Digital Financial Inclusion and Payment Growth: A Comparative Assessment of Malaysia and Indonesia

Rohaiza Kamis

Faculty of Business and Management, Universiti Teknologi MARA Cawangan Melaka, 110 off Jalan Hang Tuah, 75300, Melaka, Malaysia

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ABSTRACT

Digital financial inclusion has accelerated in Southeast Asia, particularly in Malaysia and Indonesia, where e-wallets and QR-based payments are reshaping financial behaviour and expanding access to digital services. This conceptual study examines the determinants of digital payment growth in both countries by integrating three behavioural theories (TAM, UTAUT, TRI), peer-reviewed literature, national policy frameworks, and Scopus AI–generated thematic and conceptual analyses. The findings show that Malaysia's adoption is driven mainly by perceived usefulness, security assurance, and regulator-led infrastructure such as DuitNow QR, while Indonesia's adoption is influenced by technology readiness, merchant compatibility, and the widespread diffusion of QRIS among MSMEs. Persistent challenges include digital literacy gaps, uneven infrastructure, trust and security concerns, and differences in regulatory maturity. Emerging themes which are environmental sustainability, Sharia-compliant digital finance, strengthened legal frameworks, and culturally grounded initiatives further explain variations in adoption behaviour and inclusion outcomes. The study proposes an integrated conceptual framework linking structural, behavioural, and ecosystem-level factors, and highlights differentiated policy priorities to strengthen inclusive, resilient, and sustainable digital financial systems in both countries.

Keywords: Digital financial inclusion, digital payments, e-wallet adoption, QRIS, DuitNow QR, fintech ecosystem, Malaysia, Indonesia

INTRODUCTION

Developments in digital finance have significantly expanded access to financial services, particularly among vulnerable and underserved communities in developing economies. Financial technology (FinTech) provides innovations that simplify transactions, reduce barriers to service usage, and enhance overall convenience for consumers. Within this landscape, e-wallets have emerged as a key enabler, supporting national economic goals by promoting cashless behaviour, encouraging contactless payments, and accelerating the transition toward a digitally driven economy (Kamis et al., 2023). In Malaysia, the rapid rise of FinTech solutions has demonstrably contributed to improvements in technological efficiency and productivity, strengthening both the financial sector and the broader digital ecosystem.

Digital transformation has reshaped financial ecosystems worldwide, accelerating the shift from traditional cash-based transactions toward more inclusive, technology-driven payment systems. Transitioning to digital currencies and contactless payments can establish a safer environment, where financial transactions are both optimized and safeguarded against unlawful activity (Kamis et al., 2024). In developing economies, advancements in digital finance are particularly impactful, as they provide vulnerable and underserved communities with new pathways to access formal financial services. Financial technology (FinTech) innovations which ranging from mobile banking to QR-based payments have simplified transactions, reduced operational barriers, and broadened participation in the financial system. Among these innovations, e-wallets and interoperable QR payment systems have emerged as central enablers of digital financial inclusion, offering convenient, low-cost tools that support everyday economic activities.

Malaysia and Indonesia represent two of Southeast Asia's most dynamic digital payment landscapes. Both countries have articulated ambitious aspirations to reduce cash dependence, expand formal financial access, and strengthen digital economic ecosystems. Malaysia's digital finance environment is characterized by high banking penetration, early regulatory coordination, and strong institutional infrastructure, including the deployment of DuitNow QR as a unified national standard. Conversely, Indonesia demonstrates a fintech-led expansion model, where the rollout of the QRIS standard has rapidly onboarded millions of micro and informal merchants, significantly deepening financial inclusion across diverse socio-economic segments. These different pathways reflect each country's structural realities where Malaysia's regulator-driven modernization versus Indonesia's market-driven, grassroots digital adoption.

Despite these advancements, digital financial inclusion remains uneven in both countries. Challenges persist in rural connectivity, digital literacy, user trust, cybersecurity, and merchant readiness, factors that continue to influence the extent to which digital payment growth translates into meaningful financial inclusion outcomes. Few existing studies provide a direct comparison between Malaysia and other Southeast Asian countries using consistent measures of digital financial inclusion and the digital divide to evaluate digital payment growth (Bajwa et al., 2025). Existing research on digital payments in Malaysia and Indonesia, however, remains fragmented across policy documents (Mahusin & Prilliadi, 2025), sectoral report (Asian Development Bank, 2020; Bank Negara Malaysia, 2024; World Bank Group, 2023), behavioural studies (Kamis et al., 2024), economic impact (Widyastuti et al., 2024), and adoption models (Purwatiningsih, 2025), with limited comparative assessments that synthesize broader structural, institutional, and user-level factors.

