

Understanding SMEs' Preference for QRIS: Positioning Indonesian Fintech in the Global Financial Ecosystem.

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Abstract

This research responds to the growing shift among Indonesian SMEs from cash-based to cashless transactions, with QRIS (Quick Response Code Indonesian Standard) emerging as the most preferred digital payment system. The primary objective is to explore the factors influencing SMEs' preference for QRIS. A quantitative research design was employed, involving 110 SMEs from across the country who participated in the BRI UMKM EXPO(RT) 2025. Data were collected using 20 validated research statements representing four independent variables, namely: Security (X_1), Speed (X_2), Ease of Use (X_3), and Business Impact (X_4); and one dependent variable, Payment Preference (Y). Using Structural Equation Modelling with Partial Least Squares (SEM-PLS), the analysis revealed that all independent variables significantly influence payment preference. These findings enhance the understanding of QRIS's positioning within Indonesia's digital financial landscape. Additionally, the growing international acceptance of QRIS in at least nine countries by early 2025 underscores Indonesia's emerging role in the global fintech ecosystem. Theoretically, this research extends the Technology Acceptance Model (TAM) by applying it to the specific context of QRIS adoption among SMEs in Indonesia, offering valuable insights into the dynamics of cashless payment system adoption.

Keywords: QRIS; Technology Acceptance Model; FinTech; Cashless; SMEs.

Introduction

The Quick Response Code Indonesian Standard (QRIS) represents a pioneering initiative that integrates various QR code-based payment systems into a single, unified national standard (Nisa & Adinugraha, 2024; Bimantara & Nugraha, 2025). More than just a milestone in Indonesia's fintech development, QRIS is garnering increasing global attention, eliciting both recognition and scrutiny from international stakeholders (Prawitasari et al., 2024), including major economies such as the United States. The rapid evolution of digital payment technologies has transformed global financial transactions, promoted financial inclusion and enhanced economic efficiency.

This research aims to investigate the key factors driving SMEs in Indonesia to adopt QRIS as a preferred cashless and digital payment solution. While previous research has predominantly examined QRIS from the consumer perspective, empirical studies exploring its adoption by SMEs remain scarce. This research seeks to address this gap by offering insights into SMEs' motivations and decision-making processes regarding QRIS adoption.

To enhance regional financial integration, central banks from five ASEAN countries, Bank Indonesia (BI), Bank Negara Malaysia (BNM), Bangko Sentral ng Pilipinas (BSP), the Monetary Authority of Singapore (MAS), and the Bank of Thailand (BOT) have initiated a collaborative agreement to strengthen cross-border payment connectivity. As a result, QRIS has evolved into a cross-border payment system known as "QRIS Antarneegara" and is now

operational (Raharjo, 2023; Metri, 2024) in several countries, including Thailand (Maharani, 2023), Malaysia (Putit & Sahudin, 2023; Aryowiloto et al., 2024), and Singapore (Santi & Chalid, 2024). Additional countries such as the Philippines, Vietnam, Laos, Brunei Darussalam, Japan, and South Korea are also exploring the adoption of this system (Aryowiloto et al., 2024). This regional cooperation signifies a major milestone in promoting seamless and efficient cross-border transactions within Asia (Sonjaya et al., 2025). With QRIS currently accepted in nine countries and poised for broader international implementation, examining its adoption from the perspective of SMEs is both timely and relevant. This research aims to contribute to the growing body of literature on how Indonesian financial technology innovations - such as QRIS - are increasingly influencing the global payment ecosystem.

The Brief History of QRIS

Launched on 17 August 2019 on Indonesia's Independence Day (Sari & Adinugraha, 2021), QRIS marked a strategic milestone within the country's digital economy acceleration agenda (Warjiyo, 2023). Initiated by Bank Indonesia in collaboration with the Indonesian Payment System Association (ASPI), QRIS was developed to unify a previously fragmented landscape of QR code-based payment platforms operated by various digital wallets and banking institutions (Garten, 2025). The underlying QR code technology was first invented in 1994 by Masahiro Hara of the Japanese company Denso Wave (de Seta, 2023). By consolidating these disparate systems under a single national standard, QRIS aims to improve interoperability, enhance financial inclusion, and increase the efficiency of transactions across both urban and rural communities in Indonesia (Rarawahyuni et al., 2025).

The rapid growth of the technology sector has significantly contributed to society's increased familiarity with digital financial transactions (Gomber & Siering, 2017), particularly through the integration of Financial Technology (Fintech) in payment gateway systems. Even before Fintech reached mainstream adoption, the expansion of e-commerce highlighted an urgent need for fast, secure, and convenient payment solutions (Cumming et al., 2023). This demand has been a driving force behind the ongoing evolution of digital financial services (Nichkassova & Shmarlouskaya, 2020). Among the most notable advantages of digital wallets are their practicality, convenience, and security. Transactions can be completed in just a few steps, and digital receipts are automatically archived in users' transaction histories, providing both transparency and ease of record-keeping (Wardhani, 2024).

In recent years in Indonesia, various digital wallet platforms have become increasingly popular among consumers. The government has undertaken several strategic initiatives to accelerate the adoption of digital payment systems and encourage a shift toward a cashless economy (Soejachmoen, 2016; Hendrawan et al., 2023). One such initiative is the *Gerakan Nasional Non-Tunai* (GNNT), launched in 2014 by Bank Indonesia. This movement aims to reduce reliance on physical currency by promoting digital transactions, thereby enhancing economic efficiency, transparency, and security. GNNT particularly targets the banking and business sectors, encouraging a broader societal shift toward non-cash payments. The initiative is expected to play a key role in supporting Indonesia's broader economic transformation.

