



RESEARCH ARTICLE

The Influence of Perceived Usefulness on QRIS Technology Adoption in Mobile Banking Applications Using the Technology Acceptance Model (TAM)

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Abstract

The integration of the Quick Response Code Indonesian Standard (QRIS) into mobile banking applications has reshaped retail payment behaviors in Indonesia. Grounded in the Technology Acceptance Model (TAM), this study examines the predictive effect of perceived usefulness on QRIS technology adoption among active mobile banking users. A quantitative explanatory survey was conducted with 100 verified respondents in the Jakarta Metropolitan Area, recruited using purposive sampling. Data were analyzed using simple linear regression after conducting psychometric and classical assumption diagnostics. The results show that perceived usefulness has a statistically significant positive effect on QRIS adoption ($\beta = 0.766$, $p < 0.001$), explaining 58.7% of the variance ($R^2 = 0.587$). In this study, perceived usefulness captures cognitive expectations related to transaction speed, operational efficiency, and practical advantages, while technology adoption reflects sustained behavioral reliance, recurrent use, and satisfaction in everyday transactions. These findings support TAM in financial technology contexts and imply that commercial banks and payment system engineers should prioritize low-latency scanning, seamless biometric authorization, and reliable transaction settlement to sustain adoption.

Keywords

QRIS; Technology Acceptance Model (TAM); Perceived Usefulness; Technology Adoption; Mobile Banking.

Abstrak

Integrasi Quick Response Code Indonesian Standard (QRIS) ke dalam aplikasi mobile banking telah mengubah perilaku pembayaran ritel di Indonesia. Penelitian ini, berlandaskan Technology Acceptance Model (TAM), mengkaji pengaruh prediktif persepsi kegunaan terhadap adopsi teknologi QRIS pada pengguna mobile banking yang aktif. Survei eksplanatori kuantitatif dilakukan terhadap 100 responden yang terverifikasi dan berdomisili di wilayah Jabodetabek, dengan teknik purposive sampling. Data dianalisis menggunakan regresi linear sederhana setelah melalui uji psikometrik serta diagnostik asumsi klasik. Hasil menunjukkan bahwa persepsi kegunaan berpengaruh positif dan signifikan terhadap adopsi QRIS ($\beta = 0,766$; $p < 0,001$), dengan kemampuan menjelaskan 58,7% variasi adopsi ($R^2 = 0,587$). Dalam kerangka penelitian ini, persepsi kegunaan merepresentasikan ekspektasi kognitif terkait kecepatan transaksi, efisiensi operasional, dan keunggulan praktis, sedangkan adopsi teknologi mencerminkan penggunaan berkelanjutan, frekuensi pemakaian berulang, serta kepuasan operasional pada transaksi harian. Temuan ini mendukung TAM pada konteks fintech dan mengindikasikan perlunya prioritas pada pemindaian berlatensi rendah, otorisasi biometrik yang lancar, serta penyelesaian transaksi yang andal.

Kata Kunci

QRIS; Technology Acceptance Model (TAM); Persepsi Kegunaan; Adopsi Teknologi; Mobile Banking.

1 | INTRODUCTION

The rapid acceleration of digital transformation has fundamentally reshaped retail financial systems worldwide. In Southeast Asia—and particularly in Indonesia—the shift toward a cashless economy has gained substantial momentum through regulatory initiatives and technological standardization. A landmark development in this process is the introduction of the Quick Response Code Indonesian Standard (QRIS), initiated by Bank Indonesia and the Indonesian Payment System Association (ASPI) in August 2019 and made mandatory across national payment service providers starting January 1, 2020. QRIS serves to harmonize heterogeneous and proprietary QR codes into a single national interoperable interface, enabling consumers to perform transactions across different banking institutions and digital wallets using a unified barcode (Al-Sharafi *et al.*, 2022; Saripudin *et al.*, 2023). Within this ecosystem, a critical yet under-examined dimension is the direct integration of QRIS into native commercial mobile banking applications. While prior studies have extensively investigated standalone digital wallets (e.g., GoPay, OVO, and DANA) (Najib & Fahma, 2020; Patil *et al.*, 2020), mobile banking represents a distinctly different operating paradigm. Transactions in mobile banking applications are typically initiated from users' core savings accounts, involve broader transaction limits, and require heightened psychological security and stronger institutional trust (Upadhyay *et al.*, 2022). In contrast, standalone e-wallets often stimulate usage through promotional subsidies and cashback schemes. Consequently, the motivation and adoption dynamics observed in e-wallet contexts may not generalize well to mobile banking QRIS usage, which is more strongly driven by day-to-day utility, direct debit convenience, and long-term functional necessity. Therefore, user acceptance of QRIS in mobile banking cannot be assumed to mirror acceptance patterns found in promotional e-wallet environments. This consideration highlights the need to examine QRIS adoption specifically within native banking platforms, where value is delivered through regulated financial infrastructure and established account-based payment workflows.