In Indonesia and Malaysia, microentrepreneurs have widely adopted e-wallets and ATM debit for business transactions, while factors influencing adoption differ between the two countries, suggesting tailored approaches are necessary for each market (Trianto et al., 2025). In Malaysia, factors such as performance expectancy, price value, facilitating conditions, and social influence significantly impact e-wallet adoption intention (Leong & Kwan, 2021). Prioritizing structural assurance and addressing trust and security concerns can motivate users to switch from traditional payment methods to digital solutions (Fareed et al., 2024). QR payments are popular in Indonesia due to smartphone convenience, aligning with the country's push towards a cashless society. Thus, streamlining user interfaces, and strengthening security features are recommended to improve QR payment adoption in Indonesia (Amrullah & Purwanto, 2025). Both Indonesia and Malaysia are making strides in digital financial inclusion through e-wallets and QR code payments. However, adoption rates and influencing factors vary, necessitating country-specific strategies to overcome challenges and enhance digital payment usage.

This comparative analysis is grounded in three key theoretical models: the Technology Acceptance Model (TAM) (Davis, 1989), the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003), and the Technology Readiness Index (TRI) (Parasuraman, 2000). These frameworks offer behavioural insights into the differing levels of digital payment adoption in Malaysia and Indonesia. TAM focuses on perceived usefulness and ease of use; UTAUT emphasizes performance expectancy, social influence, and facilitating conditions; while TRI addresses variations in technology readiness and trust. Together, these models inform the discussion of emerging themes such as security assurance, digital literacy, and the structure of the digital ecosystem forming a theoretical foundation that links structural factors to digital financial inclusion outcomes in both contexts.

Therefore, this study addresses this gap by providing a comparative analysis of digital financial inclusion and digital payment growth in Malaysia and Indonesia between 2020 and 2025. Building on the theoretical foundation provided by TAM, UTAUT, and TRI, along with a structured review of academic literature, national policy frameworks, financial inclusion indicators, and the evolution of digital payment ecosystems, this research identifies shared drivers, differing strategic approaches, and emerging challenges within both markets. By examining trend patterns, institutional contributions, and thematic clusters, the study aims to deepen understanding of how digital financial inclusion evolves under distinct regulatory, economic, and socio-technological environments in Southeast Asia.

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METHODOLOGY

This study adopts a conceptual and integrative research design that synthesizes academic theory, sectoral evidence, and comparative policy analysis, with no primary data collection involved. The source base consists of peer-reviewed articles published between 2020 and 2025 in Scopus database, alongside authoritative sectoral reports issued by Bank Negara Malaysia (BNM), Bank Indonesia (BI), the World Bank, ASEAN, ADB, ERIA, and UNESCAP. Relevant industry analyses from Google–Temasek–Bain, PwC, and KPMG were also included to provide contemporary insights into digital payment trends and ecosystem developments. The analytical procedure involved a thematic synthesis of determinants and behavioural models, a sectoral examination of national digital ecosystems, and a comparative analysis of Malaysia's and Indonesia's digital financial pathways, culminating in the integration of findings into a unified conceptual framework. As this is a conceptual study, no empirical testing was conducted, and all relationships presented are theoretically derived and intended for future empirical validation.

This search strategy was designed to ensure a systematic and methodical approach, following three key subprocesses: identification, screening, and eligibility. All database queries were constructed using reproducible search strings, the entire process can be documented transparently within the review. The identification stage involved determining all relevant synonyms, conceptual variations, and associated terms linked to the study's core keywords. Given that the focus of this research lies in the post-pandemic period, the dataset was restricted to publications from January 2020 to 27 November 2025. The search process employed advanced search techniques; Boolean operators, phrase searching, wildcards, truncation, and field code functions—to maximize accuracy and comprehensiveness. The final search string used across databases was: ("digital financial inclusion") AND ("e-wallet" OR "QR code payment" OR "QR payment" OR "QRIS" OR "DuitNow") AND ("adoption" OR "digital payment usage" OR "digital payment growth") AND ("Malaysia" OR "Indonesia"). The primary database consulted was Scopus AI, selected for its extensive collection of high-quality, peer-reviewed journals in business, management, and social sciences. Scholars identify Scopus as a core database for evidence synthesis due to its comprehensive journal coverage (Gusenbauer & Haddaway, 2020). Its interface supports efficient literature screening and documentation for academic projects. Scopus AI was chosen due to its advanced capability to generate summaries, expanded summaries, concept maps, and emerging themes, which together provide a structured overview of literature.

This string was applied across title, abstract, and keywords fields to ensure that both conceptual and empirical studies were captured. The initial search yielded 120 documents, which were then refined using Scopus AI's Summary function to identify emerging themes such as digital financial inclusion and environmental sustainability, sharia-compliant digital financial services, digital financial inclusion and legal frameworks, and culturally grounded digital financial initiatives. The Expanded Summary provided deeper insights by linking digital payment growth with consumer behaviour, regulatory environments, and technological advancements.

