability requires alignment on payload specifications, merchant identifiers, and participation rules—not merely the ability to scan a code (Bank Indonesia, 2022; Bimantara & Nugraha, 2025).

- Common QR payload mapping: align DuitNow QR fields with China-facing app/network requirements to reduce merchant onboarding costs.
- Interoperable merchant IDs: allow a single merchant identifier to be used across participating payment apps and acquirers without extra hardware.
- Fee and FX transparency: display fees and the MYR–CNY rate at point of sale in real time to reduce perceived "hidden spreads".

3) Strengthen central-bank cooperation on atomic settlement and central bank digital currency (CBDC)-related pilots

Over the longer term, cooperation on emerging settlement technologies—including central bank digital currency (CBDC)-related pilots—can support faster and more transparent settlement for specific cross-border use cases. A key principle is atomicity: payment finality and FX conversion occur simultaneously, reducing settlement risk and shortening the time SMEs wait for usable funds. Given the evolving nature of CBDC strategies, this direction should be implemented through staged research and pilots rather than immediate large-scale deployment.

FURTHER STUDY

A key limitation of this study is its reliance on publicly available policy documents and macro-level statistics. Future research should incorporate primary data from SME surveys to quantify the percentage reduction in transaction costs after corridor implementation. As CBDC pilots and settlement innovations progress, further empirical work is also needed to evaluate impacts on speed, transparency, and risk allocation in real cross-border corridors.

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