To explain how users adopt financial technologies, this study adopts the Technology Acceptance Model (TAM) introduced by Davis (1989) and expanded by Venkatesh and Davis (2000) as an empirically grounded theoretical framework. TAM posits that adoption behaviors are primarily shaped by two cognitive beliefs: perceived usefulness (PU) and perceived ease of use (PEOU). Across the technology acceptance literature, perceived usefulness—defined as the degree to which an individual believes that using a particular system will enhance transaction performance and efficacy—consistently emerges as the most important driver of technology adoption (Patil *et al.*, 2020; Sivathanu, 2019). While perceived ease of use often functions as a facilitating factor during early trials, it is perceived usefulness that tends to determine sustained post-adoption commitment. Users may tolerate limited complexity if a tool provides indispensable practical value, but they are likely to discontinue even easy-to-use tools when tangible utility is absent (Davis, 1989; Wicaksono, 2022). Despite the growing body of research on digital payments, an explicit and context-specific research gap remains. Many prior inquiries examine general consumer populations using multi-construct models, where the operational mechanics of perceived usefulness become diluted among other variables. For example, perceived usefulness may be treated as a broad construct rather than decomposed into its functional components (Galih Nur Jati *et al.*, 2023; Rahmawati & Murtanto, 2023). In addition, few empirical studies have isolated perceived usefulness to examine its constituent operational facets—such as transactional effectiveness, temporal acceleration, routine daily utility, and relative advantage—specifically within regulated mobile banking applications in Indonesia. Addressing this gap is important because QRIS adoption may be shaped by different value interpretations depending on the payment channel. In mobile banking, users may evaluate QRIS not merely as a technological feature but as an integrated payment capability tied to security protections, settlement reliability, and everyday transaction efficiency. As such, the behavioral mechanisms linking perceived usefulness to actual QRIS technology adoption may require more targeted investigation than what existing studies have provided. Accordingly, this study examines whether perceived usefulness significantly influences the adoption of QRIS technology in mobile banking applications and the extent to which perceived usefulness explains the variance in adoption. Grounded in TAM and supported by context-specific reasoning, this research is expected to refine the application of TAM in emerging-market mobile banking settings and offer actionable insights for banking software engineers and payment system designers. By focusing on perceived usefulness as the primary explanatory factor, the study aims to clarify how functional value assessments translate into sustained behavioral reliance and continued QRIS usage in daily financial transactions.

2 | BACKGROUND THEORY

2.1 Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM), formulated by Davis (1989) from the Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1980), posits that user acceptance of information technology is primarily determined by two cognitive beliefs: perceived usefulness and perceived ease of use. In modern financial technology studies, TAM

has demonstrated outstanding explanatory robustness across mobile wallets, contactless cards, and QR payment systems (Al-Sharafi *et al.*, 2022; Patil *et al.*, 2020; Venkatesh & Davis, 2000). While TAM originally incorporated attitude as an intermediate construct, Davis *et al.* (1989) established that perceived usefulness exerts a direct and powerful link to behavioral intentions and technology adoption, making it the most resilient utilitarian predictor.

2.2 Perceived Usefulness (PU)

Perceived usefulness is conceptualized as the consumer's subjective evaluation that integrating a specific technology will optimize task execution, save time, and elevate operational efficacy (Davis, 1989). In the context of mobile banking QRIS, perceived usefulness is not an abstract belief but a concrete assessment of payment utility relative to cash and debit cards. Drawing on validated TAM operationalizations (Davis, 1989; Venkatesh & Davis, 2000; Wicaksono, 2022), perceived usefulness in this research is structured across four functional dimensions: (1) Transaction Effectiveness, evaluating how effectively QRIS fulfills payment objectives; (2) Faster Completion, measuring the temporal speedup in completing checkout; (3) Routine Utility, assessing everyday usefulness across recurrent shopping; and (4) Relative Practical Advantage, capturing tangible benefits over cash and physical cards.