The underlying philosophy of QRIS centres around simplicity, inclusivity, and national sovereignty in digital finance (Raharjo, 2023). By creating a universal QR code standard, Indonesia sought to democratize access to digital transactions, especially for SMEs that dominate the country's economy. QRIS embodies the principle of "one merchant, one QR code," which eliminates confusion and barriers caused by competing digital payment platforms.

Philosophically, QRIS reflects an effort to reclaim control over the national payment ecosystem in an era where global payment giants dominate many markets (Prawitasari et al., 2024).

SMEs, as critical pillars of Indonesia's economy, are central to this transformation (Ssenyonga, 2021; Utama et al., 2024). SMEs contribute significantly to national GDP and play a vital role in employment generation and grassroots economic activity (Pulka & Gawuna, 2022). Recognizing the importance of SMEs, PT Bank Rakyat Indonesia (Persero) Tbk (BRI) has emerged as a leading financial institution dedicated to their development. In addition to offering conventional banking services, BRI serves as a strategic partner by providing financial access, competitive lending rates, business mentoring, and programs aimed at international market expansion. One of BRI's flagship initiatives is the BRI UMKM EXPO(RT) 2025, a platform designed to support SMEs in building global networks and enhancing international competitiveness (PT. Bank Rakyat Indonesia, 2025). This research aims to explore whether SMEs' preferences for choosing QRIS align with the original features and objectives envisioned by its founders.

Why do people prefer QRIS over MasterCard and VISA?

QRIS has surprisingly emerged as the most favoured digital payment system in Indonesia (Badrawani, 2024), and is now being adopted by nine other countries as an alternative to global giants like MasterCard and VISA. While MasterCard and VISA continue to dominate international credit and debit card transactions, QRIS is gaining recognition as a cost-effective and inclusive solution, particularly aligned with the needs of emerging economies (Sefrina, 2024). A key advantage of QRIS is its lower merchant fees, which are significantly more affordable than those of traditional credit card networks (Dos Santos & Kvangraven, 2017; Rafferty & Fajar, 2022), an especially attractive feature for Small and Medium Enterprises (SMEs). In addition, QRIS eliminates the need for expensive payment infrastructure, such as point-of-sale (POS) terminals. It requires only a smartphone and a printed QR code, dramatically reducing entry barriers for small-scale vendors and enhancing access to the digital economy (Sriekaningsih, 2020).

The real-time settlement capability of QRIS, which enables instant transfers directly to bank accounts or digital wallets, further enhances operational efficiency. Additionally, QRIS promotes financial inclusion by allowing individuals without access to formal banking services or physical bank cards to engage in the digital economy (Lannquist & Tan, 2023). Its design is particularly beneficial in rural or underserved regions, where traditional banking infrastructure is limited (Yuko et al., 2025).

Furthermore, the philosophy of simplicity has contributed to QRIS's widespread adoption as a digital payment method (Harahap, 2025). Users can easily make purchases at all types of merchants using only their mobile phones, including without the need for a minimum transaction amount, annual fees, or the disclosure of sensitive personal information, such as family or workplace details, which are typically required when applying for credit cards like MasterCard or VISA. This streamlined process enhances users' sense of security and privacy, making QRIS a more appealing option for many.

Another key factor contributing to the global interest in QRIS is the issue of national control over financial infrastructure and data sovereignty. By adopting a domestically managed payment system, countries can reduce dependence on foreign financial networks and gain greater control over transaction data. Inspired by this model, several countries have begun to

develop similar systems, such as India's Unified Payments Interface (UPI) and Brazil's PIX. However, QRIS stands out due to its comprehensive integration with both banks and e-wallet providers, as well as its early steps toward cross-border interoperability, making it an increasingly respected model across Southeast Asia and beyond.

Therefore, this research aims to reveal the key factors influencing SMEs in choosing QRIS as their preferred digital payment system, and to examine whether these factors align with those identified from the customer perspective or if there are no differences.

The definition of SMEs

SMEs are defined differently across countries, reflecting variations in economic structure and policy frameworks. In the European Union (EU), SMEs are typically characterized by limited employee numbers and annual turnover, yet they play a critical role in fostering innovation, employment, and economic growth (European Commission, 2023). In Indonesia, SMEs are defined under Law No. 20 of 2008 as productive economic ventures owned by individuals or business entities meeting specific criteria. As a developing nation, Indonesia considers SMEs the backbone of its economy, essential for community-based economic resilience and self-sufficiency (Bank Indonesia, 2022).

According to the Coordinating Ministry for Economic Affairs (2023), SMEs contribute approximately 61% of Indonesia's Gross Domestic Product (GDP) that equivalent to IDR 9,580 trillion, and employ around 97% of the workforce. With 65.5 million SMEs constituting 99% of business entities, government support continues to enhance their capacity. As defined in Regulation No. 64/2016 of the Ministry of Industry, small industries employ 1–19 people with investments under IDR 1 billion, while medium industries employ more than 20 people with investments between IDR 1 billion and IDR 15 billion, excluding land and building costs.

According to Article 2 of Law No. 20 of 2008 on SMEs in Indonesia, the development of SMEs is guided by several core principles that reflect the nation's socio-economic priorities, namely:

- *Family-Based Values*
SMEs are encouraged to become integral to the national economy by embracing economic democracy, which is rooted in familial values. This principle promotes unity, fairness, sustainability, independence, and collective prosperity, starting from the smallest social unit - the family
 - *Economic Democracy*
The law highlights the vital role of MSMEs in driving national economic growth. Their development aims not only to stimulate productivity but also to reduce income inequality and uplift community welfare
 - *Cooperative Engagement*
SMEs are expected to foster cooperative relationships, encouraging collaboration among entrepreneurs to build a supportive, equip, and safe business environment.
 - *Fair and Efficient Business Practices*
This principle ensures that SMEs operate efficiently while upholding fairness in competition and providing equal opportunities for all business actors, regardless of scale or background.
 - *Sustainability*
SMEs are also guided to build resilient and self-reliant economic foundations while maintaining environmental responsibility. Long-term economic growth must be pursued in balance with ecological preservation, emphasizing sustainability as a key pillar.
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These five foundational principles underscore Indonesia's commitment to inclusive, ethical, and sustainable economic development through the empowerment of SMEs. By grounding SME policies in these values, the government aims to strengthen local economies, enhance social equity, and promote national resilience.