To strengthen conceptual clarity, the Concept Maps generated by Scopus AI was employed. The Scopus AI concept map identified four major thematic clusters which are market trends, adoption factors, QR code payments, and e-wallet usage; together with related subthemes such as fintech growth, perceived usefulness, contactless payments, and customer satisfaction. These themes informed the selection of search terms and supported the development of the study's conceptual framework. The Scopus AI scan identified four Emerging Themes consisting of environmental sustainability, Sharia-compliant digital financial services, regulatory and legal frameworks, and culturally grounded digital initiatives. These themes indicate that digital financial inclusion is increasingly linked to sustainability agendas, Islamic finance innovation, regulatory strengthening, and culturally adaptive design. These insights guided the thematic scope and conceptual framing of the study, which is illustrated in Figure 1.

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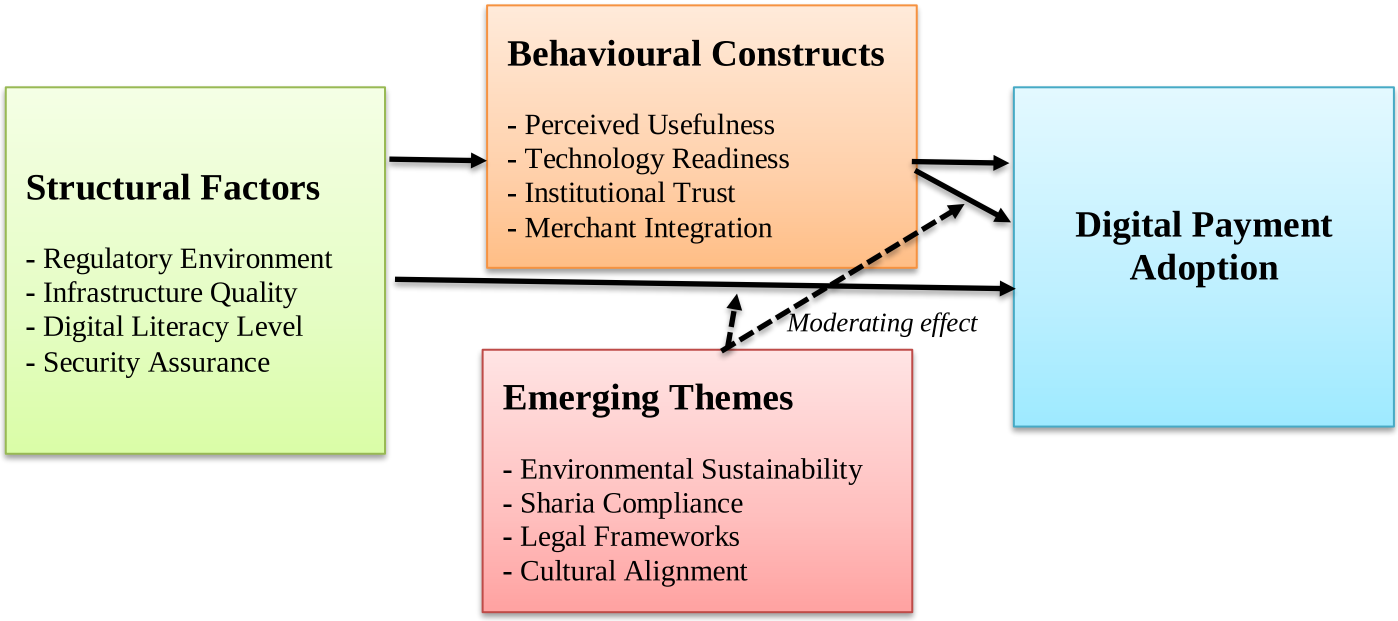

Fig. 1 Conceptual Framework of Digital Financial Inclusion and Payment Growth

RESULTS AND DISCUSSION

The findings of this review are synthesized by integrating insights from three key sources: (i) the summary and expanded summary of the literature, (ii) the Scopus AI–generated concept map, and (iii) the emerging themes identified through Scopus AI on 27 November 2025. This structured approach consolidates evidence across multiple domains while illuminating the theoretical and policy implications of digital payment growth in the contexts of Malaysia and Indonesia.

Summary and Expanded Summary

The review highlights that digital financial inclusion and the adoption of digital payment methods—particularly e-wallets and QR code payments—continue to progress in both Malaysia and Indonesia, though the drivers, challenges, and user behaviours vary significantly between the two countries. Evidence shows that digital payments are becoming increasingly embedded in daily financial activities, with microentrepreneurs, MSMEs (Bagas et al., 2025), and younger consumers (Amrullah & Purwanto, 2025) emerging as key adopters. In Indonesia, microenterprises and university-aged consumers frequently rely on QR payments due to smartphone convenience and the strong national push toward a cashless society(Agustin et al., 2025). Adoption in this context is shaped by perceived ease of use, perceived usefulness, technology readiness, facilitating conditions, and trust in the underlying technology (Agustin et al., 2025). Among MSMEs, QRIS adoption is further influenced by merchant compatibility, relative advantages, and supportive business conditions (Rettobjaan et al., 2023; Syanova & Fajar, 2024).

