THE INFLUENCE OF TRUST AND RISK ON THE USE OF QRIS WITH FRAUD ISSUES AS A MODERATING VARIABLE IN BANDUNG

PENGARUH KEPERCAYAAN DAN RISIKO TERHADAP PENGGUNAAN QRIS DENGAN ISU KECURANGAN SEBAGAI VARIABEL MODERASI DI BANDUNG

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Abstract

The development of digital payment systems has driven the increasing use of the Indonesian Standard Quick Response Code (QRIS) as a practical and integrated cashless transaction method. Although QRIS adoption continues to increase, its continued use is still influenced by trust, perceived risk, and the prevalence of fraud in digital transactions. This study aims to analyze the influence of trust and risk on QRIS use, with fraud as a moderating variable, in the city of Bandung. This study used a quantitative approach with a survey of 200 QRIS user respondents. The data analysis technique used was Structural Equation Modeling based on Partial Least Squares (SEM-PLS). The results showed that trust had a positive and significant effect on QRIS use, while risk had a negative and significant effect. Furthermore, fraud moderated the relationship between trust and QRIS use by weakening the influence of trust, and moderated the relationship between risk and QRIS use by strengthening the influence of risk. These findings confirm that although QRIS offers convenience and efficiency, perceptions of risk and fraud remain crucial factors influencing usage behavior. This research is expected to provide theoretical contributions to the development of digital payment technology adoption models and provide practical implications for regulators, payment service providers, and MSMEs in strengthening security, improving digital literacy, and building user trust in the QRIS payment system.

Keywords : QRIS, trust, risk, fraud issues, and QRIS usage.

Abstrak

Perkembangan sistem pembayaran digital mendorong meningkatnya penggunaan Quick Response Code Indonesian Standard (QRIS) sebagai metode transaksi non-tunai yang praktis dan terintegrasi. Meskipun adopsi QRIS terus meningkat, keberlanjutan penggunaannya masih dipengaruhi oleh faktor kepercayaan, persepsi risiko, serta maraknya isu kecurangan dalam transaksi digital. Penelitian ini bertujuan untuk menganalisis pengaruh kepercayaan dan risiko terhadap penggunaan QRIS dengan isu kecurangan sebagai variabel moderasi di Kota Bandung. Penelitian ini menggunakan pendekatan

kuantitatif dengan metode survei terhadap 200 responden pengguna QRIS. Teknik analisis data yang digunakan adalah Structural Equation Modeling berbasis Partial Least Square (SEM-PLS). Hasil penelitian menunjukkan bahwa kepercayaan berpengaruh positif dan signifikan terhadap penggunaan QRIS, sementara risiko berpengaruh negatif dan signifikan terhadap penggunaan QRIS. Lebih lanjut, isu kecurangan terbukti memoderasi hubungan antara kepercayaan dan penggunaan QRIS dengan memperlemah pengaruh kepercayaan, serta memoderasi hubungan antara risiko dan penggunaan QRIS dengan memperkuat pengaruh risiko. Temuan ini menegaskan bahwa meskipun QRIS memberikan kemudahan dan efisiensi, persepsi terhadap risiko dan kecurangan masih menjadi faktor krusial yang memengaruhi perilaku penggunaan. Penelitian ini diharapkan dapat memberikan kontribusi teoretis dalam pengembangan model adopsi teknologi pembayaran digital serta memberikan implikasi praktis bagi regulator, penyedia layanan pembayaran, dan pelaku UMKM dalam memperkuat keamanan, meningkatkan literasi digital, dan membangun kepercayaan pengguna terhadap sistem pembayaran QRIS.

Kata Kunci : QRIS, kepercayaan, risiko, isu kecurangan, dan penggunaan QRIS.

1. INTRODUCTION

Technological advancement is an inevitable phenomenon, requiring society to constantly adapt to the changing times. One unavoidable form of technology is the transaction system. One of the services resulting from technological development is the cashless or digital non-cash payment system (Fadhila et al. 2023). Technology changes how people conduct financial transactions; with the help of technology, transactions or trade become easier. Fundamentally, money is a legal transaction tool for purchasing goods and services. This indicates a high level of public interest in transacting non-cash. Digital money now serves as a substitute for cash in various transactions, and the government also supports the implementation of this electronic payment system (Fadhila et al. 2023).

