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From Risk to Trust: Strengthening QRIS Use among MSMEs for Islamic Financial Inclusion

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Abstract

The expansion of Quick Response Code Indonesian Standard (QRIS) has widened the use of digital payments among Indonesian micro, small, and medium-sized enterprises (MSMEs). Even so, continued usage remains closely tied to users' financial understanding, perceptions of security-related risk, and trust in the payment system. This article examines how financial literacy, perceived security risk, and trust in QRIS security shape behavioural intention and actual QRIS usage among MSME customers, while also considering their relevance to Islamic financial inclusion. The analysis draws on survey data from 180 MSME customers in Yogyakarta who had completed at least one QRIS transaction and employs Partial Least Squares Structural Equation Modelling (PLS-SEM). The results show that financial literacy positively affects behavioural intention and strengthens trust in QRIS security. By contrast, perceived security-related risk weakens both usage intention and trust. Trust in QRIS security, in turn, has a positive effect on actual QRIS use, and usage intention also contributes positively to realised usage. The model explains a considerable share of the variance in trust, intention, and usage. In addition, trust significantly shapes the relationship between usage intention and actual QRIS usage, although the direction of this effect is negative. This suggests that once users have developed strong trust and integrated QRIS into routine transactions, further increases in intention contribute only marginally to additional usage. These results imply that broader QRIS adoption among MSMEs depends on stronger financial literacy, lower perceived security risk, and credible security assurance. From the perspective of Islamic finance, QRIS can support wider financial inclusion when combined with financial education, secure digital payment infrastructure, and sharia-compliant financial services.

Keywords: QRIS; digital payment; financial literacy; perceived security risk; trust; Islamic financial inclusion; Islamic finance

Introduction

Recent advances in digital technology have reshaped the way individuals together with micro small and medium enterprises (SMEs) carry out economic activities. Digital and mobile payment systems are now widely regarded as practical, dependable, and efficient tools for daily transactions. In Indonesia, this transformation has been strengthened reinforced by the implementation of QRIS, the national QR payment standard that allows users to conduct payments via various mobile applications using a single QR code. QRIS simplifies transactions, reduces reliance on cash, and supports broader efforts to promote financial inclusion and a less-cash econom (Affandi et al., 2024; Djoyo et al., 2022; Gunawan et al., 2023).

Recent official figures also indicate that QRIS has expanded rapidly in Indonesia. As of Semester I 2025, QRIS had recorded 57 million users and 39.3 million merchants, of whom 93.16% were MSMEs, with total transactions reaching 6.05 billion valued at Rp579 trillion (Bank Indonesia, 2025). These figures confirm the broad diffusion of QRIS in the national payment ecosystem. Even so, growth in registered users and accepting merchants does not

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necessarily indicate equally intensive day-to-day use. The distinction between adoption and active usage therefore remains important, particularly in MSME-related transactions where continued use depends on confidence, perceived security, and financial capability.

MSMEs hold a central role in the Indonesian economy because they generate employment, create value added, and support local development. In this context, QRIS offers practical value by improving transaction efficiency, widening market access, and reducing cash-handling costs. Its relevance has grown alongside the expansion of Islamic finance and digital financial services in Indonesia and other Muslim-majority countries. Although mobile banking, e-wallet, and fintech platforms broaden access to financial services, they also introduce operational and security-related concerns that affect user confidence. When QRIS is linked to sharia-compliant financial products and services, it may therefore support Islamic financial inclusion by connecting everyday transactions with wider access to formal Islamic financial institutions (Aisyah et al., 2025; Butarbutar et al., 2022; Kemala et al., 2026; Pamungkas & Paramaputra, 2025; Yang et al., 2021).

Within this broader context, QRIS can be viewed not only as a payment tool but also as a gateway to wider participation in formal and potentially sharia-oriented financial systems. However, the extent to which QRIS contributes to continued use depends on how users evaluate the system itself. Among the many determinants discussed in prior digital payment studies, three factors appear especially relevant in the QRIS context: financial literacy, perceived security risk, and security trust. Financial literacy helps users understand digital financial products and assess their benefits and risks. Perceived security risk may discourage use when users fear fraud or data breaches, and trust can reduce uncertainty and encourage both intention and actual usage (Achanta & Lepcha, 2025; Matar & Aloqaily, 2025; Padma Kiran & Sailaja, 2025; Ponsree & Naruetharadhol, 2025; Ramayanti et al., 2025; Venkatesh et al., 2016).