2.3 Conceptualizing QRIS Technology Adoption in Mobile Banking

A critical conceptual distinction in information systems literature is the demarcation between cognitive antecedent beliefs (such as perceived usefulness) and actual technology adoption (Bhattacharjee, 2001; Rogers, 2003). In this study, QRIS Technology Adoption does not evaluate whether a user finds the technology useful; rather, it reflects behavioral engagement, sustained utilization, and operational commitment within mobile banking applications. Adoption is operationalized through four experiential dimensions: (1) Transaction Execution Speed, capturing the rapid completion of actual payments; (2) Transaction Security and Safety, reflecting consumer confidence against fraud during live transactions; (3) Payment Convenience, measuring situational flexibility and preference for QRIS anytime and anywhere over physical cash; and (4) User Fulfillment and Satisfaction, representing post-adoption fulfillment that sustains continued, repeat usage (Najib & Fahma, 2020; Ramadanti *et al.*, 2025; Saripudin *et al.*, 2023).

2.4 Hypothesis Formulation and Conceptual Framework

Empirical literature extensively affirms that utilitarian expectations drive digital payment acceptance. When consumers realize that scanning a QR code eliminates cash-handling hassles, prevents queuing, and offers immediate electronic receipts, their behavioral commitment to use the system accelerates (Patil *et al.*, 2020; Sivathanu, 2019). Recent empirical studies in Indonesia (Rahmawati & Murtanto, 2023; Ramadanti *et al.*, 2025; Sahabuddin *et al.*, 2025; Wijaya, 2024) consistently confirm that perceived usefulness is a primary antecedent of QRIS usage decisions. Hence, grounded in TAM theoretical foundations and empirical evidence, we hypothesize: H1: Perceived usefulness has a positive and statistically significant influence on QRIS technology adoption in mobile banking applications. The conceptual framework illustrating the hypothesized relationship between perceived usefulness (operationalized across 4 dimensions, 12 items) and QRIS technology adoption (4 dimensions, 12 items) is depicted in Figure 1.

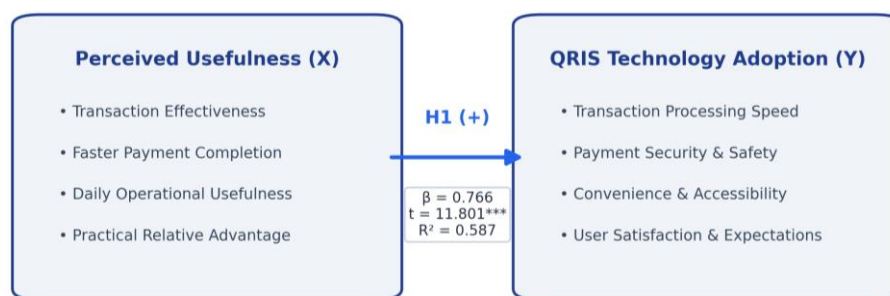


Figure 1. Conceptual framework and hypothesized relationship between TAM constructs

3 | METODE

3.1 Research Design

This study implements a quantitative explanatory survey design. Explanatory research tests empirical associations and predictive linkages hypothesized between theoretical constructs (Sugiyono, 2022). In alignment with TAM, the analytical framework treats Perceived Usefulness as the single independent predictor variable (X) and QRIS Technology Adoption as the dependent outcome variable (Y).

3.2 Population, Sampling, and Exclusion Criteria

The target population comprises active retail banking consumers in Indonesia who execute payments via QRIS embedded within commercial mobile banking applications. According to Bank Indonesia, national QRIS users surpassed 47.8 million individuals by late 2024. Because the population is exceptionally large and geographically dispersed, a non-probability purposive sampling technique was applied (Sugiyono, 2022). Four strict inclusion criteria were enforced: (1) respondents must be at least 18 years of age; (2) possess an active account with a licensed commercial bank in Indonesia; (3) actively use the bank's official mobile banking application; and (4) have executed QRIS retail payments via the mobile banking application on multiple occasions within the preceding three months. The sample size was established using Slovin's formula with a margin of error of $e = 0.10$ (10%) and a 95% confidence level ($Z = 1.96$):

$$n = N / (1 + N(e)^2) = 47,800,000 / (1 + 47,800,000(0.10)^2) = 99.96 \approx 100 \quad (1)$$

Thus, a target of $N = 100$ valid respondents was established, satisfying the minimum threshold required for bivariate linear regression modeling (Hair *et al.*, 2019). Geographically, the investigation focused on respondents residing in the Jakarta Metropolitan Area (Jabodetabek), the national epicenter of digital banking infrastructure, high smartphone penetration, and merchant QRIS deployment.