Accordingly, this research adopts the criteria that define SMEs as enterprises employing fewer than 20 individuals with a total investment not exceeding IDR 15 billion. This definition includes both family-owned businesses and partnership-based enterprises.

Technology Adoption Theory (TAM)

The adoption of digital payment systems has become increasingly vital for SMEs, particularly as consumer behaviour continues to shift toward cashless transactions. In this context, QRIS emerges as a practical solution, offering a standardized and efficient method for processing payments (Widjanarko, 2019). The significance of digital financial services in supporting such systems is further highlighted in the World Bank's Digital Financial Services report in 2020, which emphasizes their critical role in enhancing the capabilities of SMEs within the evolving digital economy (Ceyla et al., 2020). To understand the motivations behind SMEs' adoption of QRIS, it is essential to examine the key determinants influencing their acceptance of digital payment technologies.

This research adopts the TAM, first developed by Davis (1986), as the theoretical foundation to explain user behaviour regarding the adoption of new technologies. TAM posits two core constructs:

- *Perceived Usefulness (PU)*
The degree to which an individual believes that using a particular system would enhance job performance.
- *Perceived Ease of Use (PEOU)*
The extent to which one believes that using the system would be free of effort.

These constructs are illustrated in Davis's original model, shown in Figure 1 below.

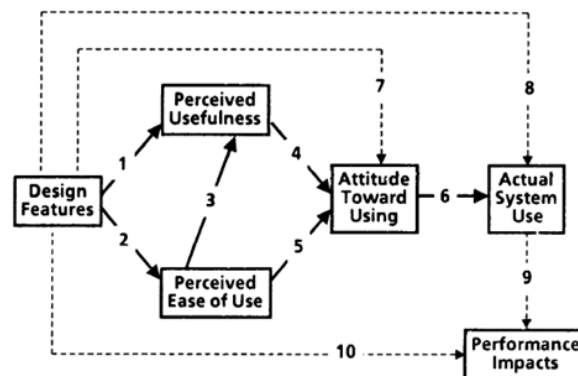


Figure 1.
The Original Technology Acceptance Model (TAM)
Source: Davis (1986)

In subsequent developments, Venkatesh et al., (2003) extended the original TAM by incorporating external variables that could indirectly influence technology acceptance via PU and PEOU (Venkatesh et al., 2003). This enhanced model, shown in Figure 2, provides a broader framework to explore factors affecting technology adoption and user decision-making processes.

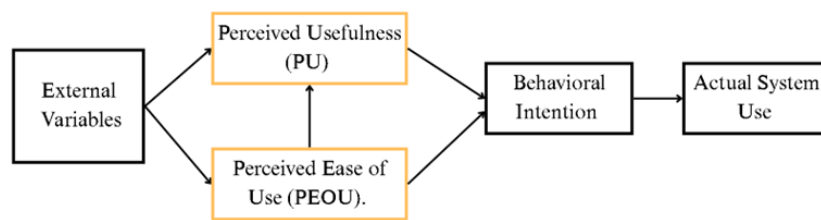


Figure 2.
Final TAM Model
Source: Venkatesh et al. (2003)

Building upon this extended model, the current research introduces four external variables as key factors affecting SMEs' preferences between using QRIS and traditional cash payments, namely:

1. Security (SC)
2. Speed (SP)
3. Ease of Use (EU)
4. Business Impact (BI)

These variables are identified based on theoretical alignment with TAM and supported by previous empirical studies.

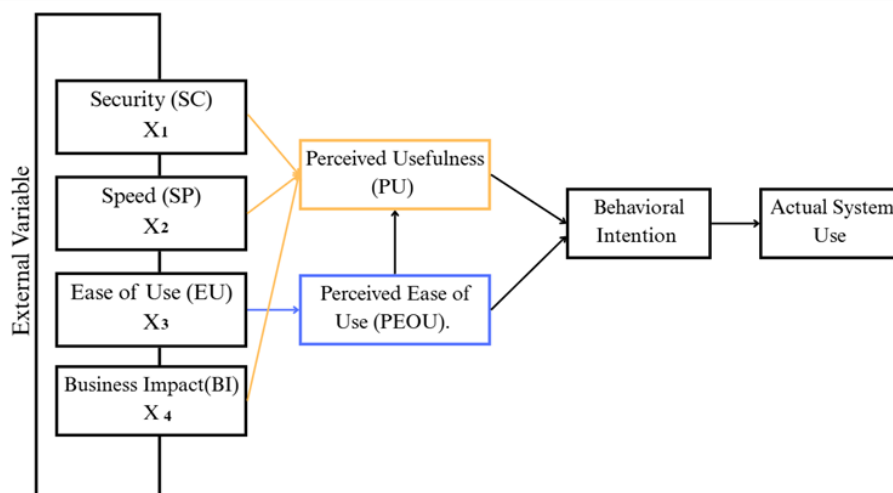


Figure 3. Integration of External Variables in This Research
Source: Adapted from Davis (1986) and Venkatesh et al. (2003), modified by the researcher

Among these factors, *Security (SC)* plays a crucial role. It refers to the belief that QRIS can safeguard transaction data and user privacy. When users perceive the system as secure, they are more likely to develop trust in it, increasing their willingness to adopt QRIS over cash. This is consistent with findings by Saripudin et al. (2023), who emphasize that perceived security significantly influences QRIS adoption among Indonesian consumers.