Despite the rapid expansion of QRIS, empirical evidence regarding the combined roles of financial literacy, perceived security risk, and trust in shaping MSME customers' behavioural intention and actual QRIS usage remains limited, especially when considered from the perspective of Islamic financial inclusion (Edward et al., 2023; Maniam, 2024). This study fills that gap by analysing how financial literacy, perceived security risk, and trust in QRIS security affect behavioural intention and actual QRIS usage among MSME customers who have used QRIS at least once. Using Partial Least Squares Structural Equation Modelling (PLS-SEM), the study contributes by explaining the combined roles of these factors in a QRIS setting, emphasising the moderating role of trust, and explaining how QRIS-based payment ecosystems may support Islamic financial inclusion through financial education, credible security assurance, and links to sharia-compliant financial services.

Literature Review

Financial literacy in digital payment adoption

Recent studies indicate that financial literacy has an important role in digital payment adoption, particularly among MSMEs. Users with stronger financial literacy are more capable of understanding of digital financial products, compare costs and benefits, evaluate risks, and assess the practical features of mobile banking services, e-wallets, and QR-based payments. As a result, they are more likely to adopt and keep usingvdigital payment systems, including QRIS. Financial literacy may also reduce information asymmetry and support the integration of digital payments into sales and cash-flow management, thereby strengthening MSME formalisation and market access(Affandi et al., 2024; Banerjee & Pradhan, 2024; Hermawan et al., 2022; Jameel & Karem, 2022; Jusman & Fauziah, 2024a; Lee et al., 2025; Ma'nawiyah et al., 2025; Masrizal et al., 2024; Musthafa et al., 2023; Saptono & Khozen, 2024).

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In Muslim-majority contexts, financial literacy also include the ability to identify products and services that comply with Islamic principles. When digital payment tools are linked to Islamic banking or Islamic fintech, financially literate users are better positioned to evaluate whether those services meet both practical and ethical expectations. This suggests that financial literacy may strengthen not only behavioural intention to use QRIS along with trust in the system's security and integrity (Ahmed et al., 2025; Islam & Khan, 2024).

Perceived security risk in digital payment adoption

Perceived security risk is another important determinant of digital payment use. In this regard, risk refers to users' concerns about fraud, privacy breaches, data misuse, service failure, or unauthorised transactions. When such concerns are high, users are more likely to hesitate, postpone adoption, or avoid continued use, whereas secure and well-protected payment systems are more likely to encourage positive adoption intentions. Evidence from QR-based payment studies similarly shows that users are more inclined to use these systemswhen they are seen as secure, reliable, and easy to use (Arkeman & Ermawati, 2023; Djoyo et al., 2022; Judijanto & Husnayetti, 2024; Monir & Mia, 2024; Pamungkas & Paramaputra, 2025; Zaid Kilani et al., 2023).

Perceived security risk therefore tends to reduce behavioural intention and weaken trust in both the payment platform and the institutions that manage it. This issue is also relevant from the perspective of Islamic finance, because the protection of wealth and personal data is closely related to the aim of preserving wealth (hifz al-mal) within the maqasid al-shariah framework. For that reason, visible security safeguards and clear risk communication are especially important when QRIS is promoted within ecosystems aimed at supporting Islamic financial inclusion (Afif et al., 2023; Chakraborty et al., 2023; Faisal & Abbood, 2024; Jusman & Fauziah, 2024b; Khan et al., 2023; Malik & Singh, 2022; Rizkiani et al., 2024; Tanapaisankit et al., 2024).

Trust in digital payment-based

Trust has become a central concept in the digital-payments literature as it reduces uncertainty and supports continued use of financial technologies. In general, confidence refers to users' belief that the system is reliable, secure, as well as managed by competent and responsible institutions. Studies consistently show that trust is positively linked to the intention to use digital payment methods, continuance behaviour, and real usage over time (Butarbutar et al., 2022; Buyondo, 2024; Hoque et al., 2022; Nandru et al., 2023).

In QR-based payment environments, trust depends on prior experience, perceptions of transaction security, confidence in authentication mechanisms, and belief in institutional credibility. It is particularly important when risk is salient, because it helps users move from interest to action. Trust is also relevant in Islamic finance settings, where users may evaluate not only technical safety but also institutional integrity and compliance with Islamic ethical principles. In such contexts, trust may help explain why users are willing to use digital financial services over time, especially when these services are linked to Islamic banks, Islamic microfinance institutions, or sharia-compliant platforms (Ahmed et al., 2025; Ansori & Nugroho, 2024; Chawla et al., 2023; Masrizal et al., 2024; Matar & Aloqaily, 2025; Padma Kiran & Sailaja, 2025; Rahman et al., 2023; Ramayanti et al., 2025; Rambe et al., 2025; Sembiring et al., 2022).