As a response to the widespread use of digital payments, a model is needed to understand how society accepts and uses such new technologies. The TAM (Technology Acceptance Model) developed by Davis is a relevant theory for explaining behavioral decisions in using technological systems, as it is based on technological characteristics that can influence usage interest (Syaifuddin and Rahman 2022). Therefore, TAM theory can be used to analyze the implementation of digital payment transaction systems, including QRIS, by measuring usage reactions and perceptions. Through this approach, the extent to which public attitudes and behavioral decisions are formed toward the use of QRIS-based non-cash payment systems can be identified.

In the theoretical framework of this thesis proposal regarding the influence of trust and risk on the use of QRIS with fraud issues as a moderating variable in Bandung, the Technology Acceptance Model (TAM) is positioned as an operational supporting theory. Introduced by Davis (1989) as a specific adaptation of the Theory of Reasoned Action (TRA) for the information technology domain, it provides the constructs of perceived usefulness and perceived ease of use to measure QRIS acceptance, complementing the analysis of contextual variables such as trust and risk without becoming the primary foundation of human behavior. This position aligns with research practices on fintech adoption in Indonesia. FinTech can have

a positive impact on monetary stability and financial system stability, as outlined in Bank Indonesia Regulation Number 19/12/PBI/2017 (Aldi Akbar et al. 2023). In this context, TAM functions as a supporting model under TRA/TPB for PLS-SEM extensions, allowing for empirical hypothesis testing of the fraud moderator on the trust-risk-behavioral intention relationship.

Bank Indonesia is committed to accelerating the electronification of transactions within local government environments while simultaneously encouraging digital transformation in the national financial sector. This effort is in line with the need for modernizing payment systems capable of increasing efficiency, accelerating productivity, and stimulating real sector activities that ultimately contribute positively to national economic growth (Sriekaningsih, 2020). One concrete manifestation of this initiative was the implementation of the Quick Response Code Indonesian Standard (QRIS) on January 1, 2020. This policy was born through collaboration between Bank Indonesia and the Indonesian Payment System Association (ASPI). This policy aims to unify various digital payment service providers into a single QR code standard that is simple, efficient, and fast. The implementation of QRIS not only makes it easier for the public to transact but also provides connectivity and interoperability between payment systems, thereby supporting a digital financial ecosystem that is inclusive, secure, and accessible to all levels of society (Rachmawati and Wahyudi 2024).

The development of financial technology in the era of digital transformation has given rise to various digital wallet (e-wallet) services accessible via smartphones, making it easier for users to manage finances while conducting transactions. In Indonesia, several popular digital wallets include GoPay, OVO, DANA, LinkAja, Shopeepay, BCA Mobile (Sakuku), Jenius, iSaku (Telkomsel), Kredivo, and BRIMO. However, using many different applications is often considered inefficient because consumers must have more than one e-wallet. To address this challenge, Bank Indonesia established a national standard for QR-based payments known as QRIS, which allows transactions to be carried out more practically with one universal code that can be used across various applications. The following is data on the number of QRIS users in Indonesia (January 2022–March 2024):
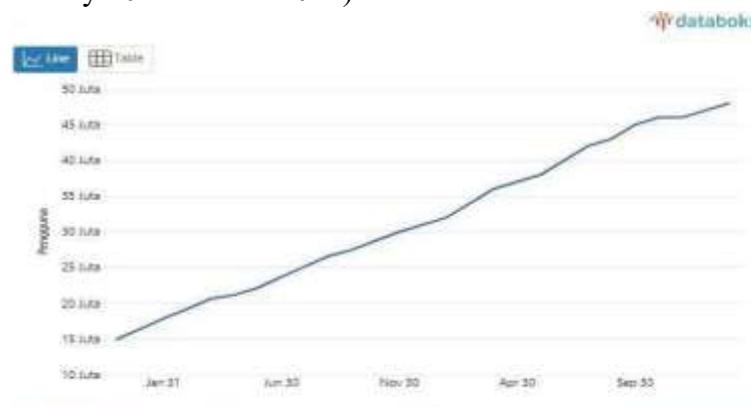

Figure 1.1 Data on the Number of QRIS Users in Indonesia
Source: Databoks, (2024)

