

## FROM CASHLESS TO CONTACTLESS: A CONCEPTUAL REVIEW OF QR PAYMENT IN MALAYSIA

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### Abstract

*The shift in payment methods in Malaysia has been very quick. Cash Payments methods have been replaced with Contactless payment methods. With this significant change, QR payments have become one of the main methods of enabling digital transactions in Malaysia. This paper aims to explore the main factors influencing the adoption of QR payments in Malaysia. It does this by explaining the current literature regarding the adoption of QR payments in Malaysia using a review and synthesis model. Broadly categorized, the author examines the technological, consumer, and market and policy dimensions of QR payment adoption literature. The author notes a number of factors which influence the adoption of QR payments and which fall within the 3 categories mentioned. In the technological dimension, readiness of the technology, perceived ease of use, and system accessibility of the QR payment technology are significant. In the consumer dimension, trust, convenience, and repetitive use influence consumer adoption of QR payments. At the market level, the author notes the influence of institutional, governmental, banking, and fintech sponsorship/ support and how this impacts the adoption of QR payments. The author attempts to describe how the identified factors influence QR payment adoption in Malaysia and confirms the importance of untested empirical research as it pertains to the adoption of QR payments in the context of a cashless payment system.*

**Keywords:** QR payment; Malaysia; digital payment; DuitNow QR; fintech; e-wallets; interoperability

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## INTRODUCTION

The transformation of financial transactions in Malaysia has shifted from cash transactions to digital transactions and to contactless payment systems consisting of Quick Response (QR) payment systems. QR payments are an interface for cashless transactions and are easily adopted due to the simplicity of contactless transactions and the prevalence of smartphones and mobile internet. QR payments are ideal

for use in closed financial transactions and possess the attributes of a secure and convenient interface at the point of sale (Ganie et al., 2025; Sehat et al., 2024). The desire to access services in a secure and contactless manner has been heightened by the COVID pandemic, which rapidly facilitated the migration to digital payment services and altered users' expectations (Balakrishnan & Eesan, 2024; Ganie et al., 2025).

The advancement of cashless transactions in Malaysia has been propelled by the rapid development of QR payment platforms, including Touch'n Go, GrabPay, Boost, and the standard DuitNow QR, with QR cashless transactions in Malaysia increasing from 25% in 2021 to 61% in 2022 (Ganie et al., 2025; Sehat et al., 2024). For retailers, the systems provide reduced costs and insights, enabling quick and secure payment access (Ganie et al., 2025; M. A. Nazri et al., 2023). Transaction costs decrease, and secure, swift payments encourage consumers to utilise the systems even more. Digital Transformation initiatives from the government, such as the MyDigital framework and programmes like e-Tunai Rakyat, promote the spread of the Digital Economy and the use of contactless payments (Balakrishnan & Eesan, 2024; Ganie et al., 2025; Rasyidah et al., 2023).

The impact that the perceived utility of QR payments, their perceived ease of use, the ease of securing the payments, and the ease of trusting their payment systems, along with the ease of social influence QR payments integrate within a social setting, have on the adoption of QR payments is shaped by security and trust (Ganie et al., 2025; M. Nazri et al., 2024; Rasyidah et al., 2023; Sehat et al., 2024). Certainly, trust is a fundamental component of the mediating family of QR payment adoption and is reliant on the security and privacy aspects aimed at QR payment adoption, as trust formation is negatively influenced by security and privacy losses, which in turn affects QR payment system adoption (Jahangir & Segumpan, 2025; Sehat et al., 2024). Supporting the rapid adoption seen in urban settings, the digital illiteracy, insufficient infrastructure, and limited awareness prevalent in small and rural areas pose challenges for rural and small business populations (Kassim et al., 2024; M. A. Nazri et al., 2023). For Malaysia to effectively complete the transition from cash to cashless systems, understanding these factors that determine the adoption of cashless systems is essential for facilitating and supporting digital payment ecosystems, thereby sustaining and inclusively integrating digitally inclusive payment systems (Balakrishnan & Eesan, 2024; Ganie et al., 2025; Jahangir & Segumpan, 2025; Rasyidah et al., 2023).