Speed (SP) and *Ease of Use (EU)* are also pivotal. A system that enables fast transactions enhances operational efficiency, while an intuitive and user-friendly interface reduces the cognitive and physical effort required to use it. These dimensions are frequently associated with

higher levels of user satisfaction and improved user experience. Calderon (2025) confirms that speed and usability are among the primary reasons consumers prefer digital payment methods.

The final variable, *Business Impact (BI)*, relates to the tangible benefits that QRIS offers to SMEs. These include improvements in financial record-keeping, enhanced customer service, and greater overall efficiency. As Kuswoyo et al., (2024) demonstrate, the adoption of QRIS has a positive influence on SME operations, thereby encouraging its continued use and shaping payment preferences.

While this research draws from the extended TAM framework as conceptualized in Figure 3, a simplified theoretical framework (Figure 4) is proposed to more directly assess the influence of these external variables on SMEs' payment choices. This targeted approach aligns with the central objective of the research: to identify the key factors that drive SMEs to choose between QRIS and cash-based payment systems. As such, the research does not test the full TAM model but rather adapts its structure to suit the research's specific focus.

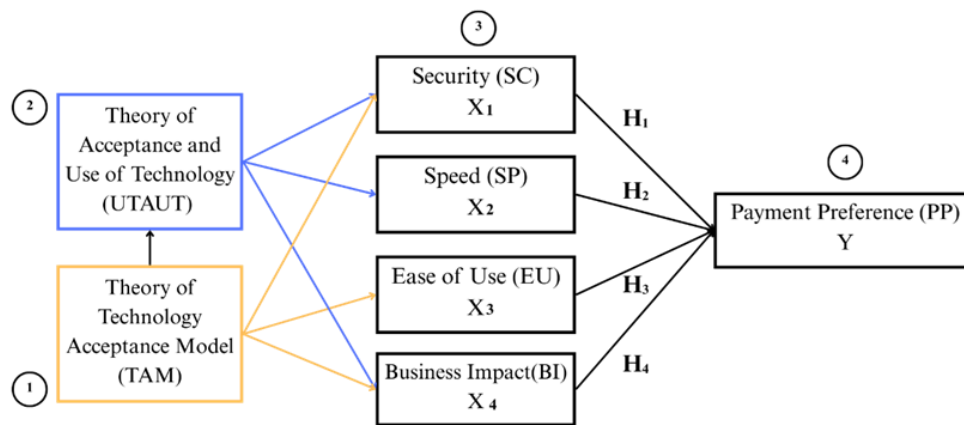


Figure 4.
Theoretical Framework

Hypotheses Development: Key Factors Influencing QRIS Adoption Among SMEs

This research explores five key determinants that influence the QRIS by SMEs participating in the BRI UMKM EXPO(RT) 2025. The variables under investigation include security, transaction speed, ease of use, business growth, and payment preferences. The following section outlines the research hypotheses along with a synthesis of supporting literature:

Security

Security remains a fundamental consideration in the adoption of digital payment technologies by SMEs. Secure transaction mechanisms help protect sensitive financial data, prevent fraud, and build consumer trust. According to Nasution et al. (2025), security significantly influences QRIS adoption among SMEs in Medan, with entrepreneurs placing high importance on transaction safety over speed. Enhanced features such as encryption, two-factor authentication, and real-time fraud detection systems are crucial in boosting user confidence. Belanche et al. (2022) further emphasize that robust digital security frameworks increase the credibility and attractiveness of mobile payment systems. Therefore, addressing security concerns directly contributes to higher adoption rates among SMEs.

H₁: Perceived security positively influences QRIS adoption among SMEs.

Transaction Speed

Transaction speed is a critical operational factor for SMEs seeking to improve service efficiency and customer satisfaction. Digital payment platforms like QRIS eliminate the need for handling physical currency and reduce queue times, leading to smoother and faster transactions. Syahid and Zainudin (2024) noted that QRIS significantly expedites transaction processing, allowing SMEs to accommodate higher sales volumes and reduce bottlenecks in busy retail environments. The ability to complete transactions within seconds improves overall business productivity and customer experience.

H₂: Transaction speed positively influences SMEs' preference for QRIS over cash payments.

Ease of Use

Ease of use refers to the degree to which a technology is perceived as effortless to learn and operate. In line with Davis's (1989) TAM, perceived ease of use is one of the most influential predictors of technology adoption. For SMEs, simplicity in setup, interface navigation, and day-to-day operations makes QRIS a practical alternative to traditional payment systems. Nugraha et al. (2022) report that SMEs prefer payment technologies that do not require advanced technical skills or extensive training. Nasution et al. (2025) also confirmed that ease of use significantly contributes to QRIS adoption in SMEs in Medan, highlighting its role in reducing barriers to technology adoption.

H₃: Perceived ease of use positively influences the adoption of QRIS among SMEs.

Business Impact

The potential for business growth is a compelling incentive for SMEs to adopt QRIS. According to Iskandar et al. (2023), digital payment systems such as QRIS can enhance customer acquisition, increase transaction frequency, and improve financial management practices. By accommodating digital-savvy customers who prefer cashless transactions, SMEs can expand their market reach. Moreover, electronic payments help reduce risks associated with manual cash handling, such as theft or accounting errors. Evidence suggests that QRIS adoption is associated with increased revenue and operational efficiency, positioning it as a strategic tool for business expansion.

H₄: The positive impact of QRIS on business growth influences SMEs' decision to adopt it.