Islamic financial inclusion within digital payment ecosystems

Islamic financial inclusion is increasingly discussed in relation to digitalisation because digital platforms can widen access to formal financial services by reducing geographic barriers, lowering transaction costs, and increasing convenience for users who were previously excluded from mainstream systems. For MSMEs and low-income users, this expansion may

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be particularly important because digital financial services often provide more flexible access points than conventional branch-based services. in the present study, Islamic inclusive finance is viewed as the broader policy and institutional context in which QRIS adoption becomes relevant. QRIS itself is not a specifically Islamic financial product, but when linked to Islamic banking, Islamic microfinance, or other sharia-compliant services, it may function as a practical entry point into a wider ecosystem of Islamic finance (Afif et al., 2023; Aisyah et al., 2025; Hoque et al., 2022; Islam et al., 2024; Mamun & László, 2025; Masrizal et al., 2024).

Conceptual framework and hypotheses development

This study focuses on three determinants that are especially relevant in QRIS-based payment adoption: financial literacy, perceived security risk, and trust in QRIS security. These constructs are used to explain behavioural intention while actual QRIS use among MSME customers, while trust is also examined as a moderator of the intention–use relationship.

Financial literacy and behavioural intention, and trust

Financial literacy is expected to increase behavioural intention because users who better comprehend QRIS features, transaction mechanisms, and possible benefits are more likely to perceive the system positively. It is also expected to strengthen trust in QRIS security because better-informed users are more capable of interpreting security information and evaluating whether the system offers adequate protection (Achanta & Lepcha, 2025; Bin-Nashwan et al., 2023; Chan et al., 2022; Handoyo, 2024; Hermawan et al., 2022; Mambile & Ishengoma, 2024).
H1: Financial literacy positively affects behavioural intention to use QRIS.
H2: Financial literacy positively influences trust in QRIS security.

Perceived security risk, behavioural intention, and trust

Perceived security risk is expected to reduce both behavioural intention and trust in QRIS security. When MSME customers are concerned about fraud, privacy breaches, or service disruption, they are less likely to adopt or continue using the system and less likely to believe that it offers reliable protection (Afif et al., 2023; Bailey et al., 2022; Khan et al., 2023; Malik & Singh, 2022).
H3: Perceived security risk negatively affects behavioural intention to use QRIS.
H4: Perceived security risk exerts a negative effect on trust in QRIS security.

Trust in QRIS security and actual usage

Trust in QRIS security is expected to encourage actual usage because users who believe that the system is secure, reliable, and capable of protecting their financial and personal data are more likely to use QRIS in routine transactions (Ansori & Nugroho, 2024; Butarbutar et al., 2022; Jafri et al., 2024; Rahman et al., 2023; Sembiring et al., 2022).
H5: Trust in QRIS security positively affects actual QRIS usage.

Behavioural intentionand actual QRIS usage

Consistent with the Theory of Planned Behavior and UTAUT2, behavioural intention is treated as the closest predictor of actual technology use. Users who express stronger intention to use QRIS are therefore expected to show higher actual usage in practice (Bergmann et al., 2023; Setiawan et al., 2024; Venkatesh et al., 2016).
H6: Behavioural the intention to use QRIS positively influences actual QRIS usage.

Trust as a moderating factor

Trust may also shape how strongly behavioural intention is translated into actual use. When users trust the security of QRIS, uncertainty may decline and intention may be more easily converted into behaviour. On this basis, trust in QRIS security is modelled as a moderator of

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the relationship between behavioural behavioural intention and actual QRIS usage (J. Hasan et al., 2023; Shukri et al., 2024). In the present study, trust in QRIS security is therefore modelled as a moderator of the intention–usage relationship:

H7: Trust in QRIS security moderates the link between behavioural intention and actual QRIS usage.

Methodology

Study Design

This study used a quantitative cross-sectional survey design to assess the effects of financial literacy, perceived security risk, and trust in QRIS security on behavioural intention and actual QRIS usage among MSME customers. Primary data were gathered through a structured questionnaire, and the relationships among the latent constructs were analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM) (Anggarini, 2022; Usman et al., 2024).

Population, Sampling, and Data Collection

The target population comprised MSME customers in Yogyakarta who had completed at least one payment transaction using QRIS. The study used purposive non-probability sampling because respondents had to meet specific screening criteria: they had to know QRIS and have practical experience using it. Data were collected through online and offline questionnaire distribution in collaboration with MSME networks and local business communities. A screening question was included to ensure that all respondents had used QRIS at least once. In total, 180 valid responses were obtained and used in the final analysis. This sample size is adequate for the proposed PLS-SEM model and is consistent with common recommendations for this analytical approach (Kumar et al., 2024; Wijayanto et al., 2024).