3.3 Data Collection, Instrument Adaptation, and Ethical Considerations

Data collection was conducted between March and May 2025 via a web-based structured questionnaire hosted on Google Forms. The survey link was disseminated electronically through digital banking discussion forums, university student networks, and professional associations across WhatsApp, Telegram, and LinkedIn. A total of 115 questionnaires were returned. Quality screening was conducted using pre-established exclusion criteria: 15 responses were eliminated due to straight-lining responses (zero variance across all items), incomplete fields, or failure to meet the 3-month usage requirement, resulting in 100 clean, verified responses for final statistical analysis. The measurement instrument was developed through an adaptation of established scales from Davis (1989), Venkatesh and Davis (2000), Najib and Fahma (2020), and Saripudin *et al.* (2023). The instrument underwent rigorous forward-backward translation between English and Bahasa Indonesia to guarantee semantic equivalence. Face and content validity were evaluated by two academic experts in information systems and digital banking. Prior to full-scale deployment, the questionnaire was pilot-tested with 20 non-sample mobile banking users to ensure clarity and eliminate ambiguity. Ethical considerations were strictly observed: participants were informed of the research objectives on the opening page, consented voluntarily, were guaranteed total anonymity, and all responses were secured exclusively for non-commercial academic study.

3.4 Operationalization of Variables

The questionnaire utilized a standardized 5-point Likert continuum ranging from 1 ('Strongly Disagree') to 5 ('Strongly Agree'). A total of 24 items were administered: 12 items operationalizing Perceived Usefulness (P1–P12) across effectiveness, faster completion, routine usefulness, and practical advantages; and 12 items operationalizing QRIS Technology Adoption (P13–P24) across transaction speed, security, convenience, and user satisfaction. The detailed operationalization of research variables is displayed in Table 1.

Table 1. Operationalization of research variables and measurement items

Variable	Dimension	Code	Questionnaire Item Statement (Translated)	Source
Perceived Usefulness (X)	Effectiveness	P1	QRIS helps me transact more effectively.	Davis (1989); Venkatesh & Davis (2000); Wicaksono (2022)
		P2	QRIS facilitates achieving my payment objectives.	
		P3	I feel QRIS makes the transaction process less efficient. (R)	
	Faster	P4	With QRIS, I can complete payments more quickly.	
	Completion	P5	QRIS accelerates payment speed compared to other methods.	
		P6	QRIS makes the payment process slower. (R)	
	Routine	P7	QRIS is very useful in my daily purchasing activities.	
		P8	I can utilize QRIS for diverse daily payment needs.	
	Usefulness	P9	I find QRIS not very useful for my daily transactions. (R)	
		P10	Using QRIS provides many benefits over	

QRIS Technology Adoption (Y)	Advantage	P11	alternative methods. QRIS makes transactions practical and time-saving.	Najib & Fahma (2020); Ramadanti <i>et al.</i> (2025); Saripudin <i>et al.</i> (2023)
		P12	I do not perceive any tangible advantage from using QRIS. (R)	
	Transaction	P13	Transactions executed with QRIS occur rapidly.	
	Speed	P14	I can complete payments more efficiently with QRIS.	
		P15	I feel transaction execution with QRIS takes too much time. (R)	
	Payment	P16	QRIS provides a reassuring sense of security in transactions.	
	Security	P17	I am not worried about financial fraud when using QRIS.	
		P18	I have doubts regarding the safety of transacting with QRIS. (R)	
	Convenience	P19	QRIS facilitates easy payment execution anytime.	
		P20	I find QRIS comfortable and convenient wherever I shop.	
		P21	I feel QRIS is troublesome and inconvenient during payment. (R)	
	User	P22	I am satisfied using QRIS across various commercial transactions.	
	Satisfaction	P23	QRIS aligns well with my expectations for digital payments.	
		P24	QRIS fails to meet my expectations for convenience and practicality. (R)	

