



THE IMPACT OF QUICK RESPONSE CODE INDONESIAN STANDARD (QRIS) ON MSME SALES PERFORMANCE IN INDONESIA

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Abstract: The Quick Response Code Indonesian Standard (QRIS), launched by Bank Indonesia as the national QR-code payment standard and made mandatory from January 2020, has achieved extraordinary adoption, with more than 30 million registered MSME merchants and 2.9 billion transactions recorded in 2023. Despite this growth, empirical evidence on the specific commercial impact of QRIS adoption on MSME sales performance remains limited. This study analyses the impact of QRIS adoption on the sales performance of Indonesian MSMEs, with transaction frequency as a mediating variable. Using a quantitative descriptive-causal design, primary data were collected through a structured questionnaire from 120 valid MSME respondents who had been actively using QRIS for at least three months, and analysed using path analysis and the Sobel test. The results show that QRIS adoption has a positive and significant effect on transaction frequency ($a_1 = 0.7053$, $p < 0.001$, $R^2 = 0.4975$), and that transaction frequency has a positive and significant effect on sales performance ($b_2 = 0.5378$, $p < 0.001$). The Sobel test confirms a significant indirect effect of QRIS adoption on sales performance through transaction frequency (indirect effect = 0.3793, $z = 6.61$, $p < 0.001$), indicating partial mediation. The combined model explains 75.67% of the variance in sales performance. These findings confirm that QRIS adoption generates commercial value for Indonesian MSMEs through two concurrent mechanisms: directly, by expanding customer reach and improving satisfaction, and indirectly, by increasing the frequency of completed transactions, which drives revenue and sales volume.

Keywords: QRIS, MSME, Sales Performance, Transaction Frequency, Digital Payment, Path Analysis, Mediation, Indonesia

1. Introduction

Micro, small, and medium enterprises (MSMEs) form the backbone of the Indonesian economy. They constitute the overwhelming majority of business entities in Indonesia, contribute approximately 61% of Gross Domestic Product (GDP), and absorb more than 97% of the national workforce. Despite this economic significance, MSMEs have historically depended on cash-based transactions, which introduce operational risks and limit scalability. The QRIS program was introduced partly to address these constraints by providing a low-cost, accessible digital payment infrastructure for small businesses.

The Quick Response Code Indonesian Standard (QRIS) is a unified national QR-code payment standard established by Bank Indonesia in 2019 and made mandatory for all QR-based payment systems in Indonesia from 1 January 2020 [2]. QRIS integrates the QR codes of all licensed payment service providers, including GoPay, OVO, Dana, LinkAja, ShopeePay, and various mobile-banking applications into a single standardised code accepted by any registered merchant. As of December 2023, more than 30 million merchants were registered as QRIS users and total annual transaction volume reached 2.9 billion, a 130% year-on-year increase; Bank Indonesia data further indicate



that QRIS-adopting MSMEs experience an average increase in daily transaction volume of roughly 15–20% relative to their pre-adoption baseline [4].

Despite this momentum, the commercial reality for many MSME operators remains ambiguous. While aggregate transaction data are encouraging, many individual owners report uncertainty about whether QRIS adoption has meaningfully changed their sales volume, revenue, and customer reach. The practical question of whether and how QRIS adoption translates into measurable commercial outcomes for MSMEs has not been sufficiently answered, creating a gap between the policy narrative promoting QRIS and the lived experience of MSME operators.

The existing literature on digital payment adoption in Indonesia is substantial but leaves three critical gaps. First, most prior studies examine digital payment systems broadly — encompassing mobile banking, e-wallets, and QR-code systems collectively — without isolating the specific effects of QRIS as a standardised, government-mandated infrastructure [17, 23]. Second, most consumer-facing studies focus on adoption intention or customer satisfaction rather than business-side outcomes such as MSME sales performance [11, 14]. Third, and most importantly, no study to date has formally examined transaction frequency as a mediating variable between QRIS adoption and MSME sales performance, despite theoretical predictions and empirical indications that transaction frequency is the primary mechanism through which payment convenience translates into revenue improvement [9, 23].