Measures

The questionnaire comprises items measuring five latent constructs: financial literacy, perceived security risk, trust in QRIS security, behavioural intention toward use QRIS, as well as actual use of QRIS. All constructs were specified as reflective constructs and measured through multiple indicators through a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) (Pamungkas & Paramaputra, 2025). Financial literacy refers to respondents' perceived ability to understand and manage financial matters related to QRIS and digital payments, including basic financial concepts, fees, and product features. Perceived security risk captures concerns regarding fraud, data breaches, and unauthorised transactions. Trust in QRIS security reflects respondents' beliefs that QRIS transactions are secure, that personal and financial data are protected, and that service providers act in a reliable and responsible manner(Mohd Thas Thaker et al., 2023; Shahzad et al., 2022; Usman et al., 2024; Widagdo & Sa'diyah, 2023).

Behavioural intention refers to respondents' willingness to continue using QRIS in future transactions, whereas actual QRIS usage reflects the extent to which QRIS is used in everyday payment activities. Measurement items were adapted from prior studies on digital payment, mobile banking, and fintech adoption and were adjusted to fit the QRIS context. To improve content validity and clarity, the survey instrument was reviewed by two academic experts in Islamic finance and digital payments and was pre-tested with a small group of MSME customers before full-scale data collection (Ahmed et al., 2025; Hellemans et al., 2023; Tang et al., 2022).

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Data Analysis

The data were analysed using SmartPLS. The measurement model was evaluated through outer loadings, Cronbach's alpha, composite reliability, average variance extracted (AVE), and discriminant validity, while the structural model was evaluated using path coefficients, bootstrapped t-values and p-values, together with coefficients of determination (R^2) for the endogenous constructs (Kumar et al., 2024; Malaquias & Fernandes Malaquias, 2022; Mohd Thas Thaker et al., 2023; Wardhani et al., 2023).

Results

Respondent characteristics

Table 1 summarises the demographic and QRIS-usage profile of the respondents (n = 180). The sample consisted of 59.4% women and 40.6% men. Most respondents were in the economically active age groups, with 58.9% aged 30–39 years and 35.0% aged 20–29 years. In terms of educational background, the majority had diploma or bachelor-level education. These characteristics indicate that most respondents were relatively well educated and had the capacity to form stable judgments about digital payment services.

The QRIS experience profile also suggests that respondents were not merely first-time users. Most had used QRIS for at least six months, and 86.6% had used it for six months or longer. In addition, 49.4% reported using QRIS one to three times per week and 37.2% reported using it four times or more per week. These figures indicate a meaningful distinction between simple adoption and active usage: respondents had not only accessed QRIS but had also incorporated it into repeated payment behaviour. Figure 1 reinforces this pattern by showing that regular users outnumber infrequent users by a wide margin.

Table 1. Demographic and QRIS usage profile of respondents (n = 180)

Variables	Categories	Frequency	Percentage (%)
Sex	Men	73	40.6
	Women	107	59.4
Age group	Below 20 years	5	2.8
	20–29 years	63	35.0
	30–39 years	106	58.9
	40–49 years	6	3.3
Education level	Senior high school level or below	26	14.4
	Diploma / Bachelor degree	151	83.9
	Postgraduate	3	1.7
Length of using QRIS	< 6 months	24	13.3
	6–12 months	96	53.3
	> 12 months	60	33.3
Frequency of QRIS use	Under once per week	24	13.3
	1–3 times weekly	89	49.4
	4 times or more per week	67	37.2

Figure 1 shows the frequency distribution of QRIS use among MSME customers. Most respondents reported using QRIS at least weekly, which supports the argument that the sample reflects active rather than merely nominal adoption.

Assessment of the measurement framework

The measurement model was assessed using indicator reliability, internal consistency, convergent validity, as well as discriminant validity. All constructs were specified as reflective.

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As shown in Table 2, the indicator loadings were satisfactory overall. Financial literacy items loaded between 0.746 and 0.898, perceived security risk items between 0.842 and 0.927, trust in QRIS security items between 0.901 and 0.922, behavioural intention items between 0.913 and 0.939, and actual QRIS usage items between 0.921 and 0.938. These values indicate adequate item reliability across the constructs.