Research Methodology

This research adopts a quantitative research methodology, which is well-suited for hypothesis testing and examining relationships between variables. As noted by Creswell (1994, cited in Jannah et al., 2022), quantitative research involves systematic data collection and statistical analysis to evaluate theoretical constructs in empirical contexts. It emphasizes objectivity through numerical measurements, enabling the validation of a pre-defined conceptual framework.

The analytical technique employed is Structural Equation Modeling (SEM) using the Partial Least Squares (PLS) approach. SEM-PLS is a powerful multivariate analysis method that allows for the simultaneous evaluation of measurement and structural models. It is particularly effective for exploratory research, theory building, and analyzing complex interrelationships among latent variables. Data analysis is carried out using SmartPLS software, which offers robust tools for model estimation, reliability, and validity testing, ensuring precise and efficient results.

Sampling and Data Collection

The sampling was drawn from SMEs participating in the BRI UMKM EXPO(RT) 2025. The primary respondents were business owners or authorized representatives directly involved in daily transactions, whether through QRIS or traditional cash payment methods. The sampling approach was designed to capture a broad spectrum of SMEs, reflecting diversity in business types, transaction volumes, and preferred payment systems.

Data were gathered using a structured questionnaire comprising 20 items, purpose-built to examine key determinants influencing SMEs' choices of payment methods. The instrument addressed several dimensions, including perceived transaction security, processing speed, ease of use, perceived impact on business operations, and patterns of technology adoption. To ensure convenience and maximize participation, the survey was distributed in both digital and paper formats during the event, enabling respondents to complete it according to their preference.

In line with established guidelines for multivariate statistical analysis, a minimum sample size of 100 respondents was set to ensure the validity and generalizability of the results. Sampling techniques were carefully selected to maintain representativeness and uphold the quality of the data collected. This methodological rigor supports the reliability of the findings and enables comprehensive hypothesis testing using quantitative analysis tools.

Respondence Profile

Based on survey data collected from 110 SME participants at the BRI UMKM EXPO(RT) 2025, the gender distribution revealed that 60.9% (67 respondents) were female, while 39.1% (43 respondents) were male. This suggests a predominance of female entrepreneurs among SME participants, highlighting the increasing role of women in advancing digital financial inclusion through tools such as QRIS. These findings were derived from structured questionnaires aimed at understanding SMEs' preferences between QRIS and conventional cash payments in the context of Indonesia's shift toward a cashless economy.

The operational area data provides insights into the geographical diversity of SMEs engaged in the BRI UMKM EXPO(RT) 2025. Among the 110 respondents, the highest representation came from Central Java with 24 respondents (21.8%), followed by West Java with 17 (15.5%) and East Java with 15 (13.6%). Other regions included Yogyakarta (6.4%), DKI Jakarta (5.5%), and provinces such as Bali, West Nusa Tenggara, East Nusa Tenggara, and West Sumatra, each contributing 4 respondents (3.6%). Banten was represented by 3 respondents (2.7%), while Semarang, Bangka Belitung, South Sumatra, Jambi, Lampung, North Sumatra, South Sulawesi, Gorontalo, and West Kalimantan each contributed 2 respondents (1.8%). The provinces of Riau, North Sulawesi, Aceh, and Papua each accounted for 1 respondent (0.9%). This wide distribution underscores the national scope of the program, reflecting participation from a broad range of provinces across Indonesia.

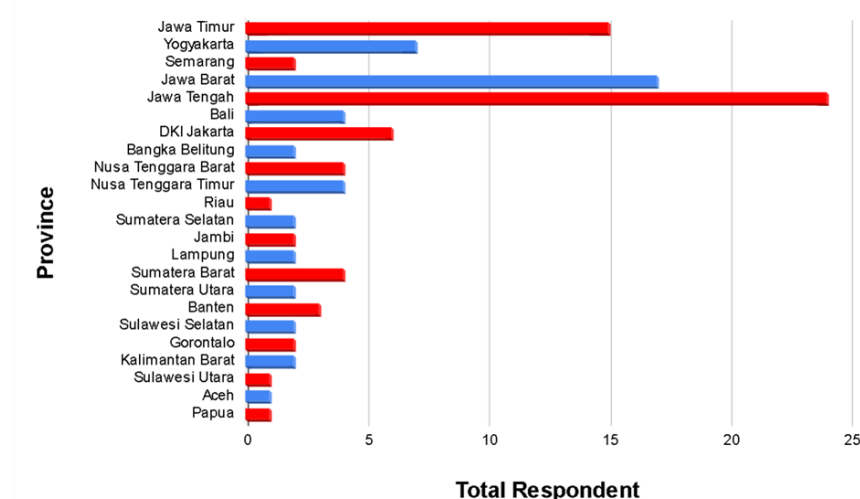


Figure 5. SMEs Original Business Operational Area
Source: Primary Data

Industry type classification illustrates the diversity of SMEs represented in this research. The largest proportion of respondents operated in the food and beverage sector, comprising 39 SMEs (35.5%). This was followed by the fashion industry with 35 respondents (31.8%). The handicraft sector contributed 22 respondents (20%), while the medical sector accounted for 14 respondents (12.7%). These results indicate a strong representation across creative, lifestyle, and essential product sectors, reflecting the entrepreneurial landscape promoted through the BRI UMKM EXPO(RT) 2025 initiative.

In terms of enterprise scale, classification was based on Regulation of the Minister of Industry of the Republic of Indonesia No. 64 of 2016, which outlines criteria for distinguishing small and medium-sized enterprises, including workforce size. Survey results showed that 64.5% (71 respondents) of participating businesses were classified as small enterprises, while 35.5% (39 respondents) fell under the medium enterprise category. This distribution highlights the dominant presence of small enterprises in the SME ecosystem targeted by the expo's financial technology empowerment initiatives.