In Malaysia, e-wallet usage is more prominent among younger demographics, driven by perceived usefulness, convenience, and security (Jamaludin et al., 2024). Structural assurance such as security measures, clear regulations, and consumer protection plays a crucial role in shaping trust and encouraging sustained adoption (Shukri et al., 2024). Factors such as performance expectancy, price value, facilitating conditions, and social influence consistently emerge as significant predictors of behavioural intention to use e-wallets (Leong & Kwan, 2021; Muthusamy et al., 2024). Despite national efforts to promote cashless payments, adoption rates in Malaysia show fluctuations, indicating that concerns related to trust, risk, and system security continue to influence consumer behaviour (Fareed et al., 2024).

Across both countries, technological advancements, regulatory support, and smartphone penetration have accelerated digital payment growth, particularly during and after the COVID-19 pandemic (Amrullah & Purwanto, 2025; Bagas et al., 2025). However, the review also identifies persistent challenges. In Indonesia,

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limited digital infrastructure, inadequate digital knowledge, and the cultural preference for cash hinder deeper penetration of QR-based payments (Basmantra et al., 2024). In Malaysia, although infrastructure is more mature, issues related to trust and security remain barriers to widespread acceptance (Fareed et al., 2024). These patterns suggest that while technological readiness is necessary for digital financial inclusion, digital literacy, user trust, and institutional assurance ultimately determine whether consumers transition from awareness to actual usage.

As shown in Table 1, Malaysia and Indonesia exhibit distinct yet complementary patterns in digital financial inclusion and payment adoption, where Malaysia's regulator-structured ecosystem contrasts with Indonesia's fintech-driven QRIS expansion, resulting in differing adoption drivers, user profiles, and infrastructural challenges.The comparative analysis demonstrates that both Malaysia and Indonesia are progressing toward broader digital financial inclusion, yet each country continues to face distinct structural, behavioural, and ecosystem-related barriers. Bridging infrastructure gaps, improving digital and financial literacy, strengthening system security, and reinforcing regulatory safeguards remain critical to sustaining adoption and building user trust in both markets. A differentiated policy approach is essential to reflect each country's demographic characteristics, technological readiness, institutional environment, and merchant ecosystem. By aligning interventions with these contextual realities, policymakers can accelerate the development of inclusive, resilient, and sustainable digital payment ecosystems capable of supporting long-term economic transformation.

The differences in digital payment adoption between Malaysia and Indonesia are better understood when analyzed through the lenses of TAM and UTAUT. In Malaysia, key factors such as perceived usefulness, security assurance, and institutional support—central to TAM and UTAUT—drive adoption within a regulator-led ecosystem. Conversely, in Indonesia, dominant influences include facilitating conditions, merchant readiness, and perceived advantages, aligning with UTAUT's focus on enabling environments and TRI's emphasis on technological readiness. These observations are consistent with emerging themes from the Scopus AI analysis, particularly around legal frameworks and cultural adaptability, which shape how behavioural intentions are translated into actual use.

Table 1: Comparative Summary of Digital Financial Inclusion and Payment Adoption in Malaysia vs. Indonesia

Dimension	**Malaysia**	**Indonesia**
Ecosystem Model	Regulator-led ecosystem (BNM, PayNet). Unified DuitNow QR infrastructure.	Fintech-led ecosystem supported by BI. Massive QRIS adoption across sectors.
Primary Users	Youth (Gen Z, students), urban consumers, digitally literate groups.	MSMEs, microentrepreneurs, informal sector, and university-aged consumers.
Key Payment Methods	E-wallets (Touch 'n Go, GrabPay, Boost), FPX, DuitNow QR.	QRIS-based payments (GoPay, OVO, DANA, ShopeePay).
Main Adoption Drivers	Perceived usefulness, ease of use, security, structural assurance, performance expectancy, and social influence.	Smartphone convenience, perceived usefulness, facilitating conditions, trust, merchant compatibility, and relative advantages.
Behavioural Predictors of Intention	Usefulness, ease of use, security assurance, price value, social influence.	Ease of use, usefulness, technology readiness, facilitating conditions, risk perception, trust in technology.
Merchant/Business Adoption	Moderate adoption; stronger in urban SMEs; QR use steadily increasing.	Very high adoption among MSMEs and informal merchants due to QRIS standardization.
Regulatory Environment	High structural assurance; robust consumer protection and data governance.	Strong inclusion agenda; QRIS integration; ongoing improvements in cybersecurity and consumer protection.