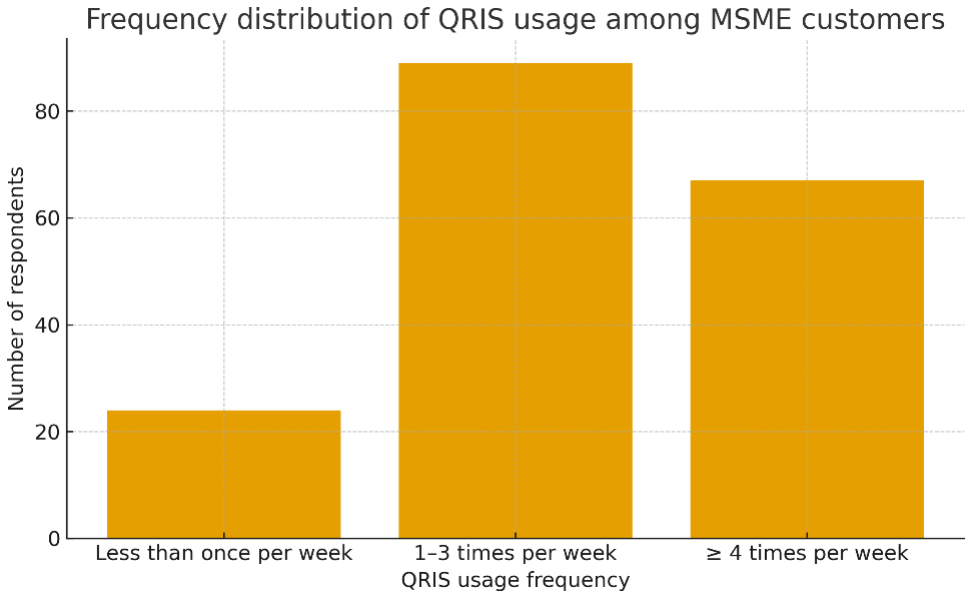

Figure 1. Frequency distribution of QRIS usage among MSME customers

Internal consistency was also acceptable. Cronbach's alpha ranged from 0.841 to 0.931, while Composite reliability values ranged from 0.891 to 0.951. Convergent validity was supported because all AVE values exceeded 0.50. The AVE values were 0.673 for financial literacy, 0.804 for perceived security risk, 0.827 for trust in QRIS security, 0.864 for behavioural intention, and 0.863 for actual QRIS usage. The manuscript also reports that the Fornell–Larcker criterion and HTMT ratios supported discriminant validity. Taken together, these results indicate that the measurement model was reliable and suitable for structural analysis.

Table 2. Measurement model assessment

Construct	Indicator	Loading	Cronbach's alpha	Composite reliability	AVE
Financial literacy	FinancialLiteracy_1	0.898	0.841	0.891	0.673
	FinancialLiteracy_2	0.852	0.841	0.891	0.673
	FinancialLiteracy_3	0.776	0.841	0.891	0.673
	FinancialLiteracy_4	0.746	0.841	0.891	0.673
Perceived security risk	PerceivedSecurityRisk_1	0.918	0.878	0.925	0.804
	PerceivedSecurityRisk_2	0.927	0.878	0.925	0.804
	PerceivedSecurityRisk_3	0.842	0.878	0.925	0.804
Trust in QRIS security	TrustSecurity_1	0.903	0.931	0.951	0.827
	TrustSecurity_2	0.922	0.931	0.951	0.827

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	TrustSecurity_3	0.911	0.931	0.951	0.827
	TrustSecurity_4	0.901	0.931	0.951	0.827
Behavioural intention	BehavioralIntention_1	0.939	0.921	0.950	0.864
	BehavioralIntention_2	0.913	0.921	0.950	0.864
	BehavioralIntention_3	0.937	0.921	0.950	0.864
Actual QRIS usage	ActualUsage_1	0.921	0.920	0.950	0.863
	ActualUsage_2	0.928	0.920	0.950	0.863
	ActualUsage_3	0.938	0.920	0.950	0.863