This study addresses these gaps directly. It focuses specifically on QRIS rather than digital payments in general, adopts the MSME-owner perspective rather than the consumer perspective, and formally introduces and tests transaction frequency as a mediating variable in the QRIS adoption–sales performance relationship. Accordingly, the study pursues six objectives: to determine the levels of QRIS adoption, transaction frequency, and sales performance among MSMEs; and to examine the effect of QRIS adoption on transaction frequency, the effect of transaction frequency on sales performance, and the direct and mediated effect of QRIS adoption on sales performance through transaction frequency.

2. Literature Review

2.1 Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM), proposed by Davis [8], is the primary theoretical framework guiding this study. TAM identifies two core constructs that jointly determine behavioural intention to use a technology. Perceived Usefulness (PU) is the degree to which a person believes that using a system will enhance their performance, while Perceived Ease of Use (PEOU) is the degree to which a person believes that using the system requires minimal effort. Applied to QRIS, TAM provides the mechanism explaining why merchants adopt and consistently use the system: owners who perceive QRIS as easy to set up and operate (PEOU) and as genuinely useful for attracting customers and lowering cash-handling costs (PU) are more likely to integrate it actively into daily operations. This study operationalises QRIS adoption through four TAM-grounded dimensions — ease of use, reliability, accessibility, and cost efficiency.

2.2 Marketing Theory: Place and Sales Performance

Marketing theory, as articulated by Kotler and Keller [13] and Kotler and Armstrong [12], provides the second theoretical pillar. Within the marketing-mix framework, the “place” element concerns how a product is made accessible to customers, including the payment mechanisms through which a transaction is completed. Kotler and Armstrong [12] argue that improvements in place accessibility reduce transactional friction: when it becomes easier to complete a purchase, the probability of a successful transaction increases and the frequency of transactions rises. QRIS functions as a place-element innovation — by integrating all QR-code instruments into a single standardised code, it removes the need for merchant–customer platform alignment. According to this logic, the reduction in friction should manifest first as higher transaction frequency and subsequently as improved sales performance, forming the causal chain tested in this study.

2.3 QRIS and Its Adoption Dimensions

The governing principle of QRIS is interoperability: any QRIS-compatible instrument can transact with any QRIS-accepting merchant, enabled by Bank Indonesia’s adoption of the EMV QR-code specification. Drawing on TAM [8] and Karsen et al. [11], this study operationalises QRIS adoption across four dimensions. Ease of use reflects that QRIS requires only a displayed QR code and a smartphone scan. Reliability reflects real-time processing with immediate confirmation. Accessibility reflects interoperability across all licensed providers, eliminating the platform

fragmentation that previously discouraged digital-payment adoption. Cost efficiency reflects reduced cash-handling costs and a regulated, low merchant discount rate [3].

2.4 Transaction Frequency as a Mediating Variable

Transaction frequency refers to the rate at which customer payments are initiated and successfully completed at a business within a defined period. It is a critical commercial metric because it directly determines the volume of revenue-generating events. Habib et al. [9], in a meta-analysis of 47 studies, identified transaction frequency as one of the two most consistent mediating mechanisms linking digital-payment adoption to improved business performance, and Wijaya et al. [23] confirmed it empirically as the “key mechanism” linking adoption to revenue growth among Indonesian micro-enterprises. This study operationalises transaction frequency across three dimensions: daily transaction volume, payment completion rate, and repeat purchase rate.

2.5 MSME Sales Performance

MSME sales performance refers to the degree to which a business achieves its commercial objectives, measured through tangible indicators such as sales volume, revenue, customer base, and customer satisfaction. Following Maulida [14] and Habib et al. [9], it is best understood as a multidimensional construct capturing both quantitative outcomes (transaction count, total revenue) and qualitative outcomes (customer satisfaction, perceived service quality). This study operationalises sales performance across four dimensions: sales volume, revenue growth, customer reach, and customer satisfaction.