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Infrastructure Strength	High-quality, stable digital infrastructure; gaps mainly in rural/East Malaysia.	Improving infrastructure; significant disparities outside Java; connectivity remains a challenge.
Key Challenges	Trust issues, security concerns, fluctuating e-wallet adoption, digital literacy gaps in rural areas.	Limited digital knowledge, preference for cash, infrastructure instability, varying digital literacy across demographics.
Impact of COVID-19	Accelerated e-wallet and QR adoption, especially among youth and urban consumers.	Boosted MSME adoption of QRIS and increased reliance on mobile-based payments.
Policy Priorities	Enhance structural assurance, strengthen digital literacy, build trust, expand rural inclusion.	Improve digital infrastructure, strengthen cybersecurity, enhance digital literacy, simplify UI/UX for broader adoption.
Overall Trend	High digital readiness, steady adoption, but requires deeper trust-building and rural penetration.	Rapid, mass adoption through QRIS; strong growth potential but constrained by literacy and infrastructure gaps.

Beyond structural and behavioural determinants, the emerging themes identified by Scopus AI which are environmental sustainability, Sharia-compliant digital finance, legal and regulatory safeguards, and culturally grounded digital initiatives; provide a broader lens for interpreting digital payment adoption in both countries. These themes reinforce core constructs in TAM, UTAUT, and TRI. For example, legal and cybersecurity frameworks directly strengthen structural assurance within UTAUT, while Sharia-compliant financial design enhances trust, a central construct in TAM. Culturally grounded initiatives shape social influence and perceived compatibility, explaining Indonesia's strong grassroots-driven QRIS uptake compared with Malaysia's regulatory-led adoption. Likewise, sustainability-linked digital finance aligns with performance expectancy by offering added social value. Integrating these themes clarifies why adoption trajectories differ between Malaysia and Indonesia and expands the conceptual interpretation of digital financial inclusion.

Concept Maps

Figure 2, the Scopus AI concept map generated for this study highlights four dominant thematic clusters related to digital payment adoption: market trends, factors influencing adoption, QR code payment systems, and e-wallet usage. Each cluster is connected to specific subthemes such as cashless society initiatives, fintech growth, perceived risk and usefulness, business integration, contactless payment functionality, customer satisfaction, and e-wallet adoption which collectively illustrate the breadth of determinants shaping digital payment behaviour. This mapping confirms that digital payment adoption is influenced simultaneously by technological infrastructure, user perceptions, ecosystem readiness, and broader market developments. These thematic insights guided the refinement of keywords, the structuring of the literature review, and the development of the conceptual framework.

Market Trends: Cashless Initiatives and Fintech Growth

Cashless society initiatives have played a pivotal role in accelerating digital payment diffusion in both countries. Malaysia's *Financial Sector Blueprint 2022–2026* emphasises interoperability through DuitNow QR (Bank Negara Malaysia, 2022), while Indonesia's QRIS drives mass merchant integration under the *Payment System Blueprint 2025* (Bank Indonesia, 2024). The ongoing growth of fintech firms further strengthens this shift, as fintech innovations lower barriers to entry and extend services to previously underserved groups (World Bank Group, 2023). These trends corroborate evidence that policy direction and ecosystem innovation are foundational to digital financial inclusion (UN Trade & Development, 2021).