### **Evolution Of Malaysia's Cashless Ecosystem**

Over the decades, Malaysia's transition from cash-based to cashless and now to contactless ecosystems has been the effect of rapid technological advances, regulatory and cultural shifts as well. The changes started in the early 2000s, when government policies like Bank Negara Malaysia's Financial Sector Blueprint began to support the adoption of digital financial services and the country's shift from cash. The evolution begin with the initial adoption of electronic payments with the introduction of debit cards, Financial Process Exchange (FPX), and online banking. The changes in strategy encouraged the use of credit and debit cards and promoted the use of cards as electronic payment methods (Hashim et al., 2023; Xiao et al., 2023).

The rapid adoption of smartphones and internet connectivity has aided mobile banking and e-wallets, and has led to the creation of industry leaders like Touch 'n Go, Boost and GrabPay to emerge in the 2010s (Hashim et al., 2023; Wardina et al., 2024). In 2019, Malaysia's smartphone penetration had surpassed 90% (Hashim et al., 2023). By 2050, the government aims to achieve a highly cashless society and the vision to have a cashless society was accompanied by the introduction of DuitNow QR to stimulate interoperability and the rapid adoption of cashless transactions by merchants (Ganie et al., 2025; Hashim et al., 2023).

An important turning point was witnessed during the pandemic in the years of 2020-2021 when concerns for health were in the forefront and safety prompted the use of contactless and cashless payments. Programs such as the e-Tunai Rakyat and e-Penjaja provided incentives for the use of e-wallets and the adoption of QR payments by millions of users in Malaysia (Ganie et al., 2025; Xiao et al., 2023). In Malaysia, by the year 2022, 61% of the populace was using QR payments after the 25% adoption two years prior, indicating a change in behaviour towards the use of digital contactless payments (Ganie et al., 2025).

In recent years, QR payment solutions have moved out of major metropolitan areas as the state-sponsored Sarawak S Pay Global and Cross Border QR Payment Integrations (Ganie et al., 2025). The adoption of QR payments largely depends on its perceived utility, ease of use, and most importantly, trust in the security of the system; these are fundamental for both consumers and SMEs (Ganie et al., 2025; Jahangir & Segumpan, 2025). However, some remain reluctant as the digital literacy gap, infrastructure in rural areas, and the absence of continuous information campaigns stand out as the most important factors (Balakrishnan & Eesan, 2024; Ganie et al., 2025; Xiao et al., 2023).

Finally, QR payments in Malaysia's cashless ecosystem have moved from the basic electronic payments system to sophisticated contactless and interoperable payments. The development of QR payments in Malaysia has led to the transformation of a cashless ecosystem to one with highly interoperable, contactless and QR payments systems.

### **The Transformation Of Malaysia's Digital Payments Infrastructure**

Since 2017, Touch 'n Go eWallet, GrabPay, Boost, and MAE among others, have dominated Malaysia's fintech and e-wallets industry, and this came after the 2017 spike in digital payment adoption fuelled by innovative technologies, governmental policies, and consumer behaviour. Malaysia has since then, undergone a digital payment revolution.

The Alipay supported Touch 'n Go eWallet is the industry leader and is the most versatile platform as it offers features for public transport, retail, and bill payments (Koh et al., 2024; Radzi et al., 2024; Yeh et al., 2024). Utilising its food and transport ecosystem, GrabPay offers seamless payment options, and loyalty rewards (Koh et al., 2024; Radzi et al., 2024; Yeh et al., 2024). Axiata backed Boost is one of the most versatile platforms with cashback offers and integrations with a large number of merchants including UnionPay QR (Koh et al., 2024; Radzi et al., 2024; Yeh et al., 2024). MAE operates on a bank-led model given its ownership by MayBank and among all digital wallets, it is the most popular

among youth (Koh et al., 2024; Radzi et al., 2024).

Within a year after 2017, the industry had over 40 competitors and as a result, there was fierce competition focused on user convenience, and service costs (Kamis et al., 2023; Koh et al., 2024). Touch 'n Go and MAE have the most users among all competitors with Boost and GrabPay being close competitors with large market share (Koh et al., 2024; Yeh et al., 2024). Providers compete on user experience, rewards, security, and seamless integration, and these result in rapid pushed innovations (Blankenette et al., 2024; Koh et al., 2024; Radzi et al., 2024; Yeh et al., 2024).