2.6 Previous Research

Five peer-reviewed studies are most directly relevant to this research. Table 1 summarises their methods, findings, and the specific differentiation of the present study.

Table 1 Summary of Previous Research

Study	Method (n)	Key Findings	Difference from This Study
Karsen et al. [11]	Quantitative; SEM-PLS (n = 385)	PEOU and PU significantly predicted mobile-payment adoption; higher usefulness correlated with increased transaction frequency.	Focused on adoption intention; this study examines post-adoption outcomes (transaction frequency and sales performance).
Maulida [14]	Quantitative; simple regression (n = 120)	QRIS positively influenced customer satisfaction and loyalty; MSMEs reported higher repeat-purchase rates and transaction frequency.	Examined customer-side outcomes; this study examines the MSME-owner side.
Wijaya et al. [23]	Mixed methods; regression + interview (n = 160)	Digital-payment adoption led to ~19% average monthly revenue increase; transaction frequency identified as the key mechanism.	Examined digital payments broadly; this study isolates QRIS and formally tests transaction frequency as a mediator.
Rahayu and Day [17]	Quantitative; logistic regression (n = 200)	Ease of use, cost efficiency, and government support were significant adoption determinants associated with expanded reach and higher sales volume.	Focused on e-commerce adoption determinants; this study focuses on post-adoption QRIS outcomes with a tested mediator.
Habib et al. [9]	Systematic review and meta-	Digital financial services had a significant positive effect on	Multi-country meta-analysis; this study

	analysis (47 studies)	SME performance; transaction frequency and payment accessibility were the most consistent mediators.	contributes primary QRIS evidence from Indonesia.
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Source: Compiled by Author, 2026

2.7 Conceptual Framework and Hypotheses

The study proposes a mediation model in which QRIS adoption (X) influences MSME sales performance (Y) both directly and indirectly through transaction frequency (Z). Consistent with TAM, MSME owners who perceive QRIS as useful and easy to use integrate it more actively, creating a payment environment that facilitates frictionless transactions. Consistent with marketing theory, this improvement in place accessibility increases transaction frequency, which in turn drives sales performance by increasing the volume and regularity of revenue-generating events (the indirect path). QRIS adoption is also expected to exert a direct effect on sales performance, independent of transaction frequency, by expanding payment accessibility to new customer segments and improving customer experience (the direct path). Fig. 1 illustrates the framework.

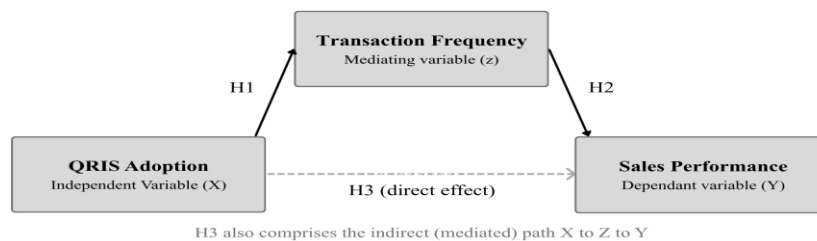


Fig. 1 Conceptual Framework

On this basis, three hypotheses are proposed. **H1:** QRIS adoption has a positive and significant impact on transaction frequency among MSMEs in Indonesia. **H2:** Transaction frequency has a positive and significant impact on MSME sales performance. **H3:** QRIS adoption has a positive and significant impact on MSME sales performance, both directly and through the mediating role of transaction frequency.