3.5 Data Analysis Techniques

Data were analyzed using IBM SPSS Statistics version 21 through a structured five-step protocol: (1) Descriptive statistics to assess respondent demographic distributions and item central tendencies; (2) Instrument validation via Pearson Product-Moment correlation ($r_{\text{count}} > r_{\text{table}} = 0.1966$, $N = 100$, $\alpha = 0.05$); (3) Reliability assessment using Cronbach's Alpha (benchmark $\alpha > 0.60$); (4) Classical linear regression assumption tests, including Kolmogorov-Smirnov residual normality ($p > 0.05$), Variance Inflation Factor for multicollinearity ($VIF < 10$), and Glejser test for homoscedasticity ($p > 0.05$); and (5) Inferential statistical evaluation via simple linear regression, Pearson correlation coefficient (r), coefficient of determination (R^2), partial t-test, and ANOVA F-test.

4 | RESULT AND DISCUSSION

4.1 Results

4.1.1 Demographic Characteristics of Respondents

The survey captured complete profiles from 100 validated mobile banking QRIS users residing in the Jakarta Metropolitan Area. Table 2 summarizes participant distributions across gender, age brackets, primary occupation, QRIS usage frequency, and duration of usage.

Table 2. Demographic characteristics of research participants (N = 100)

Demographic Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	62	62.0%
	Female	38	38.0%
Age	18–24 years	59	59.0%
	25–34 years	38	38.0%
	35–44 years	3	3.0%
Occupation	Private Sector Employee	51	51.0%
	College Student / Student	42	42.0%

Usage Frequency	Entrepreneur / Self-Employed	5	5.0%
	Unemployed / Job Seeker	2	2.0%
	Less than 1 time per week	33	33.0%
	1–2 times per week	47	47.0%
	3–4 times per week	17	17.0%
Duration of QRIS Use	Daily	3	3.0%
	Up to 3 months	23	23.0%
	More than 3 months	77	77.0%
Geographic Area	Jakarta Metropolitan Area (Jabodetabek)	100	100.0%
Total Sample	All Respondents	100	100.0%

As reported in Table 2, the sample comprises 62.0% male and 38.0% female respondents. Age-wise, young adult cohorts constitute 97.0% of the sample (59.0% aged 18–24 and 38.0% aged 25–34), with individuals aged 35–44 accounting for 3.0%. This distribution mirrors national digital adoption patterns where Gen Z and millennials form the vanguard of smartphone-based contactless payments. Occupationally, private employees (51.0%) and university students (42.0%) dominate. Significantly, 67.0% of respondents use QRIS at least weekly, and 77.0% have transacted via QRIS for over three months, proving substantive behavioral familiarity with mobile banking QRIS services.

4.1.2 Instrument Validity and Reliability Analysis

Psychometric evaluation was performed to confirm instrument construct validity and scale reliability. Bivariate Pearson Product-Moment correlations were calculated between each item and its respective construct sum. With $N = 100$ at $\alpha = 0.05$, the critical correlation threshold is $r_{\text{table}} = 0.1966$. Internal consistency was evaluated using Cronbach's Alpha against the standard cutoff of $\alpha > 0.60$. To provide empirical depth, item mean scores and standard deviations were computed. Table 3 reports these psychometric properties.

Table 3. Validity and reliability test results with item descriptive statistics

Construct / Dimension	Item	Mean	Std. Dev.	Pearson r	r Table	Cronbach's α
Perceived Usefulness (X)	P1	4.88	0.33	0.212	0.1966	0.832 (Reliable)
	P2	4.65	0.48	0.316	0.1966	
	P3	4.76	0.71	0.583	0.1966	
Faster Completion	P4	4.72	0.45	0.351	0.1966	
	P5	4.72	0.59	0.762	0.1966	
	P6	4.73	0.58	0.685	0.1966	
Routine Usefulness	P7	4.67	0.47	0.527	0.1966	
	P8	4.70	0.58	0.795	0.1966	
	P9	4.76	0.57	0.719	0.1966	
Relative Advantage	P10	4.62	0.60	0.408	0.1966	
	P11	4.69	0.58	0.780	0.1966	
	P12	4.77	0.62	0.749	0.1966	
QRIS Adoption (Y)	P13	4.58	0.61	0.752	0.1966	0.764 (Reliable)
	P14	4.63	0.60	0.768	0.1966	
	P15	4.76	0.62	0.668	0.1966	
Transaction Speed	P16	4.59	0.60	0.765	0.1966	
	P17	4.56	0.66	0.709	0.1966	
	P18	4.69	0.69	0.680	0.1966	
Payment Security	P19	4.62	0.60	0.690	0.1966	
	P20	4.64	0.59	0.738	0.1966	
	P21	4.69	0.69	0.724	0.1966	
Convenience	P22	4.59	0.60	0.688	0.1966	
	P23	4.61	0.49	0.576	0.1966	
	P24	4.77	0.45	0.392	0.1966	