The rapid growth of QRIS in Indonesia reflects a highly positive trend, with user numbers reaching 48 million and merchant adoption growing by 28% annually as of early 2024. This digital transformation has significantly altered consumer behavior, particularly among Generation Z in Bandung, who increasingly rely on smartphones for daily transactions and rarely carry physical cash. While QRIS offers enhanced efficiency, transparency, and integration across various platforms, its implementation is not without challenges. Technical risks such as unstable internet connectivity and financial concerns regarding Merchant Discount Rate (MDR) fees remain prevalent. Furthermore, data security and privacy remain a concern for nearly half of the users, creating a complex landscape of perception regarding the safety of digital payments.

A critical factor influencing the long-term adoption of QRIS is the prevalence of fraud, which serves as a significant moderating variable in this study. Recent criminal activities in Bandung, such as the use of fake QR codes and manipulated transfer proofs, have highlighted vulnerabilities that directly impact public confidence. Preliminary survey data indicates that while overall trust in QRIS remains high at over 80%, more than 70% of respondents are aware of these fraud cases and believe they significantly diminish the system's credibility. Consequently, this research utilizes the Technology Acceptance Model (TAM) to analyze how trust and risk—when moderated by the presence of fraud—shape the behavioral intention of users in Bandung. The findings aim to provide strategic recommendations for regulators and stakeholders to strengthen the digital financial ecosystem against evolving security threats.

The prominence of Micro, Small, and Medium Enterprises (MSMEs) in Bandung further underscores the strategic importance of QRIS as a tool for economic resilience. With over 10,000 units recorded in 2024, MSMEs in Bandung have shown remarkable adaptability to the digital era, supported by local government initiatives such as simplified business licensing and e-commerce collaborations. For these businesses, QRIS is not merely a payment method but a gateway to financial inclusion, allowing them to manage transactions more efficiently and reach a broader market. However, the consistent growth of these micro-businesses relies heavily on a stable digital infrastructure, as any technical disruption or perceived insecurity can hinder their productivity and willingness to maintain digital operations.

Ultimately, the interplay between trust, perceived risk, and the reality of fraud creates a dynamic environment that dictates the future of fintech adoption in Indonesia. While high digital literacy and the convenience of a unified QR standard drive usage, the recurring reports of deceptive practices necessitate more robust internal controls and enhanced digital literacy programs. By investigating these factors specifically within the context of Bandung—a city with high technological penetration—this research seeks to bridge the gap between theoretical technology acceptance and the practical realities of financial security. The results are expected to serve as a vital reference for Bank Indonesia and payment service providers in refining security protocols and restoring user confidence amidst the rising threats of digital payment fraud.

2. RESEARCH METHOD

This research employs a quantitative approach with an explanatory design to examine the causal relationships between the variables (Amelia et al., 2023). The study focuses on investigating the influence of trust and risk on QRIS usage in Bandung, specifically positioning fraud issues as a moderating variable. Within this framework, there is a strong correlation between PEOU (Perceived Ease of Use) and the intention to use technology services, such as FinTech mobile payment services (Kartawinata, Pradana, and Purwanto 2025). This correlation is fundamental in understanding how technological characteristics influence user interest and behavioral decisions (Syaifuddin and Rahman 2022).

The research process follows a systematic sequence as defined by Sugiyono (2022), who states that research stages are a systematic series of steps taken by researchers to carry out the research process. This activity generally begins with problem identification. However, the focus of problems in quantitative and qualitative approaches differs; in a quantitative approach, the formulation of the problem must be firmly and specifically established from the beginning of the study. The quantitative research procedure for this study follows the stages illustrated in Figure 3.1 regarding the research stages (Widodo Arry and Yusiana Rennyta 2021).

Data for this study is collected through primary sources by distributing questionnaires to 200 respondents from Generation Z in Bandung, selected via a purposive sampling method. To measure respondent perceptions, a five-point Likert scale is utilized. The data is then analyzed using variance-based Structural Equation Modeling (SEM) with the Partial Least Square (PLS) approach via SmartPLS software. This analysis includes evaluating the measurement model (outer model) to ensure validity and reliability, as well as the structural model (inner model) to empirically test the hypotheses regarding the impact of trust, risk, and the moderating effect of fraud on behavioral intention (Aldi Akbar et al. 2023).