3. Methodology and Result

This study employs a quantitative descriptive-causal research design [6, 24]. The descriptive component characterises the level of each variable among respondents, while the causal component examines the directional relationships among them. The unit of analysis is the individual MSME owner/operator, and the time horizon is cross-sectional. The independent variable is QRIS Adoption (X), the mediating variable is Transaction Frequency (Z), and the dependent variable is MSME Sales Performance (Y).

Each construct is operationalised through its dimensions and measured with a structured questionnaire using a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). QRIS Adoption is measured by seven items across four dimensions (ease of use, reliability, accessibility, cost efficiency); Transaction Frequency by four items across three dimensions (daily transaction volume, payment completion rate, repeat purchase rate); and Sales Performance by six items across four dimensions (sales volume, revenue growth, customer reach, customer satisfaction), giving 17 items in total.

The population comprises all MSMEs in Indonesia registered as QRIS merchants and actively using QRIS for at least three months; Bank Indonesia [4] reports more than 30 million such merchants.

The minimum sample size was determined using the Bernoulli formula for an unknown population ($Z = 1.96$, $p = q = 0.5$, $e = 0.10$), yielding ≈ 96 and rounded up to 100. To satisfy the statistical-power requirements of mediation analysis [5], 120 valid respondents were ultimately retained after data cleaning. Sampling was non-probability

purposive [18]: respondents had to be the owner or primary operator of an MSME that had used QRIS for at least three months.

Validity was assessed using Pearson product-moment correlation (item valid if $r_n > r_{\text{tan}}$ at $\alpha = 0.05$) and reliability using Cronbach's Alpha (≥ 0.70). Ordinal data were transformed to interval scale via the Method of Successive Intervals (MSI) prior to parametric analysis [16]. Classical assumptions were checked using the Kolmogorov–Smirnov test (normality) and the Glejser test (heteroscedasticity). Given the mediation structure, path analysis was used as the primary technique, estimating two OLS equations — Path 1: $Z = a_0 + a_1X + e_1$, and Path 2: $Y = b_0 + b_1X + b_2Z + e_2$ — with the indirect effect ($a_1 \times b_2$) tested via the Sobel test [19] and the Hayes PROCESS macro Model 4 [10].

3.1 Respondent Profile

A total of 135 responses were collected online; after applying the inclusion criteria and removing invalid entries (businesses exceeding MSME thresholds, non-owners, content creators, a cooperative, and one duplicate), 120 valid responses were retained. The food-and-beverage sector is the largest group, with Warung Makan / Restoran / Cafe (31.67%) and Pedagang Kaki Lima (20.00%) together accounting for 51.67% of the sample; the remainder spans fashion, automotive services, retail, printing, personal care, laundry, electronics, and other sectors. Table 2 summarises the respondent profile.

Table 2 Respondent Profile (n = 120)

Characteristic	Category	Freq.	%
Business type	Warung Makan / Restoran / Cafe	38	31.67
	Pedagang Kaki Lima	24	20.00
	Fashion & Clothing	9	7.50
	Automotive Services	9	7.50
	Grocery & General Retail	8	6.67
	Other sectors (combined)	32	26.66
Operating duration	< 1 year	29	24.17
	1–3 years	37	30.83
	3–5 years	15	12.50
	> 5 years	39	32.50
QRIS usage duration	3–6 months	33	27.50
	6 months – 1 year	25	20.83
	1–2 years	27	22.50
	> 2 years	35	29.17
Monthly revenue	< Rp 5 million	65	54.17
	Rp 5–20 million	38	31.67
	Rp 20–50 million	9	7.50

	> Rp 50 million	8	6.67
QRIS dominant method	Yes	84	70.00
	No	36	30.00

Source: Primary Data Processed by Author, 2026

3.2 Validity and Reliability

All 17 items returned r_n values substantially exceeding $r_{tan} = 0.1793$ ($df = 118$), ranging from 0.7060 (Q11) to 0.8818 (Q8), with all significance values at 0.000; no items required removal (Table 3). Reliability testing returned Cronbach's Alpha values well above the 0.70 threshold for every variable and 0.9489 overall, indicating excellent internal consistency (Table 4).