The e-wallet trend among the government-sponsored e-Tunai Rakyat and ePenjana programmes, and during the pandemic, was particularly correlated with the urban populace and members of the younger sector, Gen Z, and Millennials (Aw et al., 2023; Blankenette et al., 2024; Yeh et al., 2024). Adoption of these digital payment systems is attributed to the e-wallet systems being tailored to the users' perception of usefulness, convenience, resource availability, and the trust the consumers had in the e-wallet and systems' developmental potential must be coupled with the key variables of security, trust, and digital payment systems (Yeh et al., 2024)(Gan et al., 2025)(Blankenette et al., 2024)(Aw et al., 2023).

### **E-Wallet Market Share and Consumer Behaviour in Malaysia**

Touch 'n Go eWallet maintains the largest share of the market for e-wallet users in Malaysia. Reports indicate that Touch 'n Go dominates the market with usage between 41% and 51%. GrabPay and Boost e-wallet users represent approximately 37% and 22% respectively of the e-wallet market (Koh et al., 2024; Yeh et al., 2024). MAE e-wallet also holds a strong market position, ranking either second or third in e-wallet standings, with a MAE usage of 28%, and is well-liked by the young and banked demographic (Koh et al., 2024; Samsudin & Kasiran, 2023).

User preferences arise from a variety of factors including the fulfilment of user needs, simple usability, and comprehensive service points. With enhanced brand visibility and integration with transportation services, Touch 'n Go is particularly favoured. GrabPay users are predominantly those who utilise Grab for ride-hailing or food delivery services, while Boost users are more attracted by cashback offers and a greater range of retailers. MAE appeals to banking service users due to its integration with banking services (Koh et al., 2024; Samsudin & Kasiran, 2023; Yeh et al., 2024).

Users value quick payments, system security, and spending controls. They cite time savings and convenience as reasons for continued usage, with satisfaction levels remaining high. Users' preferences are influenced by age, lifestyle, and financial behaviours. Younger and urban customers are more likely to adopt and frequently use e-wallets (Blankenette et al., 2024; Koh et al., 2024; Yeh et al., 2024).

Overall, Touch 'n Go is the dominant player among Malaysian e-wallets, followed in rank by MAE, GrabPay, and Boost. Users' preferences lean towards convenience, integration, and usefulness (Blankenette et al., 2024; Koh et al., 2024; Samsudin & Kasiran, 2023; Yeh et al., 2024).

## **THEMATIC REVIEW: FACTORS INFLUENCING QR PAYMENT ADOPTION IN MALAYSIA**

### **Thematic Review Approach**

This article presents the synthesis of the previously existing literature on the adoption of QR payments through narrative and thematic reviews. The relevant literature was obtained via keyword searches through peer-reviewed journals. Thematic reviews enabled the author to the some repeating themes and constructs and composition of the integrative conceptual diagram. The author did not collect primary data and as such this paper remains conceptual. The diagram that the author proposes is intended to be validated empirically in future research.

### **Factors Influencing Qr Payment Adoption In Malaysia**

Recent thematic research on QR payments in Malaysia indicates that adoption results from an entrenchment of determinations rather than a single one. QR transactions, as a contactless payment, signify a cashless payment system and a digitally enabled payment ecosystem, including mobile banking, e-wallet, etc. (Jahangir & Segumpan, 2025; Sehat et al., 2024; Wardina et al., 2024). Adoption of QR and mobile payments in Malaysia contain an intersection of studies that focus on technological readiness, user-related factors, and institutional and market forces as it reflects mobile and contactless payment reviews in advanced and emerging economies (Irianto & Chanvarasuth, 2025; Sehat et al., 2024; Valencia-Arias et al., 2025). Components of technology include attributes of the system that users perceive as useful, easy to use, and convenient and secure to underpin system adoption, as analyzed in TAM and UTAUT2 studies of QR and digital payments (Jahangir & Segumpan, 2025; Linh & Huyen, 2025; Rasyidah et al., 2023; Sehat et al., 2024). Users are observed to experience perceived risk and trust deficit when a system is used, which are hedonic, habitual and socially influenced, resulting in behavioral engagement of system use. This is especially true of specific users such as Malaysian Muslim millennials and Gen Z (Al-Qudah et al., 2024; Rasyidah et al., 2023; Sehat et al., 2024). When it comes to the outer layer, institutional and market drivers are comprised of elements like government incentives, regulatory frameworks, digital infrastructure, and the financial sector's competitive dynamics. Initiatives in Malaysia, such as e-Tunai Rakyat and the Malaysia Digital Economy Blueprint, along with QR solution banks, exemplify the ways policy support and financial institutions shape the QR payments ecosystem (Jahangir & Segumpan, 2025; Mada, 2025; Wardina et al., 2024). Digital and contactless payments comparative and regional studies reinforce the importance of regulations, cybersecurity, and financial inclusion in boosting confidence and trust in QR responsive frameworks in emerging economies (Linh & Huyen, 2025; Mada, 2025; Valencia-Arias et al., 2025). It is for this reason that the QR payments adoption in the Malaysia literature is thematically structured around three interlinked elements — technological, consumer, and institutional and market factors — to capture the extent of the collective determinants in driving the journey from mere intention to the