Research Results

Descriptive Analysis

This research employs a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree) to assess respondents' perceptions regarding each variable. A score of 5 reflects strong agreement and a favorable perception, while a score of 1 indicates strong disagreement, suggesting a negative perception. This method provides insights into how participants evaluate the key constructs. The primary variables examined in this research include Security (X_1), Speed (X_2), Ease of Use (X_3), Business Impact (X_4), and Payment Preference (Y). The sample consists of SMEs participating in the BRI UMKM EXPO(RT) 2025, an initiative aimed at promoting digital financial inclusion. The overarching aim is to compare QRIS adoption against cash preference as Indonesia advances toward a cashless economy. The results of the descriptive analysis for each variable are outlined below.

Security

Table 1 presents the descriptive statistics for the Security variable, measured through four items

(SC₁ to SC₄). SC₁ and SC₃ both recorded a mean score of 1.670, suggesting that the majority of respondents expressed disagreement or weak agreement, indicating limited confidence in these aspects of security. Their respective standard deviations—0.723 for SC₁ and 0.683 for SC₃ suggest relatively consistent responses.

Table 1.
Descriptive Analysis of Security

Proxy	N	Min	Max	Mean	Std. Deviation
SC ₁	110	1.000	4.000	1.670	0.723
SC ₂	110	1.000	5.000	2.528	0.882
SC ₃	110	1.000	3.000	1.670	0.683
SC ₄	110	1.000	5.000	2.557	0.972

Questioner Statements:

SC₁: I feel that QRIS provides better security compared to cash payments.

SC₂: The QRIS system minimizes the risk of losing physical money.

SC₃: I believe that QRIS transactions are protected from fraud.

SC₄: The security of the QRIS payment system provides a sense of comfort to my customers.

Source: Statistical Software Output

Conversely, SC₂ and SC₄ showed higher average scores of 2.528 and 2.557, respectively, indicating a more neutral to slightly positive perception. However, the standard deviations for these two items were higher (0.882 for SC₂ and 0.972 for SC₄), reflecting greater variability in responses. All four items had a minimum score of 1.000, with maximum scores ranging from 3.000 to 5.000, indicating that while some respondents expressed strong disagreement, others showed more favorable perceptions. Overall, these findings suggest lingering concerns or ambivalence among SMEs regarding the security of the payment system.

Speed

As shown in Table 2, the Speed variable comprises four indicators (SP₁ to SP₄). Both SP₁ and SP₂ achieved identical mean scores of 4.047, reflecting strong agreement from respondents regarding the speed performance of the payment system. Their respective standard deviations—0.782 and 0.794—indicate a high degree of response consistency.

Table 2.
Descriptive Analysis of Speed

Variable	N	Min	Max	Mean	Std. Deviation
SP ₁	110	2.000	5.000	4.047	0.782
SP ₂	110	3.000	5.000	4.047	0.794
SP ₃	110	2.000	5.000	3.991	0.807
SP ₄	110	2.000	5.000	3.925	0.797

Questioner Statements:

SP₁: QRIS speeds up the payment process compared to cash payments.

SP₂: My customers prefer QRIS because of its transaction speed.

SP₃: With QRIS, the transaction time at the cashier becomes more efficient.

SP₄: The QRIS payment process reduces queues in my store.

Source: Statistical Software Output

SP₃ reported a slightly lower mean of 3.991 and a standard deviation of 0.807, while SP₄ had the lowest mean of 3.925 and a standard deviation of 0.797. Despite the marginal differences, all indicators remained within a favorable range. Minimum values ranged from 2.000 to 3.000, and maximum values were consistently 5.000, suggesting that participants generally viewed the

system's speed positively, with no strong disagreement observed.

Ease of Use

Table 3 reports on the Ease-of-Use variable, measured via four items (EU₁ to EU₄). EU₁ and EU₂ yielded mean scores of 3.981 and 3.972, respectively, with standard deviations of 0.812 and 0.806. These results indicate respondents generally found the system user-friendly, and their responses were relatively consistent.

Table 3.
Descriptive Analysis of Ease of Use

Variable	N	Min	Max	Mean	Std. Deviation
EU ₁	110	2.000	5.000	3.981	0.812
EU ₂	110	2.000	5.000	3.972	0.806
EU ₃	110	2.000	5.000	4.009	0.694
EU ₄	110	2.000	5.000	3.991	0.841

Questioner Statements:

EU₁: I find it easy to integrate QRIS into my business.

EU₂: My customers find QRIS easier to use compared to cash payments.

EU₃: The installation and use of QRIS do not require extensive training.

EU₄: I do not face significant technical issues when using QRIS.

Source: Statistical Software Output

EU₃ had the highest average score (4.009) and the lowest standard deviation (0.694), indicating strong and consistent agreement. EU₄ followed closely with a mean of 3.991 and a standard deviation of 0.841. All items recorded minimum values of 2.000 and maximums of 5.000, confirming that most respondents provided moderately to highly favorable evaluations. The overall findings underscore the perceived ease of system usage among the surveyed SMEs.

Business Impact

As presented in Table 4, the Business Impact variable consists of four items (BI₁ to BI₄). BI₁ and BI₄ yielded the highest average scores (4.028 and 4.047), with standard deviations of 0.818 and 0.840, respectively, reflecting strong agreement and consistent responses regarding the system's positive influence on business outcomes.

Table 4.
Descriptive Analysis of Business Impact

Variable	N	Min	Max	Mean	Std. Deviation
BI ₁	110	2.000	5.000	4.028	0.818
BI ₂	110	2.000	5.000	3.953	0.805
BI ₃	110	2.000	5.000	3.906	0.841
BI ₄	110	2.000	5.000	4.047	0.840

Questioner Statements:

BI₁: QRIS has increased the number of transactions in my business.