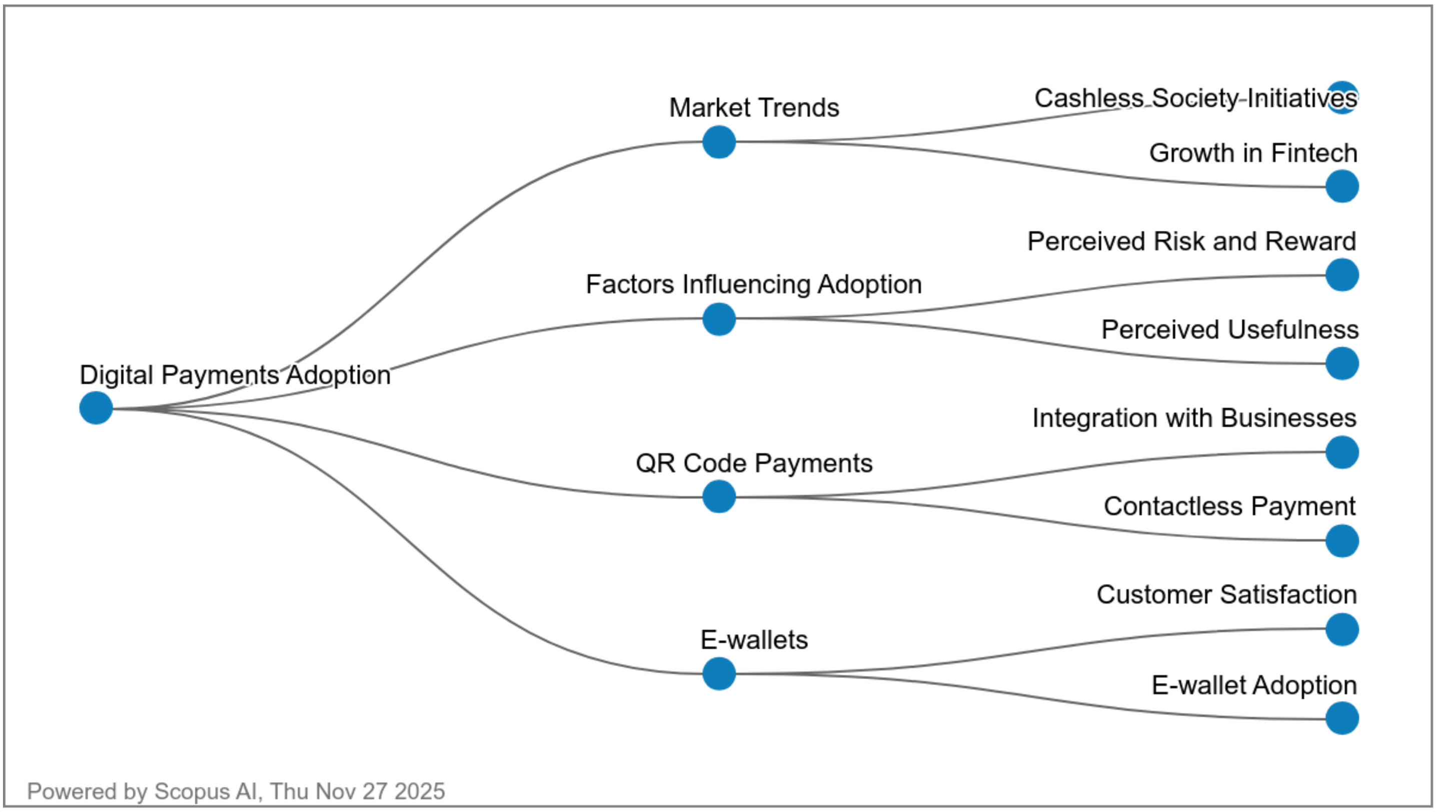

Fig. 2 Digital Payments Adoption Concept Maps

Factors Influencing Adoption: Risk, Usefulness, and Behavioural Predictors

Perceived usefulness and ease of use remain among the most influential behavioural determinants, consistent with the *Technology Acceptance Model (TAM)* (Davis et al., 1989) and *UTAUT* (Venkatesh et al., 2003). In Malaysia, younger users adopt e-wallets primarily due to convenience, usefulness, and trust in platform security (Teo et al., 2020). In Indonesia, adoption is strongly shaped by smartphone convenience, technology readiness, facilitating conditions, and perceived risk which particularly due to higher exposure to digital scams. These differences underscore that perceived risk functions as a critical inhibitor, while performance expectancy and ease of use consistently support digital payment adoption in both markets.

QR Code Payments: Merchant Integration and Contactless Transaction Growth

QR code payments have become central to digital transformation efforts due to their low cost, interoperability, and ability to scale quickly. Indonesia’s QRIS has enabled more than 30 million merchants including informal microentrepreneurs, to accept digital payments using a single unified standard (Bank Indonesia, 2024). Malaysia’s DuitNow QR has achieved similar harmonisation, improving merchant acceptance particularly in urban and semi-urban regions (Bank Negara Malaysia, 2024). The COVID-19 pandemic further accelerated contactless payment adoption as users sought hygienic alternatives to cash (OECD, 2022). This indicates that merchant compatibility, ecosystem integration, and health-related behavioural shifts all reinforce the adoption of QR-based payments.

E-wallets: Customer Satisfaction and Adoption Patterns

E-wallet adoption reflects broader shifts toward mobile lifestyle integration. Customer satisfaction has been shaped by transaction speed, ease of use, reward systems, and security. This has been shown to directly influence retention and continued usage. Malaysia’s e-wallet ecosystem is dominated by Touch ‘n Go eWallet, Boost, and GrabPay, driven largely by youth adoption and loyalty reward programmes. In Indonesia, super-app ecosystems (Gojek, Shopee, Tokopedia) underpin e-wallet proliferation, especially among MSMEs. This aligns with studies showing that perceived usefulness, social influence, and facilitating conditions are key determinants of e-wallet adoption (Rafiani et al., 2024). These themes reveal that Malaysia and Indonesia are steadily advancing toward greater digital financial inclusion, yet each country faces distinct structural, behavioural, and ecosystem-related challenges. Malaysia's ecosystem is characterised by strong regulatory assurance, high financial-sector coordination, and relatively mature infrastructure, while Indonesia's rapid adoption is fuelled by fintech innovation, QRIS standardisation, and widespread MSME participation. The findings affirm that digital payment ecosystems thrive when users perceive high usefulness, low risk, and consistent merchant availability, and when regulatory frameworks provide clear security and consumer protection structures. To sustain momentum, both countries must prioritise improved digital literacy, enhanced security features, rural infrastructure expansion, and culturally adaptable payment solutions. Aligning these strategies with the specific behavioural patterns and ecosystem conditions identified in the concept map will enable policymakers to accelerate the transition toward inclusive, resilient, and sustainable digital payment systems.