extensive and routine use of QR payments (Jahangir & Segumpan, 2025; Sehat et al., 2024; Wardina et al., 2024).

### **Technological Factors**

Technology shapes QR payment adoption in Malaysia in terms of systems' specifics described in the Technology Acceptance Model and related theories. Among Malaysian consumers, users of mobile payments, and retail SMEs, QR payment perceived usefulness as effortless, fast and efficient transaction management has been a robust technological driver of intention and actual use (Balakrishnan & Gan, 2023; Ganie et al., 2025; Jahangir & Segumpan, 2025; Tian & Chan, 2024). Users of mobile banking and digital banking ecosystems enjoy QR payment enhanced usefulness through real-time transaction updates, seamless bill payments, and financial service cross-selling and integrated widespread utilization among Malaysian smartphone users (Tian & Chan, 2024; Wardina et al., 2024). Most straightforward mobile banking use cases and transaction QR code payment facilities together most likely drive perceived usefulness and therefore intended adoption. Within banks and payment service providers, financial products and their QR code payment facilities for merchants are likely to adopt more accessible mobile banking services through perceived usefulness as a drive to intended adoption. Unquestionably, perceived ease of use as a technological driver is one of the most important of the factors driving seamless adoption for consumers and merchants. Also, offering a relatively simple system to use, scanning a QR code, and a few steps are the most influential factors driving intended use and, in some of the models, also driving perceived usefulness (Ganie et al., 2025; Jahangir & Segumpan, 2025; Tian & Chan, 2024). Yet, among Malaysian millennials, ease of use is sometimes not as influential. That suggests that in other technological factors, such as performance or system features, the influence of lack of ease becomes more dominant, (Balakrishnan & Gan, 2023; Rasyidah et al., 2023; Tian & Chan, 2024).

The importance of the designers of the technology related to the mobile payment systems must include the design of the systems' perceived security features, including encryption, authentication, secure ecosystems, and so on, as these features help build the users' behavioral intentions to utilize the payment systems. Perceptive security features of mobile payment systems help build the trust of users, and that trust helps secure ongoing usage of mobile payment systems within Malaysian users and SMEs (Jahangir & Segumpan, 2025; Tan et al., 2024). User trust and mobile payment mobile systems and the SMEs that have to process secure financial transactions to keep the mobile payment systems security features.

The features related to the systems in the TAM that go beyond the mobile payment systems include perceived reliability and availability of the systems and how quickly the transactions occur. Attitudes toward QR payment systems are positively influenced by how fast transactions occur and how at low cost the QR payment systems can be utilized as an alternative to payment systems that utilize cash or credit cards (Asmara et al., 2023; Yamin & Abdalatif, 2024). There has to be reliable and uninterrupted networks and services, that Malaysian customers expect when they are using the QR payment systems

(Arwanto et al., 2025; Ganie et al., 2025; Irianto & Chanvarasuth, 2025). The design of QR payment systems in Malaysia must include not only the QR payment systems' design, but also the network and payment designs that are under the QR payment systems.