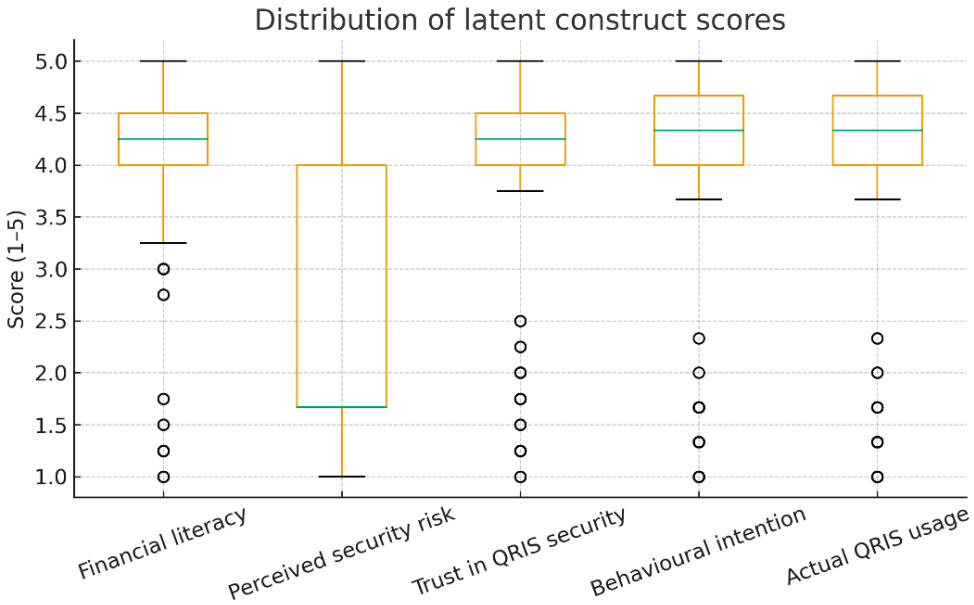

Figure 3. Distribution of latent construct scores

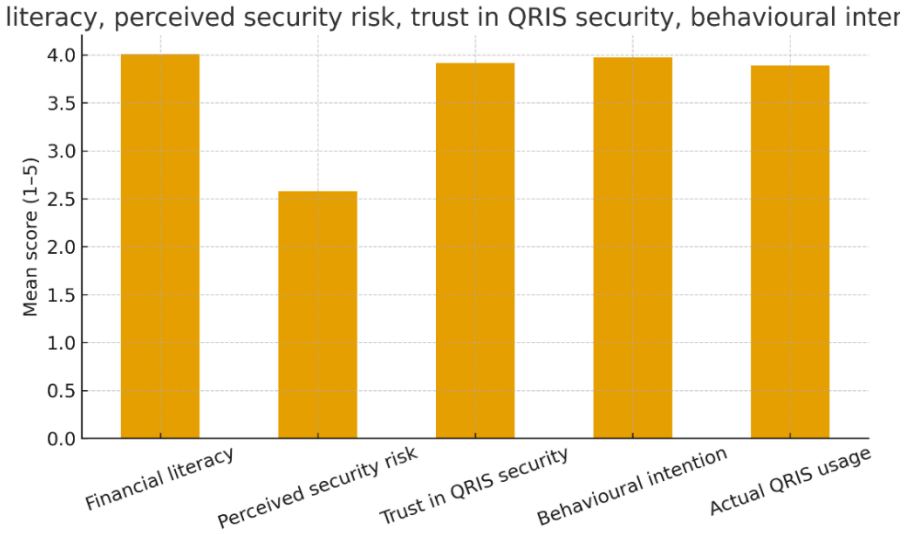

Figure 4. Mean scores of financial literacy, perceived security risk, trust in QRIS security, behavioural intention, and actual QRIS usage

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Figure 3 shows that financial literacy, trust in QRIS security, behavioural intention, and actual QRIS usage are clustered near the upper end of the scale, whereas perceived security risk is concentrated at the lower end.

Figure 4 shows a similar pattern, with trust, behavioural intention, and actual usage displaying relatively high mean scores, while perceived security risk remains lower.

Assessment of the structural model

The structural model was assessed by analysing the path coefficients, their statistical significance, and the explanatory power of the endogenous constructs. Figure 2 presents the estimated PLS-SEM model together with the coefficients of determination (R^2). The model explains a considerable proportion of the variance in trust in QRIS security ($R^2 \approx 0.86$), behavioural intention ($R^2 \approx 0.82$), and actual QRIS use ($R^2 \approx 0.91$). These values indicate strong explanatory power for the proposed model.