Table 3 Validity Test Results

Item	Indicator	r_n	r_{tan}	Sig.	Result
Q1	Ease of operation (X)	0.7947	0.1793	0.000	Valid
Q2	Transaction speed (X)	0.8483	0.1793	0.000	Valid
Q3	System stability (X)	0.8263	0.1793	0.000	Valid
Q4	Transaction confirmation (X)	0.8168	0.1793	0.000	Valid
Q5	Cross-platform accessibility (X)	0.8144	0.1793	0.000	Valid
Q6	Cash-risk reduction (X)	0.7934	0.1793	0.000	Valid
Q7	Affordable transaction fee (X)	0.7778	0.1793	0.000	Valid
Q8	Daily transactions increased (Z)	0.8818	0.1793	0.000	Valid
Q9	Cancelled transactions reduced (Z)	0.7672	0.1793	0.000	Valid
Q10	Customers return more often (Z)	0.8750	0.1793	0.000	Valid
Q11	Faster transaction completion (Z)	0.7060	0.1793	0.000	Valid
Q12	Sales volume increased (Y)	0.7615	0.1793	0.000	Valid
Q13	Attracted new customers (Y)	0.8708	0.1793	0.000	Valid
Q14	Served cashless customers (Y)	0.7764	0.1793	0.000	Valid
Q15	Customer satisfaction improved (Y)	0.8794	0.1793	0.000	Valid
Q16	Customers prefer QRIS over cash (Y)	0.8667	0.1793	0.000	Valid
Q17	Overall positive impact on sales (Y)	0.8767	0.1793	0.000	Valid

Source: Primary Data Processed by Author, 2026

Table 4 Reliability Test Results

Variable	Cronbach's Alpha	Threshold	Result
QRIS Adoption (X)	0.9090	0.70	Reliable
Transaction Frequency (Z)	0.8065	0.70	Reliable

Sales Performance (Y)	0.9094	0.70	Reliable
Overall (all 17 items)	0.9489	0.70	Reliable

Source: Primary Data Processed by Author, 2026

3.3 Descriptive Analysis

Descriptive analysis (Table 5) shows that all three variables are rated positively. QRIS Adoption records the highest percentage score (87.10%, “Very High”, mean 4.36), indicating that respondents perceive QRIS as highly easy to use, reliable, accessible, and cost-efficient. Sales Performance also falls in the “Very High” category (86.44%, mean 4.32). Transaction Frequency scores slightly lower (80.83%, “High”, mean 4.04), reflecting that some respondents perceive modest rather than dramatic increases in transaction volume — consistent with the partial-mediation finding below.

Table 5 Descriptive Analysis Results

Variable	Actual	Ideal	%	Mean	Category
QRIS Adoption (X)	3,658	4,200	87.10	4.36	Very High
Transaction Frequency (Z)	1,940	2,400	80.83	4.04	High
Sales Performance (Y)	3,112	3,600	86.44	4.32	Very High

Source: Primary Data Processed by Author, 2026

3.4 Classical Assumption Tests

The Kolmogorov–Smirnov test returned significance values below 0.05 for all three variables (Table 6), indicating non-normal distributions — a common pattern in Likert-scale data with a moderate sample where a subset of respondents rate consistently high. Because OLS path analysis is robust to moderate non-normality at this sample size ($n = 120$), and because the Sobel test and bootstrapped confidence intervals do not assume normality of the mediator, the mediation results remain interpretable, though with appropriate caution. The Glejser test returned significance values above 0.05 for all predictors (Table 7), confirming homoscedastic residuals in both regression equations [1].