### **Consumers Factors**

The factors affecting Malaysian consumers adopting QR (Quick Response) payment are technology-related, psychosocial, and brand-related. The most prevalent technology-related factor is from the Technology Acceptance Model and the UTAUT framework. It suggests that the performance expectancy (the extent to which QR payment is perceived as beneficial, rewarding, and productive) is positively correlated to the adoption of QR mobile payments and QR based e-wallets among the Malaysian consumers and the Muslim millennials (Balakrishnan & Gan, 2023; Ganie et al., 2025; Irianto & Chanvarasuth, 2025; Rasyidah et al., 2023). It is easier to use the QR based payment system and the less effort the consumer have to spend the more likely they will adopt to use QR payment systems, although some research suggested that this is less true among the younger and more tech-savvy cohort (Ganie et al., 2025; Hamzah et al., 2023; Irianto & Chanvarasuth, 2025). The more perceived usefulness of the QR payment system, the more positive attitudes and intentions toward the QR mobile payment systems, especially when it is coupled with rapid availability of the systems and super-fast transactions (Ganie et al., 2025; Rafi et al., 2024; Yamin & Abdalatif, 2024).

Consumer perceptions relating to risk and security are also important factors to consider. The level of perceived security and trust in banks and service providers' QR payment systems impacts behavioural intention. The trust in QR systems also mediates the perceived fraud and reliability and usefulness and ease of use impacts of the adoption of QR payments (Ganie et al., 2025; Irianto & Chanvarasuth, 2025; Jahangir & Segumpan, 2025). In contrast, the greater risk perceptions, the greater the risk of loss. However, there are some Malaysian Muslim millennials who do not perceive QR payments as being too risky, which helps with adoption (Balakrishnan & Gan, 2023; Rasyidah et al., 2023).

Motivational and experiential factors also help explain the uptake of QR payments. Hedonic motivation, which refers to the enjoyment, fun, and the engagement with QR payments, particularly in younger people, has a positive effect on the intention to use QR payments. However, in the presence of strong brands, over reliance on "fun" becomes less impactful (Hamzah et al., 2023; Rasyidah et al., 2023). Intrinsic motivation and optimism about technology readiness also positively impact the intention to go cashless (Balakrishnan & Gan, 2023). The social and normative influences are somewhat contradictory. Subjective norms and social influences drive attitudes and intentions of use, but with Malaysian millennials, social groups do not seem to be important, which suggests a more individualistic approach for this group (Hamzah et al., 2023; Rasyidah et al., 2023; Yamin & Abdalatif, 2024).

In Malaysia's QR e-wallet market, certain brand attributes such as brand image, brand awareness, perceived quality, and perceived value stand out. A positive brand image, alongside high brand awareness, increases perceived value and usage intention, while also mediating the effect of perceived quality. This suggests that for consumers to adopt QR payments, trust in prominent financial or e-wallet brands may be as critical as the functionality offered (Hamzah et al., 2023; Irianto & Chanvarasuth, 2025; Ramli et al., 2023).

### **Market and Policy Factors**

The market and policy dimensions influence the adoption of QR payments in Malaysia by shaping the ecosystem in which consumers, banks, and merchants interact. On the policy side, Malaysia's aim for a cashless society and a digital economy, including government initiatives for e-wallets and QR payments, provides a legal endorsement and strategic focus for the legitimization of digital payments as a priority for the nation, akin to how QR policies facilitate cashless transitions in other developing economies (Asrihapsari et al., 2025; Ganie et al., 2025; Hashim et al., 2023; Septiningrum et al., 2025). National blueprints, e-Tunai style incentives, and the supporting regulatory environment for fintech entrepreneurship reduce the apprehension toward investing in new payment systems and signal a digital finance commitment to SMEs and consumers, thereby increasing the value of QR payments (Asrihapsari et al., 2025; Ganie et al., 2025; Jahangir & Segumpan, 2025). Regulatory policy and oversight by the central bank influence adoption by establishing a set of standards, security, and interoperability, which global studies state are integral to the scaling of QR systems and the creation of a stable and safe use environment (Asrihapsari et al., 2025; Ogunjide et al., 2025).