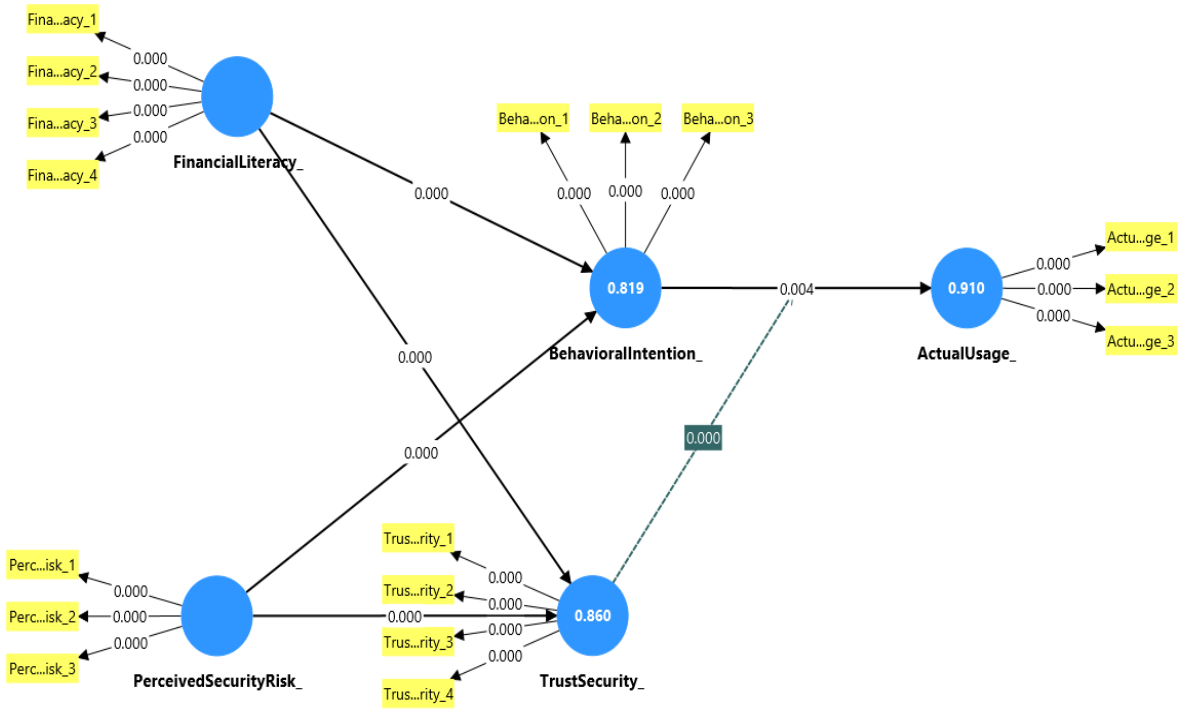

Figure 2. PLS-SEM structura l model of QRIS adoption among MSME customers

Figure 2 illustrates the structural relationships among the focal constructs. Financial literacy and perceived security risk jointly explain trust in QRIS security and behavioural intention, while trust and behavioural intention together explain actual QRIS usage. The pattern shown in the model is consistent with the study's proposition that QRIS usage is shaped by both enabling and constraining factors.

Table 3 presents the hypothesis-testing results derived from bootstrapping with 5,000 subsamples. Financial literacy has a clear favourable effect on behavioural intention ($\beta = 0.700$, $t = 17.45$, $p < 0.001$), supporting H1. Financial literacy also has a favourable effect on trust in QRIS security ($\beta = 0.734$, $t = 24.53$, $p < 0.001$), supporting H2. These findings indicate that respondents with higher financial literacy are more inclined to use QRIS and are more likely to trust its security.

Perceived security risk has significant adverse effects on usage intention ($\beta = -0.293$, $t = 6.35$, $p < 0.001$) and trust in QRIS security ($\beta = -0.280$, $t = 7.73$, $p < 0.001$), supporting H3 and H4.

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Trust in QRIS security positively affects actual QRIS usage (β = 0.396, t = 4.19, p < 0.001), supporting H5. Behavioural intention also positively affects actual QRIS usage (β = 0.280, t = 2.90, p = 0.004), supporting H6. These results confirm that both trust and intention are important predictors of actual QRIS usage.

The interaction term between trust in QRIS security and behavioural intention is statistically significant and adverse (β = −0.171, t = 3.84, p < 0.001), supporting H7 but in a direction opposite to the initial expectation of a strengthening effect. This result suggests that when trust is already high, additional increases in intention contribute less to actual usage. In other words, once users have incorporated QRIS into routine practice, trust may stabilise behaviour and reduce the marginal role of intention.

Table 3. Structural model results

Path	β coefficient	t-value	p-value
Financial Literacy → Behavioral Intention	0.700	17.45	0.000
Financial Literacy → Trust Security	0.734	24.53	0.000
Perceived Security Risk → Behavioral Intention	−0.293	6.35	0.000
Perceived Security Risk_ → Trust Security	−0.280	7.73	0.000
Trust Security → Actual Usage	0.396	4.19	0.000
Behavioral Intention → Actual Use	0.280	2.90	0.004
Trust Security × Behavioral Intention → ActualUsage	−0.171	3.84	0.000

Overall, these findings suggest that financial literacy and perceived security risk exert their effects on actual QRIS usage indirectly by shaping trust in QRIS security and behavioural intention, while trust and intention directly determine usage levels. Trust in QRIS security appears to function both as a mediator, translating literacy and risk perceptions into usage, and as a moderator that changes the strength of the intention–usage relationship In other words, trust acts as a "safety net" that directly boosts usage but reduces the degree to which additional increases in intention translate into higher usage.