As presented in Table 3, all 24 items demonstrate statistical validity, with correlation coefficients exceeding $r_{\text{table}} = 0.1966$. For Perceived Usefulness, Pearson coefficients range from 0.212 to 0.795, while for QRIS Technology Adoption, coefficients span 0.392 to 0.768. Reliability metrics confirm high internal consistency, with Cronbach's Alpha reaching $\alpha = 0.832$ for Perceived Usefulness and $\alpha = 0.764$ for Technology Adoption, both comfortably exceeding the 0.60 threshold (Hair *et al.*, 2019).

A critical psychometric observation concerns items P1 ('QRIS helps me transact more effectively', $r = 0.212$) and P2 ('QRIS facilitates achieving my payment objectives', $r = 0.316$). Although both surpass the statistical validity threshold of 0.1966, their item-total correlations are comparatively lower than remaining indicators. Examination of the descriptive statistics reveals that P1 possesses the highest overall sample mean ($M = 4.88$) and the lowest standard deviation ($SD = 0.33$) across the entire battery, while P2 also exhibits high agreement ($M = 4.65$, $SD = 0.48$). This pattern represents a classic psychometric ceiling effect: respondents exhibited near-unanimous agreement that QRIS is effective, creating restricted variance. In correlation mathematics, reduced variance inevitably attenuates the Pearson correlation coefficient, without compromising the underlying validity of the indicator.

4.1.3 Classical Assumption Diagnostics

To verify that ordinary least squares (OLS) regression generates best linear unbiased estimators (BLUE), three standard diagnostic tests were conducted: (1) One-Sample Kolmogorov-Smirnov test and Normal P-P Plot for residual normality; (2) Tolerance and Variance Inflation Factor (VIF) for multicollinearity; and (3) Glejser test for homoscedasticity. Table 4 compiles the diagnostic indices.

Table 4. Summary of classical assumption test diagnostics

Diagnostic Test	Statistical Metric	Observed Value	Critical Criteria	Conclusion
Normality Test	Kolmogorov-Smirnov Z	1.199	Asymp. Sig. > 0.05	Normal
(One-Sample K-S)	Asymp. Sig. (2-tailed)	0.113	$p = 0.113 > 0.05$	(Fulfilled)
Multicollinearity Test	Tolerance	1.000	Tolerance > 0.10	No Multicollinearity
(VIF Analysis)	Variance Inflation Factor (VIF)	1.000	$VIF < 10.0$	(Fulfilled)
Heteroscedasticity Test	Glejser Test t-statistic	-1.955	$p > 0.05$	Homoscedastic
(Absolute Residuals)	Glejser Test Significance (p)	0.053	$p = 0.053 > 0.05$	(Fulfilled)

The Kolmogorov-Smirnov test yielded an asymptotic significance of $p = 0.113$ (> 0.05), affirming residual normality. This is corroborated visually by the Normal P-P Plot in Figure 2, where standardized residuals adhere closely along the 45-degree diagonal reference trajectory. Collinearity statistics showed Tolerance = 1.000 and VIF = 1.000, confirming the absence of multicollinearity. Furthermore, the Glejser test regressing absolute residuals produced $p = 0.053$ (> 0.05), confirming error homoscedasticity. Hence, all classical assumptions are met.