From the market perspective, industry structure and rivalry in Malaysia's digital banking and e-wallet ecosystem are relevant. Maybank and CIMB QR payment market domination, especially mobile banking-based QR usage, positions them as industry leaders. Their large customer bases, brand trust, and comprehensive ecosystem (i.e. payment, banking, and super apps) foster QR adoption and usage confidence among digital consumers for QR as a mainstream payment method (Ramli et al., 2023; Wardina et al., 2024). Also, the brand disposition and promotional rewards strategies employed by providers during the preliminary competition stage for QR-code e-wallets remains unsophisticated (Aprianty & Permana, 2025; Ramli et al., 2023). Yet, market segmentation presents non-uniform adoption and usage. Urban areas and younger, better educated demographics convey significant usage and adoption. In contrast, rural areas and micro, small and medium enterprises (MSMEs) experience digital literacy, network, and infrastructure constraints, namely developing economy ubiquitous challenges and QR-based MSME payment identified constraints (Arwanto et al., 2025; Ganie et al., 2025; Sathish & Vidya, 2025; Usman et al., 2025).

These conditions within the market and the policies intertwine: the government's visions of integrating and digitizing finance are highly reliant on banks, fintech's, and merchants expanding points of QR acceptance, improving soft and hardware, and providing awareness and training programs to mitigate the securitization and knowledge gap concerns. Where policies, infrastructure, and market competition are aligned, the likelihood increases of QR payments transitioning from niche to habitual in Malaysia's evolving digital ecosystem (Aprianty & Permana, 2025; Ganie et al., 2025; Jahangir & Segumpan, 2025; Wardina et al., 2024).

## **SYNTHESIS AND CONCEPTUAL INSIGHTS**

### **Synthesis and Conceptual Insights**

Technological readiness, in the context of Malaysia's QR payment ecosystem, can be described as the smartphone penetration and mobile internet availability, together with QR code payment functionalities provided by Malaysia's main banks and e-wallets. These features encourage immediate, end-to-end encrypted payments, making payment QR systems even more appealing for SMEs (Jahangir & Segumpan, 2025; Ojo et al., 2023; Wardina et al., 2024). Empirical analyses reveal that the perceived

usefulness, ease of use, and security of the payment system, remain the main technological gaps in the intention and use of QR payments. This suggests that the availability of payment QR systems in Malaysia should be complemented by reliable, user-friendly, and secure systems to sustain user adoption (Balakrishnan & Eesan, 2024; Ganie et al., 2025; Jahangir & Segumpan, 2025). Nonetheless, within the context of mobile payments and the Malaysia contactless payment system, technological availability, without the user concerns and systematic barriers being addressed, itself does not help in closing the intention-use gap (Ganie et al., 2025; Ojo et al., 2023).

The adoption of QR payments by consumers illustrates the balance individuals strike between trust, security, convenience, habit, and the overall friction of the payment method. In the context of mobile and QR payments in Malaysia, studies applying the TAM and comparable frameworks, consistently show that perceived usefulness, and perceived ease of use, predict behavioral intention and actual use. In contrast, trust and perceived security value confidence in the use of these systems for everyday transactions (Ganie et al., 2025; Jahangir & Segumpan, 2025; Tian & Chan, 2024). Studies in Malaysia show that after users acclimatize themselves, the adoption of digital and contactless payments tends to be influenced more by habit and lifestyle than by any particular functionality. This suggests that frequent use of contactless payments reduces the associated friction, making payments feel more routine (Blankenette et al., 2024; Lasi et al., 2025). On the other hand, unjustified fears, insufficient knowledge about the technologies, and the refusal to use actual systems remain present and well grounded. Even with systems that offer advanced technologies, fears of privacy, fraudulent use of the payment systems, and misuse of personal data will remain present and will prevent the adoption of more advanced payment systems (Balakrishnan & Eesan, 2024; Irianto & Chanvarasuth, 2025).

From an institutional and market angle, the adoption of QR payments is embedded in the broader ecosystem, which includes facets of government policy, regulations, and strategies within industries. Policies promoting a cashless society, campaigns for financial literacy and cyber security, the regulation of QR standards, and the establishment of QR infrastructure all foster trust, interoperability, and inclusion, accelerating adoption beyond the early user stage (Balakrishnan & Eesan, 2024; Jahangir & Segumpan, 2025; Ojo et al., 2023). Banks, fintech companies, and merchants support these efforts by integrating QR payments into their mobile banking systems and loyalty programs, onboarding large numbers of merchants, and increasing the use of incentives that improve the perceived strategic value, particularly for small and medium enterprises (SMEs) and retail merchants (Ganie et al., 2025; Jahangir & Segumpan, 2025; Ojo et al., 2023).