Building upon the preceding discussion, the emerging themes extend the analysis beyond traditional behavioural and infrastructural factors by highlighting the deeper socio-cultural, regulatory, and developmental forces that shape digital financial inclusion in Malaysia and Indonesia. The Scopus AI analysis identified four emerging themes that expand the conceptual boundaries of digital financial inclusion in Malaysia and Indonesia. Themes such as environmental sustainability, Sharia-compliant digital finance, legal infrastructure, and culturally tailored initiatives enhance the theoretical interpretation.

1. Digital Financial Inclusion and Environmental Sustainability- *Rising Theme*

A growing body of recent work highlights the intersection between digital financial inclusion and environmental sustainability, particularly in developing and South Asian economies. Digital finance through e-wallets, digital credit, online remittances, and mobile banking can indirectly reduce environmental impact by lowering dependence on physical cash, reducing travel for financial services, and promoting paperless transactions (World Bank Group, 2023). More advanced forms of digital financial inclusion, such as precision agriculture credit platforms and digital insurance, have been shown to reduce agricultural carbon emissions by improving efficiency and resource management (Van Schoubroeck et al., 2023). This theme complements the discussion by showing that digital payment ecosystems are not only financial instruments but also enablers of national sustainability agendas, particularly relevant for Indonesia's agriculture-heavy economy and Malaysia's renewable energy incentives.

For Malaysia and Indonesia, digital finance is increasingly integrated with sustainability initiatives, including renewable energy financing, digital micro-loans for solar adoption, and government incentives tied to sustainable practices. Such developments suggest that digital inclusion plays a dual role in expanding financial access and supporting national sustainability agendas. This theme demonstrates that digital finance contributes not only to economic inclusion but also to environmental resilience, aligning with global green transition objectives. It also opens new research avenues on how digital payments and digital credit systems can influence energy consumption and environmental behaviour.

2. Sharia-Compliant Digital Financial Services- *Rising Theme*

Sharia-compliant digital finance is rapidly emerging as a critical area of development in Malaysia and Indonesia, given their large Muslim populations and strong Islamic finance ecosystems. The integration of Islamic principles into digital platforms such as Zakat distribution apps, Waqf crowdfunding systems, Islamic digital banks, and Sharia-compliant cryptocurrencies, illustrates a shift towards inclusive digital solutions that respect religious values (Abu-husin et al., 2025). This theme highlights the importance of regulatory harmonisation to ensure that digital financial services adhere to Syariah principles while maintaining consumer protection, data security, and transparency. Blockchain technology has been proposed as a mechanism to improve auditability, trust, and Sharia-compliant verification processes (Abu-husin et al., 2025). This reinforces the role of cultural and religious trust in adoption behaviour, explaining why Sharia-aligned digital products accelerate inclusion among conservative users in both countries, aligning strongly with the TAM construct of trust. The rise of Sharia-compliant fintech suggests that cultural and religious alignment strengthens trust, adoption, and financial inclusion especially among conservative or underserved populations. This is particularly relevant in Indonesia's MSME sector and Malaysia's growing Islamic digital banking framework.

3. Digital Financial Inclusion and Legal Frameworks- *Rising Theme*

As digital financial ecosystems expand, the importance of strong legal and regulatory frameworks becomes increasingly evident. Malaysia and Indonesia face significant regulatory challenges in areas such as cybersecurity, digital identity verification, data governance, and consumer protection. Without robust legal structures, digital inclusion efforts risk undermining user trust, especially among vulnerable groups (OECD, 2022). Digital identity systems (such as Malaysia's eKYC standards and Indonesia's Digital ID initiative) are essential for enabling secure onboarding and reducing fraud (Ly et al., 2022). Equally important are cybersecurity frameworks that prevent data breaches and build long-term confidence in digital transactions (Barroso & Laborda, 2022). The emergence of this theme underscores that legal assurance is a cornerstone of sustainable digital financial inclusion, aligning with global findings that regulatory clarity boosts adoption of digital payments, mobile banking, and e-wallets (Shahen & Sharaf, 2025). Strengthening law and policy is therefore not only a compliance issue but a foundational driver of digital trust. This theme also strengthens the discussion's explanation of Malaysia's higher structural assurance and Indonesia's evolving governance, directly linking regulatory strength to UTAUT's facilitating conditions.