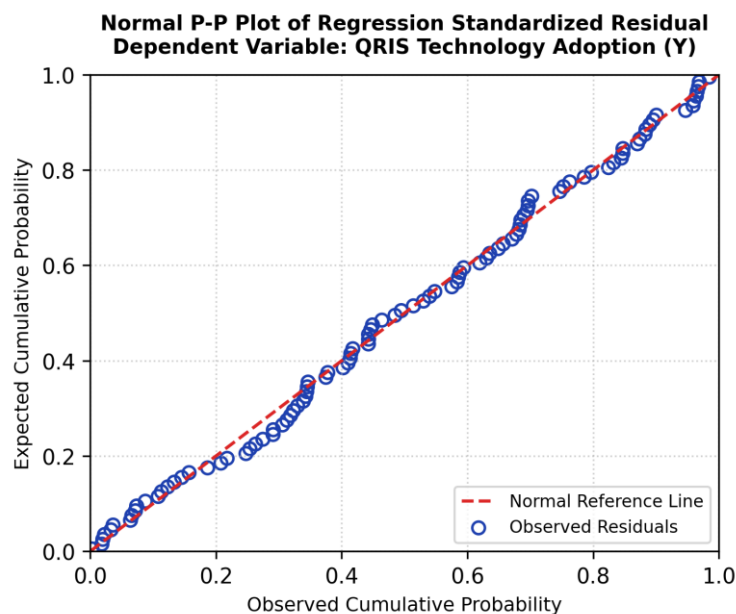


Figure 2. Normal P-P plot of regression standardized residuals for QRIS technology adoption

4.1.4 Hypothesis Testing and Regression Modeling

To test Hypothesis 1 and evaluate the predictive strength of perceived usefulness on QRIS adoption, simple linear regression analysis was performed. Table 5 details the regression coefficients, standard errors, model fit indices, and hypothesis testing outcomes.

Table 5. Simple linear regression and hypothesis testing results

Independent Variable	B	Std. Error	Beta (β)	t-value	Sig. (p)	Decision
(Constant)	1.161	4.635	—	0.250	.803	—
Perceived Usefulness (X)	0.963	0.082	0.766	11.801	.000***	Supported (H1)
Model Summary Metrics	Value	ANOVA F-Test	Value	Sig. (F)	df	R ² / Adj. R ²
Pearson Correlation (r)	0.766	F-Statistic	139.275	.000***	(1, 98)	0.587 / 0.583
Std. Error of Estimate	3.200	Sum of Squares (Reg)	1426.184	SS Residual	1003.526	Total: 2429.710

From the empirical estimates in Table 5, the linear regression model is expressed mathematically as:

$$Y = 1.161 + 0.963X \quad (2)$$

where Y represents predicted QRIS Technology Adoption and X denotes Perceived Usefulness. The slope coefficient ($B = 0.963$, $\beta = 0.766$) indicates that each one-unit increase in perceived usefulness is associated with a 0.963-unit increase in QRIS technology adoption. The Pearson correlation is $r = 0.766$, reflecting a strong positive association. The coefficient of determination is $R^2 = 0.587$ (Adjusted $R^2 = 0.583$), indicating that 58.7% of the variance in QRIS technology adoption in mobile banking is accounted for by perceived usefulness, while 41.3% is governed by external constructs. Partial t-testing produced $t_{\text{count}} = 11.801$, substantially exceeding the critical $t_{\text{table}} = 1.66055$ ($df = 98$, $\alpha = 0.05$, $p < 0.001$). Similarly, the ANOVA F-test yielded $F_{\text{count}} = 139.275$, vastly surpassing the corrected critical F_{table} value of $F(1, 98, \alpha=0.05) = 3.938$ ($p < 0.001$). Consequently, the null hypothesis (H_0) is decisively rejected, and Hypothesis 1 (H_1) is supported: Perceived usefulness exerts a statistically significant positive influence on QRIS technology adoption in mobile banking applications.

4.2 Discussion

The empirical findings provide robust confirmation of the Technology Acceptance Model (Davis, 1989; Venkatesh & Davis, 2000) within the rapidly maturing mobile banking sphere of Indonesia. Accounting for nearly 60% of adoption variance, the results demonstrate that technology adoption in mobile banking is predominantly utilitarian. Consumers do not integrate QRIS into their financial routines out of curiosity or superficial interest; rather, adoption is driven by clear, tangible functional gains that solve daily transaction friction. A rigorous examination of indicator mean scores offers deeper behavioral insights into consumer priorities. Within Perceived Usefulness, item P1 ('QRIS helps me transact more effectively', $M = 4.88$, $SD = 0.33$) and item P12 ('I perceive tangible advantages from QRIS', $M = 4.77$, $SD = 0.62$) recorded the highest levels of agreement. This underscores a universal consensus among users that QRIS delivers unambiguous operational utility. Concurrently, items P8 ('utilization for diverse daily payment needs', $r = 0.795$) and P11 ('practical and time-saving transactions', $r = 0.780$) exhibited the highest Pearson item-total correlation coefficients. It is methodologically important to emphasize that high r -values reflect superior item discrimination power rather than absolute user endorsement; items P8 and P11 are the most effective psychometric indicators in distinguishing high-adopters from moderate-adopters, indicating that versatility across diverse retail touchpoints is a key differentiator of enthusiastic adoption. Within the QRIS Technology Adoption construct, item P24 ('QRIS meets expectations for convenience and practicality', $M = 4.77$, $SD = 0.45$) and item P15 ('transaction execution occurs without delay', $M = 4.76$, $SD = 0.62$) achieved the highest central tendency ratings. In contrast, items P14 ($r = 0.768$) and P16 ($r = 0.765$) demonstrated the highest item discrimination. This confirms that rapid transaction completion and payment security are dual behavioral imperatives. Because QRIS is embedded within regulated commercial banking applications, users rely on robust banking infrastructure—including biometric login (fingerprint/Face ID) and two-factor PIN verification—which mitigates perceived fraud risk and establishes the psychological confidence required for habitual contactless spending.