Table 6 Normality Test (Kolmogorov–Smirnov)

Variable	K-S Statistic	Sig.	Result
QRIS Adoption (X)	0.1598	0.0038	Non-normal
Transaction Frequency (Z)	0.1437	0.0126	Non-normal
Sales Performance (Y)	0.1597	0.0039	Non-normal

Source: Primary Data Processed by Author, 2026

Table 7 Heteroscedasticity Test (Glejser)

Path / Predictor	Sig.	Result
Path 1: QRIS Adoption (X)	0.312	No heteroscedasticity
Path 2: QRIS Adoption (X)	0.287	No heteroscedasticity
Path 2: Transaction Frequency (Z)	0.341	No heteroscedasticity

Source: Primary Data Processed by Author, 2026

3.5 Path Analysis and Mediation

Path 1 (Table 8) shows that QRIS Adoption has a positive and significant effect on Transaction Frequency ($a_1 = 0.7053$, $t = 10.8085$, $p = 0.000$), explaining 49.75% of its variance — strong support for H1. Path 2 (Table 9) shows that both QRIS Adoption (direct, $b_1 = 0.4026$, $t = 6.2581$, $p = 0.000$) and Transaction Frequency ($b_2 = 0.5378$, $t = 8.3603$, $p = 0.000$) significantly affect Sales Performance; Transaction Frequency is the single strongest predictor in the model, and the two predictors jointly explain 75.67% of the variance in Sales Performance.

Table 8 Path Analysis — Path 1 ($X \rightarrow Z$)

Path	Coef. (a_1)	Std. Error	t	Sig.
QRIS Adoption (X) $\rightarrow$ Transaction Frequency (Z)	0.7053	0.0653	10.8085	0.000
R² (Path 1)	0.4975	—	—	—

Source: Primary Data Processed by Author, 2026

Table 9 Path Analysis — Path 2 ($X + Z \rightarrow Y$)

Path	Coef.	Std. Error	t	Sig.
QRIS Adoption (X) $\rightarrow$ Sales Performance (Y) — direct (b_1)	0.4026	0.0643	6.2581	0.000
Transaction Frequency (Z) $\rightarrow$ Sales Performance (Y) (b_2)	0.5378	0.0643	8.3603	0.000
R² (Path 2)	0.7567	—	—	—

Source: Primary Data Processed by Author, 2026

The Sobel test confirms a significant indirect effect of QRIS Adoption on Sales Performance through Transaction Frequency (0.3793, $z = 6.6129$, $p = 0.000$). Decomposing the total effect (0.7819) shows a direct effect of 0.4026 ($\approx 51.5\%$) and an indirect effect of 0.3793 ($\approx 48.5\%$), a near-equal split indicating that Transaction Frequency is a substantial but partial mediator (Table 10). Fig. 2 presents the estimated model.

Table 10 Mediation (Sobel) and Effect Decomposition

Effect	Value	Sobel z	Sig.
Indirect effect ($a_1 \times b_2$): $X \rightarrow Z \rightarrow Y$	0.3793	6.6129	0.000
Direct effect (b_1): $X \rightarrow Y \mid Z$	0.4026	—	0.000
Total effect (c): $X \rightarrow Y$	0.7819	—	0.000