4. Culturally Grounded Digital Financial Initiatives- *Novel Theme*

A distinctive novel theme identified in the analysis relates to culturally grounded digital financial initiatives. This reflects a growing recognition that digital financial solutions must be tailored to cultural norms, behavioural expectations, and community practices to achieve meaningful and equitable adoption. In Malaysia, examples include Sharia-compliant digital platforms designed for Muslim communities, culturally sensitive financial literacy programs, and digital parenting initiatives that introduce safe digital financial practices to households.

Culturally aligned design strategies such as interface localisation, religiously compliant financial features, and community-based onboarding models are increasingly recognised as essential for overcoming trust barriers and ensuring inclusive adoption. This theme suggests that digital financial inclusion cannot succeed through technology alone; it must resonate with cultural identity, belief systems, and community structures. Culturally grounded design enhances acceptance and strengthens long-term user engagement (Fono et al., 2025). For example, digital security and identity governance reinforce UTAUT's structural assurance, while Sharia-compliant systems foster trust, a key construct in TAM. Culturally embedded designs also influence social norms and perceived compatibility, helping to explain Indonesia's grassroots-driven adoption in contrast to Malaysia's top-down, regulatory-led approach. This theme explains the behavioural differences between Malaysia's top-down digitalization and Indonesia's community-driven QRIS diffusion, illustrating how cultural resonance shapes social influence and adoption intention. Incorporating these themes offers a more comprehensive understanding of digital financial inclusion outcomes in both countries.

CONCLUSION

This review demonstrates that both Malaysia and Indonesia are progressing toward deeper digital financial inclusion, driven by rapid adoption of e-wallets, QR code payments, and expanding fintech ecosystems. Adoption patterns between these two countries differ due to variations in structural conditions, user behaviours, and ecosystem development. In Malaysia, high financial penetration, robust regulatory frameworks, and an integrated payment infrastructure (DuitNow QR) promotes trust-based adoption, though behavioural change remains gradual among older and rural populations. In contrast, Indonesia's fintech-driven growth via QRIS has accelerated the inclusion of MSMEs and informal merchants yet challenges such as infrastructure limitations lead to inconsistent usage. These contextual factors shape how behavioural constructs from TAM and UTAUT manifest, resulting in distinct adoption paths despite both countries using similar digital payment technologies. Emerging themes such as environmental sustainability, Sharia-compliant digital finance, legal frameworks, and culturally grounded initiatives, illustrate that digital inclusion is shaped by broader socio-economic and cultural dynamics.

The Scopus AI derived emerging themes further extend the conceptual boundaries of digital financial inclusion by highlighting its intersection with environmental sustainability, the rise of Sharia-compliant digital financial services, the centrality of legal and regulatory safeguards, and the importance of culturally grounded digital initiatives. These insights underscore that digital inclusion in both countries is not only a technological process but also a socio-cultural, institutional, and developmental phenomenon. This study is conceptual and relies solely on secondary sources, which means the proposed relationships have not been empirically validated. The literature search was limited to publications from 2020–2025 and may not capture all relevant evidence. Additionally, Scopus AI summaries and thematic mappings, while useful, may omit nuanced insights present in full-text articles. Differences in regulatory and market contexts between Malaysia and Indonesia also limit generalizability. Future studies should incorporate primary data, multi-country empirical testing, and mixed method approaches to strengthen the model's validity.

Overall, this study contributes to the theoretical and policy landscape by presenting an integrated conceptual framework linking structural determinants, behavioural constructs, and ecosystem-level factors to digital financial inclusion and payment growth. Policymakers in both countries should prioritize targeted interventions such as strengthening cybersecurity, expanding digital literacy programs, enhancing regulatory assurance, improving rural infrastructure, and contextualizing digital solutions to cultural and religious norms. Malaysia requires stronger trust-building measures, cybersecurity governance, and rural digital upskilling, consistent with the TAM or UTAUT constructs of perceived risk and facilitating conditions. Indonesia requires infrastructural support, simplified UI/UX for QRIS, and targeted literacy enhancement to improve technology readiness. Aligning interventions with behavioural constructs and emerging themes (legal assurance, cultural fit, Sharia-compliant mechanisms) ensures that policy efforts directly address the behavioural and structural drivers revealed in the comparative analysis. These important to build an inclusive, efficient, and sustainable digital financial ecosystem capable of supporting long-term economic transformation.

Future research should empirically test the proposed conceptual relationships across multiple countries to validate behavioural, structural, and ecosystem-level determinants. Comparative modelling using TAM, UTAUT, and TRI could quantify the influence of perceived risk, security assurance, cultural compatibility, and Sharia-compliant design. Mixed-method studies are needed to explore rural adoption barriers and merchant readiness, while longitudinal studies could examine whether sustainability-linked digital finance (e.g., green incentives, ESG-driven payment features) accelerates inclusion. Further investigation into digital-identity governance, cybersecurity frameworks, and cultural adaptation strategies will strengthen the understanding of digital financial inclusion in diverse socio-economic environments.

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