These behavioral patterns are especially salient given that the sample was situated within the Jakarta Metropolitan Area (Jabodetabek). Urban consumers navigate fast-paced commercial environments characterized by dense QRIS merchant networks—spanning public transit, modern retail outlets, coffee shops, and micro-merchants. In such urban settings, the ability to scan a standardized QR code within seconds and receive instant digital receipts directly bypasses physical cash counting, ATM withdrawals, and coin shortages, providing an immediate, self-reinforcing utility that solidifies long-term adoption. Our results align with and expand prior empirical studies in Southeast Asian fintech. The finding that perceived usefulness drives QR payment acceptance corroborates previous investigations by Rahmawati and Murtanto (2023), Saripudin *et al.* (2023), and Ramadanti *et al.* (2025). Furthermore, our findings resonate with international literature on mobile payment adoption across emerging economies (Al-Sharafi *et al.*, 2022; Patil *et al.*, 2020; Upadhyay *et al.*, 2022), which established that functional performance expectations consistently outweigh promotional incentives in sustaining financial app adoption. Nevertheless, it is critical to address the remaining 41.3% of unexplained variance. In real-world mobile

banking ecosystems, technology adoption is also influenced by external variables not captured in this bivariate model, such as perceived ease of use (user interface complexity), network stability, merchant terminal availability, promotional cashback incentives, and institutional brand trust (Davis *et al.*, 1989; Sivathanu, 2019).

5 | CONCLUSION

This study examined the influence of perceived usefulness on the adoption of QRIS technology within mobile banking applications using the Technology Acceptance Model (TAM). Based on quantitative empirical analysis of 100 verified mobile banking consumers, two core conclusions are established: (1) perceived usefulness is a statistically significant positive predictor of QRIS technology adoption in mobile banking applications, confirming that higher consumer evaluations of transaction speed, convenience, and functional advantage significantly reinforce regular behavioral adoption; and (2) perceived usefulness demonstrates substantial explanatory strength, accounting for 58.7% of the variance in QRIS technology adoption, thereby validating TAM as a robust framework for explaining digital payment adoption in developing financial markets and indicating that mobile banking adoption is predominantly governed by utilitarian value. The findings also provide concrete managerial and system design implications for commercial banking executives and financial software engineers: application development teams should prioritize optimizing QR scanner performance by minimizing camera initialization latency, improving barcode recognition under low-light conditions, and ensuring sub-second transaction processing; banks should strengthen user-facing security feedback by implementing clear, instantaneous digital transaction receipts accompanied by merchant verification badges and biometric confirmation to alleviate fraud anxiety and increase user confidence; and banks should design targeted communication campaigns emphasizing everyday utilitarian benefits, such as automated budgeting, expense tracking, and seamless merchant integration, rather than relying solely on short-term promotional discounts. Finally, several methodological limitations warrant acknowledgment and suggest avenues for future research, including the cross-sectional nature of the survey design (which limits causal inference over time), the non-probability purposive sampling focusing mainly on young adult consumers in the Jakarta Metropolitan Area (which may constrain generalizability), the reliance on self-reported perceptual measures (susceptible to common method variance and recall bias), and the deliberate isolation of perceived usefulness (suggesting that future work should employ full structural equation modeling, such as PLS-SEM, integrating perceived ease of use, cybersecurity risk, structural trust, social influence, and facilitating conditions).

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