Source: Primary Data Processed by Author, 2026

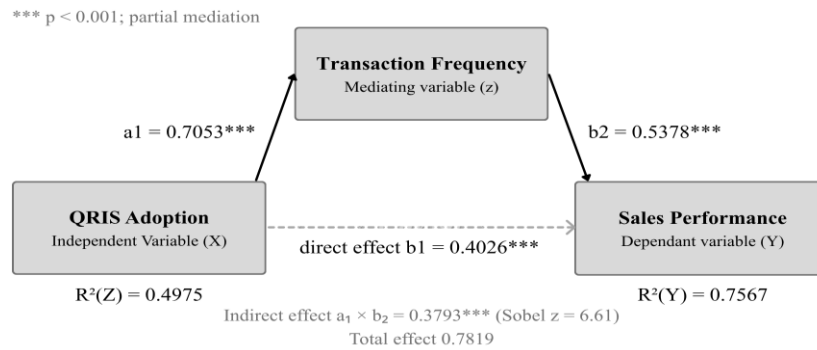


Fig. 2 Path Analysis Results

3.6 Hypothesis Testing Summary

All three hypotheses are supported at $\alpha = 0.05$ (Table 11). The null hypothesis is rejected in each case, confirming the positive and significant mediated relationship proposed in the conceptual framework. These results are consistent with TAM [8], which predicts that higher perceived ease of use and usefulness increase actual system use, and with marketing theory (Kotler and Armstrong, 2018), which establishes transaction frequency as a direct driver of sales. They also corroborate Wijaya et al. [23], Maulida [14], and Habib et al. [9], who documented the digital-payment $\rightarrow$ transaction-frequency $\rightarrow$ performance pathway in comparable contexts.

Table 11 Hypothesis Testing Summary

H	Hypothesis	t / z	Result
H1	QRIS Adoption $\rightarrow$ Transaction Frequency (positive, significant)	t = 10.81	Supported
H2	Transaction Frequency $\rightarrow$ Sales Performance (positive, significant)	t = 8.36	Supported
H3	QRIS Adoption $\rightarrow$ Sales Performance, direct and mediated	z = 6.61	Supported

Source: Primary Data Processed by Author, 2026

4. Conclusion and Recommendations

4.1 Conclusion

This study examined the impact of QRIS adoption on the sales performance of Indonesian MSMEs, with transaction frequency as a mediating variable, using data from 120 valid respondents analysed via path analysis and the Sobel test. Descriptively, the level of QRIS adoption is very high (87.10%), sales performance is very high (86.44%), and transaction frequency is high (80.83%). All three hypotheses are supported: QRIS adoption has a positive and significant effect on transaction frequency ($a_1 = 0.7053$, $R^2 = 0.4975$); transaction frequency has a positive and significant effect on sales performance ($b_2 = 0.5378$) and is the strongest single predictor in the model; and QRIS adoption affects sales performance both directly ($b_1 = 0.4026$) and indirectly through transaction frequency (indirect effect = 0.3793, Sobel $z = 6.6129$). The near-equal split between direct and indirect effects indicates partial mediation, and the combined model explains 75.67% of the variance in sales performance. QRIS therefore generates commercial value through two concurrent mechanisms — directly, by expanding customer reach and improving satisfaction, and indirectly, by increasing the frequency of completed transactions, which drives revenue and sales volume.

4.2 Recommendations

For MSME operators. Because QRIS drives sales performance substantially through transaction frequency, operators should make QRIS visible, accessible, and actively promoted — through prominent QR-code display, staff encouragement, and social-media promotion — to amplify the transaction-frequency benefits identified here. As affordability of transaction fees was rated relatively lower than other adoption dimensions, staying informed about Bank Indonesia’s merchant discount rate (MDR) regulation can help manage costs.

For Bank Indonesia and government agencies. The strong positive relationship between QRIS adoption and MSME sales performance provides empirical support for continued investment in QRIS infrastructure and financial-inclusion programmes. As 30% of respondents report QRIS as non-dominant, with cash remaining preferred, targeted education and incentive programmes — particularly for MSMEs in traditional markets and lower-revenue segments — may accelerate the transition to digital payments.

For fintech providers. Because accessibility and ease of use were the highest-rated adoption dimensions, providers building complementary services for QRIS-using MSMEs should prioritise seamless integration, minimal setup friction, and multi-platform compatibility.

Limitations and future research.

The study relies on a cross-sectional, online convenience sample of 120 respondents, which limits geographic representativeness and the strength of causal inference. The model leaves roughly 24% of the variance in sales performance unexplained. Future research should pursue larger, geographically systematic samples ($n \geq 200$), longitudinal designs tracking performance before and after adoption, and additional moderating variables such as digital literacy, government-support intensity, or business sector.

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