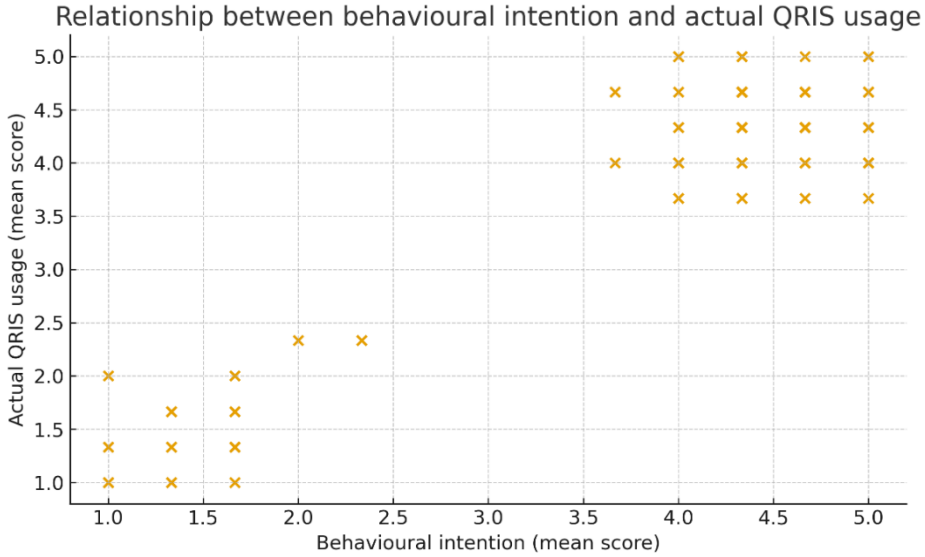

Figure 5. Association between behavioural intention and actual QRIS usage

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Figure 5 shows a positive association between behavioural intention and real QRIS usage. The spread of points around the trend also suggests that intention alone does not fully explain usage, which is consistent with the model results showing the role of trust in QRIS security and perceived security risk.

Discussion

The findings provide several insights into QRIS adoption among MSME customers and its relevance to Islamic financial inclusion. First, financial literacy has strong positive effects on both behavioural intention and trust in QRIS security. This result confirms that users who better understand digital financial services are more prepared to evaluate QRIS and to develop confidence in its use. In the broader context of Islamic finance settings stronger financial literacy may also help users recognise how digital payment systems can connect them to formal and potentially sharia-compliant financial services (Ahmed et al., 2025; Banerjee & Pradhan, 2024; Chan et al., 2022; Hermawan et al., 2022; Islam & Khan, 2024).

Second, perceived security risk remains a major barrier to QRIS usage. The adverse effects of perceived risk on behavioural intention as well as trust show that users continue to respond to concerns about fraud, data misuse, as well as and transaction vulnerability. This finding is in line with earlier studies showing that higher perceived risk weakens digital payment adoption as well as reduces trust in payment systems. From the perspective of Islamic finance, this issue is especially relevant because the protection of wealth and personal data aligns with the objective of hifz al-mal in maqasid al-shariah(Afif et al., 2023; Bailey et al., 2022; Faisal & Abbood, 2024; Monir & Mia, 2024; Zaid Kilani et al., 2023).

Third, trust in QRIS security and behavioural intention both have positive effects on actual QRIS usage. This indicates that active usage is shaped not only by willingness to use the system but also by confidence that the system is secure and dependable. The distinction is important: broad adoption figures may show that QRIS is widely available and accepted, but active and repeated use depends more directly on trust and continued user commitment. This result is consistent with studies showing that trust remains a key predictor of actual mobile payment usage and continuance behaviour (Bergmann et al., 2023; Butarbutar et al., 2022; Rahman et al., 2023; Sembiring et al., 2022; Sumadi et al., 2021; Venkatesh et al., 2016)..

Finally, the moderating effect of trust in QRIS security is statistically significant but negative. While trust is often expected to strengthen the translation of intention into behaviour, the present result suggests a different mechanism. When trust is already high, actual usage may become more habitual or stable, so additional increases in stated intention have less incremental effect. This interpretation is consistent with the possibility of a saturation or stabilisation effect, in which trust supports routine usage directly rather than merely amplifying intention (R. Hasan et al., 2023; Shukri et al., 2024),.

Taken together, the findings show that QRIS usage among MSME customers is shaped by the interaction of financial literacy, perceived security risk, and trust. In practical terms, efforts to expand QRIS use should therefore focus not only on widening adoption, but also on strengthening digital financial literacy, reducing perceived security risk, and providing visible assurance that transactions are safe and reliable. In this way, QRIS can contribute more meaningfully to Islamic financial inclusion.

Conclusion

This study shows that QRIS usage among MSME customers is shaped mainly by financial literacy, perceived security risk, and trust in QRIS security. Financial literacy strengthens behavioural intention and trust, whereas perceived security risk weakens them. Trust and behavioural intention, in turn, remain the most immediate predictors of actual QRIS usage. The findings contribute to the digital payment literature by showing that QRIS adoption is

influenced not only by technological convenience but also by users' financial capability, security perceptions, and trust formation. From the perspective of Islamic financial inclusion, QRIS may function as an entry point to wider sharia-compliant financial participation when supported by financial education, credible security assurance, and strong institutional governance.

Practically, policymakers, regulators, Islamic banks, and Islamic microfinance institutions should focus not only on expanding QRIS access but also on improving digital financial literacy and strengthening visible consumer protection mechanisms.

This study is constrained by its cross-sectional design, non-probability sampling, and its focus on a single regional setting. Future research may use broader samples, longitudinal or comparative designs, along with additional constructs such as perceived usefulness, religiosity, perceived sharia compliance, and institutional trust to deepen understanding of QRIS-based Islamic financial inclusion.

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