3. RESULT AND DISCUSSION

a. Reliability Test

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)
Isu Kecurangan	0.908	0.916	0.925
Kepercayaan	0.875	0.893	0.904
Pengguna Qris	0.918	0.918	0.936
Resiko	0.901	0.905	0.920

The reliability test results indicate that all latent constructs have a good level of internal consistency. The Cronbach's Alpha and Composite Reliability (rho_a and rho_c) values for all variables are above the threshold of 0.70, indicating that the indicators in each construct are able to measure the latent variables consistently and reliably. The high Composite Reliability values also confirm the quality of the measurement instrument in the context of PLS-SEM analysis.

b. Structural Results (Inner Model)

1) R-Square (Coefficient of Determination)

a)	R-square	R-square adjusted
Used Qris	0.672	0.664

Source: Data processed by the author (2025)

The R-Square (R²) value is used to assess the ability of exogenous variables to explain variations in endogenous variables in the PLS-SEM model. The analysis results show that the R² value for the QRIS User variable is 0.672, which means that the independent variables are able to explain 67.2% of the variation in QRIS User behavior, while the remainder is influenced by other factors outside the model. This value indicates that the model's predictive ability is relatively strong.

2) Predictive Relevance (Q-Square)

	Q²predict
Pengguna Qris	0.645

Based on the calculation results, the Q²predict value for the QRIS User variable is 0.645 and is above zero, indicating that the model has good predictive relevance. This indicates that the structural model is not only capable of explaining the relationships between variables but also has adequate predictive power. Thus, the research model is deemed suitable for use in both theoretical testing and practical application.

3) Effect Size (F-Square)

	f-square
Isu Kecurangan -> Pengguna Qris	0.107
Kepercayaan -> Pengguna Qris	0.021
Resiko -> Pengguna Qris	0.347
Isu Kecurangan x Resiko -> Pengguna Qris	0.043
Isu Kecurangan x Kepercayaan -> Pengguna Qris	0.012

Based on the results of the F-Square analysis, the contribution of each construct to QRIS usage shows a variation in influence dominated by small to moderate effects. The issue of fraud has an F-Square value of 0.107, indicating a small effect on QRIS usage, while trust has an F-Square value of 0.021, which is included in the very small effect category. Conversely, risk shows an F-Square value of 0.347, which is classified as a moderate effect and is the construct with the most dominant influence in the research model.

4) VIF

	VIF
Isu Kecurangan -> Pengguna Qris	2.557
Kepercayaan -> Pengguna Qris	2.187
Resiko -> Pengguna Qris	1.973
Isu Kecurangan x Resiko -> Pengguna Qris	1.663

Isu Kecurangan x Kepercayaan -> Pengguna Qris	2.139

Based on the results of multicollinearity testing using Variance Inflation Factor (VIF) values, all VIF values in the structural model range from 1.663 to 2.557 and are still below the VIF tolerance limit of <5. This indicates that there is no indication of multicollinearity among the independent variables in the research model. The VIF values for each path, including the main and moderating variables, indicate that each construct provides a relatively independent contribution without excessive correlation. Thus, it can be concluded that the structural model is free from multicollinearity problems and is suitable for proceeding to the hypothesis testing stage.

5) Fit Test

	Saturated model	Estimated model
SRMR	0.075	0.075

Based on the results of the model fit analysis, the Standardized Root Mean Square Residual (SRMR) value was obtained at 0.075 for both the Saturated Model and the Estimated Model. This value is below the cut-off limit of 0.08, indicating that the PLS-SEM model used has a good level of fit with the empirical data. The similarity of the SRMR values in both models indicates that the parameter estimates do not cause significant distortion to the data covariance structure. Thus, it can be concluded that the constructed model has an acceptable fit and is suitable for use in hypothesis testing and analysis of relationships between latent variables.