From a conceptual perspective, the Malaysian experience represents the adoption of QR payment systems within the ecosystem of systems. It is particularly captured in the interaction of technology, consumers, and institutions as opposed to a technology-driven paradigm. It is the ready availability of the technology that makes QR use a possibility, the attitudes and behavior of consumers that determine whether the possibility translates to continuous adoption, and the various market and policy initiatives that create a space that legitimizes, safeguards, and progressively increases the use of contactless payments (Balakrishnan & Eesan, 2024; Ganie et al., 2025; Jahangir & Segumpan, 2025). When Malaysia moves further along the continuum towards a cashless society, this perspective will be useful

in examining how the various dimensions evolve simultaneously, in as the existing analytic frameworks are lacking.

### Conceptual Diagram

Below is the proposed conceptual diagram, depicting the intersection of technological readiness, consumer behaviour, and the market or policy supportive environment, influencing the adoption of QR payments in Malaysia. The diagram is a conceptual illustration and not meant to function as a causal or empirical model. It aims to capture the interaction of the three dimensions and not describe them in isolation, reinforcing that the adoption of QR payments is a multi-faceted and contextually specific issue.

From this synthesis, it is evident that the adoption of QR payments in Malaysia encompasses far more than a singular explanation. Rather, it is a function of the intersection of technological factors, the perceptions and behaviours of the user, and the supporting frameworks of institutions and policies. This conceptual framing, therefore, delineates and establishes a pathway for empirical and policy-based research in the domain of digital payments, especially in developing and emerging economies.

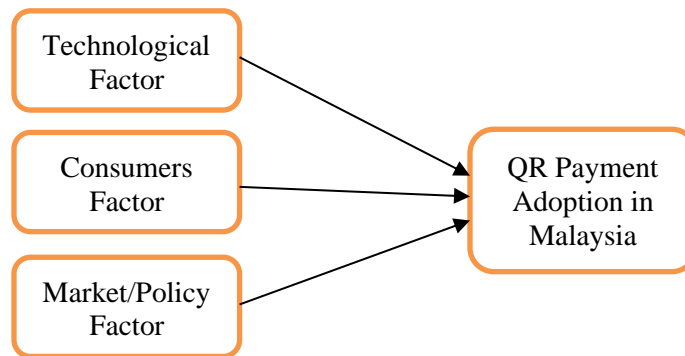


Figure 1.1 Conceptual Diagram

### CONCLUSIONS

In conclusion, the review suggests that the adoption of QR payments in Malaysia is best viewed as an ecosystem in which the technological readiness and the behavior of consumers, as well as the supporting market and policy, act as interdependent drivers of adoption, rather than as individual factors. The adoption of QR payments are associated with the perceived usefulness, the perceived ease of use, and most importantly the perceived security which emphasizes the need for QR payment systems to be secure and easy to use. The most significant of these factors are trust and perceived risk, while

the most significant component of system adoption is the payment systems and users' lifestyles. These factors indicate that in the QR payment ecosystem, the perceived technical attributes of the system will be less important than the users' behavioral acceptance and lifestyle compatibility, after the system acceptance threshold is attained. Malaysian government initiatives, such as interoperability and cybersecurity, along with the international QR payment system, have eased the transition to a cashless society. However, the adoption of QR payment systems is most effective with industry and government partnerships to develop training, onboarding, awareness, and especially incentive programs for users with minimal resources and for micro and small enterprises. To ensure developing countries have a comprehensive QR payment ecosystem, the framework should address consumer behavior, technology systems, and public sector governance, especially as most countries in the world turn to cashless and eventually to contactless payment systems.

### **CONFLICT OF INTEREST**

The authors declare no conflicts of interest.

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### **AUTHOR CONTRIBUTIONS STATEMENT**

Not applicable.

### **AVAILABILITY OF DATA AND MATERIALS**

Not applicable.

### **ETHICS STATEMENT**

Not applicable.

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