BI₂: My customers have been more satisfied since I started using QRIS.

BI₃: Using QRIS has helped enhance the professional image of my business.

BI₄: My business revenue has increased after using QRIS.

Source: Statistical Software Output

BI₂ and BI₃ reported slightly lower means (3.953 and 3.906) but still within a favorable range. The standard deviations is 0.805 for BI₂ and 0.841 for BI₃, indicate a moderate level of response

consistency. Minimum scores across all items were 2.000, and maximum scores were 5.000. Overall, the results suggest a generally positive perception of the system's impact on business operations.

Payment Preference

Table 5 summarizes the descriptive statistics for Payment Preference, which assesses respondents' inclination toward using QRIS. The highest mean score was observed for PP₁ (4.000), indicating strong preference for QRIS-based transactions, with a standard deviation of 0.514 reflecting consistent responses.

Table 5.
Descriptive Analysis of Payment Preference

Variable	N	Min	Max	Mean	Std. Deviation
PP ₁	110	3.000	5.000	4.000	0.514
PP ₂	110	3.000	5.000	3.717	0.509
PP ₃	110	2.000	5.000	3.519	0.536
PP ₄	110	2.000	4.000	3.255	0.550

Questioner Statements:

PP₁: I prefer using QRIS over cash payments.

PP₂: Most of my customers prefer QRIS over cash.

PP₃: I believe QRIS is the best solution for current payment needs.

PP₄: Customer preferences for QRIS influence my business decisions.

Source: Statistical Software Output

PP₂ followed with a mean of 3.717, while PP₃ and PP₄ recorded lower means of 3.519 and 3.255, respectively. Although slightly lower, these still reflect a general tendency toward favoring QRIS. The minimum scores ranged between 2.000 and 3.000, while the maximum was consistently 5.000. These findings imply a moderate to high acceptance of QRIS among the SME respondents, with some expressing neutral or slightly reserved preferences.

Hypothesis Testing

To support the analysis in this section, the researchers utilized Structural Equation Modeling with Partial Least Squares (SEM-PLS) to test the proposed hypotheses using appropriate statistical techniques. This approach facilitates the identification and interpretation of the relationships among four independent variables, namely Security (X₁), Speed (X₂), Ease of Use (X₃), and Business Impact (X₄); and the dependent variable, Payment Preference (Y). The analysis is situated within the context of QRIS adoption among SMEs participating in the BRI UMKM EXPO(RT) 2025. The results of the hypothesis testing are summarized in Table 6.

The statistical results in Table 6. demonstrate that all four hypotheses are supported, indicating significant and positive influences of each independent variable on Payment Preference. The detailed interpretation of each hypothesis is as follows:

- **Ha₁:** Security concerns positively impact the adoption of QRIS among SMEs.
The T-statistic of 7.863 exceeds the threshold of 1.96, with a p-value of 0.000 (< 0.05), leading to the acceptance of H₁. This confirms that Security has a significant and positive effect on Payment Preference.
- **Ha₂:** The speed of transactions positively influences SMEs' preference for QRIS over cash.
With a T-statistic of 5.955 and a p-value of 0.000, H₂ is accepted. This indicates that Speed

significantly and positively influences Payment Preference.

- **H_{a3}:** Perceived ease of use positively influences the adoption of QRIS among SMEs. H₃ is supported by a T-statistic of 7.467 and a p-value of 0.000. This result signifies that Ease of Use exerts a significant and positive impact on Payment Preference.
- **H_{a4}:** The business impact of QRIS positively influences SMEs' adoption decisions. With a T-statistic of 8.325 and a p-value of 0.000, H₄ is accepted. This suggests that Business Impact plays a significant role in shaping Payment Preference among SMEs.

Table 6.
Hypothesis Testing Results

Relationship	T-Statistic	P-Value	Decision
Speed → Payment Preference	5.955	0.000	Accepted
Ease of Use → Payment Preference	7.467	0.000	Accepted
Business Impact → Payment Preference	8.325	0.000	Accepted
Security → Payment Preference	7.863	0.000	Accepted

Source: Processed Primary Data

Research Discussion

Indonesia is undergoing a rapid transition towards a digital and cashless society, propelled by strategic initiatives from both the government and financial institutions. A central innovation in this transformation is the QRIS, which was introduced to simplify and unify digital payment systems for businesses and consumers (Niken Widowati & Khusaini, 2022).

This research investigates the influence of four critical factors, which are Security, Speed, Ease of Use, and Business Impact on SMEs' payment preference for QRIS over cash. The analysis, conducted using SEM-PLS, offers insights into the key determinants shaping digital payment adoption among SMEs participating in the BRI UMKM EXPO(RT) 2025.

Security emerged as a significant factor influencing SMEs' preferences. In the domain of digital transactions, trust and data protection are essential. SMEs that perceive QRIS as a secure platform are more likely to incorporate it into their routine operations. Security concerns typically revolve around safeguarding customer data, ensuring the accuracy of transactions, and preventing fraud. Given the sensitive financial data SMEs often handle, a strong security infrastructure is imperative. These findings are consistent with Santika et al. (2024), who identified security as a primary enabler in the adoption of digital payments among SMEs. When business owners have confidence in QRIS's security features, adoption and endorsement follow naturally.