6) Hypothesis Testing

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics ($|O/STDEV|$)	P values
Kepercayaan -> Pengguna Qris	0.122	0.122	0.061	2.009	0.045
Resiko -> Pengguna Qris	0.474	0.476	0.068	7.021	0.000
Isu Kecurangan x Kepercayaan -> Pengguna Qris	-0.068	-0.063	0.046	1.455	0.146
Isu Kecurangan x Resiko -> Pengguna Qris	0.143	0.129	0.060	2.361	0.018

c. Discussion

The descriptive analysis indicates that public trust, perceived risk, and QRIS usage in Bandung are in the "very good" to "good" categories. Trust achieved a high average score of 85.60%, driven by strong perceptions of integrity and competence, while perceived risk remained controlled at 75.12%, with system performance being the most trusted aspect. Statistically, all constructs demonstrated excellent internal consistency and validity through PLS-SEM testing, with Composite Reliability (CR) values exceeding 0.90 and Average Variance Extracted (AVE) meeting the required thresholds, confirming that the measurement instruments are highly reliable.

Hypothesis testing reveals that both Trust and Perceived Risk significantly influence the actual use of QRIS. Trust has a positive and significant effect ($p = 0.045$), suggesting that higher integrity and system reliability lead to increased adoption. Perceived Risk showed an even more dominant impact ($f^2 = 0.285$, $p = 0.000$), where lower levels of concern regarding financial and security risks directly correlate with more frequent QRIS transactions. These findings align with prior research emphasizing that a sense of security and service credibility are the fundamental drivers for digital payment adoption among the youth and MSMEs.

Regarding the moderating variables, the study found that Fraud Issues do not significantly moderate the relationship between Trust and QRIS Usage ($p = 0.146$). This suggests that users' intrinsic trust in the national digital payment system is stable and not easily swayed by external news of sporadic fraud. Furthermore, while respondents are aware of potential risks like QR code forgery or data skimming, they view existing security measures—such as two-factor authentication and Bank Indonesia's oversight—as effective, ensuring that QRIS remains the primary choice for daily financial activities.

4. CONCLUSION

Based on the research conducted regarding the influence of Trust, Perceived Risk, and Fraud Issues on QRIS Usage, both directly and as moderating variables, several important conclusions can be formulated as follows:

a. Trust Has a Significant Influence on QRIS Usage This study found that Trust has a significant and positive influence on QRIS Usage. The path coefficient (OS) value of 0.122 with a t-statistic of 2.009 (>1.96) and a p-value of 0.045 (<0.05) indicates that the higher the level of user trust in the integrity, competence, and reliability of the QRIS system, the higher their tendency to use it. The very good descriptive score (85.60%, CR=0.932, AVE=0.745) confirms that trust serves as the primary foundation for digital payment technology adoption among Gen Z in Bandung.

b. Risk Has a Positive Influence on QRIS Usage Risk is proven to have a significant positive influence on QRIS Usage. The OS value of 0.474 with a t-statistic of 7.021 (>1.96) and a p-value of 0.000 shows that Gen Z users actually use QRIS more frequently despite being aware of controlled risks (performance, financial, security, etc.) (descriptive score 75.12%, CR=0.958, AVE=0.815). This finding reinforces that the practical benefits of QRIS are more dominant than the perception of risk, making risk a driver rather than a barrier to adoption.

c. Fraud Issues Do Not Moderate the Influence of Trust on QRIS Usage The research findings show that fraud issues are unable to weaken or strengthen the relationship between trust and QRIS usage (H3 rejected: OS=-0.068, t-statistic=1.455 <1.96, p-value=0.146 >0.05). Although fraud issues (fake QR, merchant fraud) are fairly well-known (score 74.90%, CR=0.917, AVE=0.708), they are not strong enough to change

the users' fundamental belief in the reliability of the QRIS system. Thus, trust remains stable as a strong independent variable.

d. Fraud Issues Moderate the Influence of Risk on QRIS Usage In contrast to the influence of trust, fraud issues are proven to moderate the relationship between risk and QRIS usage (H4 accepted, significant interaction). When the perception of fraud issues is high, the influence of risk on QRIS usage becomes stronger with a reinforced positive effect. This finding indicates that issues of fraud and transaction manipulation increase the willingness-to-risk of Gen Z users, even within the digital-savvy context of Bandung.

In general, this research confirms that QRIS usage is primarily influenced by the psychological aspects of users related to the level of trust and perceived risk, with the analysis model showing a very good fit. Fraud issues only play a limited role as a specific reinforcer on the risk path, thereby enriching the understanding of fintech adoption in Indonesia through the Technology Acceptance Model approach as a supporting theory.

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