Speed also plays a crucial role in shaping SMEs' payment preferences. In competitive business environments, transactional speed contributes directly to operational efficiency and customer satisfaction. QRIS enables real-time payments, which is particularly beneficial during high-traffic periods or time-sensitive transactions. Fast transaction processing enhances the overall service experience and encourages repeat patronage. This is supported by Husrizal Syah et al. (2022), who highlighted the importance of speed and efficiency in increasing business productivity and minimizing operational disruptions. While speed alone may not be the sole driver of adoption, it significantly strengthens the case for QRIS when combined with other

favorable factors.

Ease of Use is another decisive element in the adoption process. The level of digital literacy among Indonesian SMEs varies widely; while some are technologically proficient, others may struggle with unfamiliar digital tools. A user-friendly QRIS interface - with clear navigation and intuitive features - enhances accessibility and acceptance. In contrast, overly complex systems may discourage use. This observation aligns with TAM theory, which posits that perceived ease of use is a key determinant of technology adoption (Davis, 1989). Supporting this, Sholihah and Nurhapsari (2023) found that the simplicity and accessibility of digital payment platforms significantly encourage SMEs to transition from cash to cashless systems, reducing barriers to adoption.

Among all variables, Business Impact was identified as the most influential factor. SMEs are pragmatic and seek tangible, measurable outcomes from adopting new technologies. The implementation of QRIS supports business operations through enhanced sales tracking, reduced cash handling errors, digital financial records, and increased eligibility for financial services. These advantages position QRIS not merely as a payment tool, but as a strategic business enabler. Nurqamarani et al. (2024) similarly found that SMEs are more inclined to adopt digital tools when they perceive clear operational benefits. QRIS's contribution to sales growth, efficient record-keeping, and improved financial management reinforces its value as a critical component of business infrastructure.

The findings of this research validate the applicability of the TAM in understanding QRIS adoption among SMEs. The strong influence of Business Impact aligns with TAM's core premise: that perceived usefulness is a primary driver of technology adoption. The significance of Security and Ease of Use further supports the model, indicating that systems perceived as secure and user-friendly are more likely to be adopted. Speed acts as a complementary factor, enhancing the overall appeal of the system.

In short, the research underscores that QRIS adoption is most likely when the system is secure, fast, easy to use, and delivers tangible business benefits. These insights have implications for policymakers, financial institutions, and technology developers aiming to accelerate digital payment adoption among Indonesian SMEs.

Conclusion

The findings derived from the SEM-PLS analysis confirm that all four hypothesized factors, namely Security, Speed, Ease of Use, and Business Impact are significantly and positively influence the payment preferences of SMEs participating in the BRI UMKM EXPO(RT) 2025. Among these, Business Impact emerges as the most dominant determinant, indicating that SMEs are more inclined to adopt QRIS when it provides tangible benefits that support operational efficiency, financial management, and growth.

Furthermore, the findings of this research contribute theoretically to the Technology Acceptance Model (TAM) by extending its application to the context of QRIS as a cashless payment system. By examining the adoption behavior of SMEs in Indonesia, this research offers context-specific insights that enhance the explanatory power of TAM within the digital payment landscape

These results address the research's research questions by affirming that QRIS adoption is

perceived as beneficial to business growth. However, despite the overall positive perception, a portion of respondents expressed ongoing concerns regarding the security of the system, suggesting that some vulnerabilities may still undermine user trust.

As a locally developed digital payment innovation, QRIS - initiated and regulated by Bank Indonesia - offers a sovereign alternative to foreign-controlled financial technologies. Strengthening its adoption not only empowers SMEs but also reinforces Indonesia's digital financial independence and resilience amidst shifting global economic dynamics. As of early 2025, the acceptance of QRIS in nine countries highlights its growing position in the global financial ecosystem as a digital payment system originating from Indonesia. This international recognition underscores the strategic importance of QRIS in cross-border transactions, particularly for SMEs seeking efficient and secure cashless payment solutions. The increasing preference among international SMEs to adopt QRIS further affirms its relevance, scalability, and competitiveness on the global stage.

Recommendations

Based on the findings, the following recommendations are proposed to enhance QRIS adoption among Indonesian SMEs. These suggestions are directed toward policymakers, financial service providers, SMEs, and future researchers:

- *For Policymakers and Bank Indonesia*
Enhance digital financial infrastructure, particularly in rural and underserved areas, by facilitating wider access to stable internet connectivity and digital tools. Public agencies should continue to offer financial incentives, technical training, or adoption grants to SMEs integrating QRIS into their operations. Strengthen regulatory frameworks and consumer protection mechanisms to boost user trust and safety in digital transactions. This includes setting standards for data privacy, fraud prevention, and transparent dispute resolution.
 - *For QRIS Service Providers (Banks and Fintech Companies)*
Invest in advanced security measures, such as encryption, biometric verification, and real-time monitoring systems, to protect user data and reinforce trust in the system. Introduce value-added features, such as cashback, loyalty points, or gamification that reward consistent QRIS usage and increase user engagement while reducing reliance on cash transactions.
 - *For SMEs Participating in BRI UMKM EXPO(RT) 2025*
Be proactive in digital transformation by engaging in training programs, requesting technical support, and exploring the full functionality of QRIS. Building internal digital capabilities is essential to maximizing the system's benefits. Enhance customer trust and loyalty by consistently offering secure and seamless QRIS payment experiences. Reliable implementation can improve customer satisfaction and strengthen competitive positioning.
 - *For Future Researchers*
Expand the analytical framework by incorporating additional moderating or mediating variables such as digital infrastructure readiness, perceived trust, digital literacy, or market competition to develop a more nuanced understanding of adoption behavior. Diversify the research context by examining QRIS adoption in various sectors (e.g., services, retail, hospitality) to uncover sector-specific drivers or barriers. Employ mixed-methods approaches to complement quantitative findings with qualitative insights, thereby capturing deeper perspectives on the challenges, motivations, and user experiences related to digital payment adoption.
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