

The Influence of Perceived Security and Convenience on Intention to Use QRIS Among Students at Muhammadiyah Karanganyar University

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ABSTRACT

Grounded in the Technology Acceptance Model (TAM) and Theory of Reasoned Action (TRA), this quantitative study ($N = 94$) examines the drivers of QRIS adoption among undergraduates at Universitas Muhammadiyah Karanganyar. Multiple linear regression reveals that perceived security and convenience significantly increase usage intention ($F = 17.476, p < 0.001$), jointly explaining 27.8% of the variance. Crucially, perceived security serves as the dominant predictor ($t = 3.816$), highlighting that while functional utility initiates user engagement, psychological reassurance regarding financial data protection remains the fundamental prerequisite for sustained digital payment acceptance.

Keywords: Perceived Security, Perceived Convenience, Intention to Use, QRIS, Digital Payments.

I. Introduction

In the contemporary era of digital disruption, the transformation of national payment infrastructures serves as a fundamental catalyst supporting sustainable economic growth, monetary stability, and nationwide financial inclusion. The rapid convergence of financial technology (FinTech) and mobile connectivity has fundamentally reconfigured human transaction habits, triggering a systemic shift away from traditional physical cash toward electronic, contactless, and seamless payment ecosystems. As the central monetary authority in Indonesia, Bank Indonesia has actively guided this digital transition through strategic regulatory frameworks and technical standardization. A cornerstone of this national strategy is the development and implementation of the Quick Response Code Indonesian Standard (QRIS). Designed on the foundational principle of Fast, Easy, Affordable, Secure, and Reliable, QRIS unifies disparate payment applications into a single, standardized QR code framework. By interconnecting conventional commercial banks, digital banking platforms, and non-bank FinTech service providers, QRIS enables consumers and merchants to execute real-time financial transactions without interoperability barriers.

To further accelerate national digital financial integration, Bank Indonesia established an ambitious target to reach 60 million active QRIS users by 2026, accompanied by an expected transaction volume exceeding 6 billion transactions across the Indonesian archipelago. This expansion is reinforced by data from the Indonesian Payment Systems Association (ASPI), which recorded 141 registered QRIS service entities as of April 2026, comprising 86 banking institutions (61%), 51 FinTech companies (36.2%), and 4 switching

institutions (2.8%). Furthermore, the strategic rollout of Cross-Border QRIS initiatives connecting Indonesia with neighboring ASEAN nations (such as Thailand, Malaysia, and Singapore) underscores the evolution of QRIS into a globalized payment gateway that facilitates international trade, tourism, and micro-merchant empowerment under Local Currency Transaction (LCT) arrangements.

Despite extensive technological deployment and regulatory backing, the ultimate success, sustainability, and institutionalization of digital payment networks depend on human acceptance and individual adoption behaviors (Rusdian et al., 2024). From a consumer behavior and technology management perspective, an individual's behavioral decision to adopt a novel financial technology is not a passive reaction; rather, it represents a conscious, cognitive evaluation of functional utility, effort allocation, and psychological risk mitigation. Within this digital landscape, university students represent a vital demographic cohort. Classified as digital natives, higher education students exhibit high digital technology literacy, intense daily transaction mobility, and a strong openness toward technological innovations (Syahfitri et al., 2026). Operating within campus ecosystems where daily purchases span canteen meals, academic supplies, student association fees, and peer-to-peer transfers students are primary targets for cashless payment adoption. However, the behavioral intention of university students to consistently utilize QRIS is governed by dual cognitive considerations: perceived security and perceived convenience. Perceived security operates as a fundamental psychological prerequisite in financial interactions, encompassing the user's subjective confidence that data privacy protocols, financial account balances, transaction encryption, multi-factor authentication procedures, and protection against cyber fraud are reliably enforced by service providers (Ofosu-Ampong et al., 2026). Conversely, perceived convenience functions as an essential functional catalyst, reflecting the extent to which a user evaluates the transaction process as effortless, time-saving, user-friendly, and accessible anytime and anywhere via mobile devices.

While extensive literature has explored FinTech adoption across commercial e-commerce sectors and metropolitan business hubs, empirical inconsistencies persist regarding the interaction between functional convenience and psychological security risks. Previous empirical investigations often present contradictory insights regarding which factor acts as the dominant driver of behavioral intention. For example, research by (Alamoudi, 2021; Yamin & Abdalatif, 2024) emphasized that operational convenience, interface speed, and effort expectancy are the primary determinants of user adoption in retail and general mobile payment contexts. In contrast, studies by (Ofosu-Ampong et al., 2026; Syahrin et al., 2025) argued that in financial platforms where personal capital is directly exposed, perceived security acts as the non-negotiable baseline that outweighs operational ease. Furthermore, a significant research gap exists regarding how these cognitive dimensions operate within semi-urban higher education environments. Most existing studies have focused on state universities in metropolitan cities or general urban consumers, leaving the specific dynamics of private university campuses in semi-urban regions such as Universitas Muhammadiyah Karanganyar (UMUKA) under-examined. To address these empirical, theoretical, and contextual gaps, this study investigates the partial and simultaneous effects of perceived security and perceived convenience on the intention to use QRIS among students at Universitas Muhammadiyah Karanganyar. In alignment with peer review recommendations for calibrated scientific precision, this study explicitly acknowledges that while security and convenience are vital, they operate alongside broader exogenous forces. By integrating theoretical perspectives from consumer behavior in marketing management and financial technology acceptance, this research provides empirical insights for payment service providers, academic administrators, and central monetary authorities in building secure, user-centric digital financial ecosystems.

II. Literature Review and Hypothesis Development

2.1 Theoretical Framework: Integrating TRA and TAM

This study builds upon the Theory of Reasoned Action (TRA) as its origin theory and the Technology Acceptance Model (TAM) as its primary theoretical framework to explain user acceptance of digital payment

systems. Developed by (Alaklabi & Kang, 2022) the Theory of Reasoned Action posits that an individual's actual physical behavior is directly determined by their behavioral intention to perform that action. Behavioral intention is formed by two cognitive components: personal attitudes (the individual's positive or negative evaluation of performing the behavior) and subjective norms (the perceived social pressure from important reference groups). In financial technology research, TRA provides the foundation that a student's decision to adopt QRIS does not occur randomly. Rather, it is the result of a conscious, rational cognitive evaluation of the expected outcomes associated with using the payment system. In a modern digital payment ecosystem like QRIS, which involves real money transactions, the conventional TAM framework needs to be expanded. The absence of physical cash creates potential uncertainty and cyber vulnerabilities. Therefore, this study expands the TAM constructs by integrating Security Perception as a risk-balancing determinant and Comfort Perception as a driver of functional utility. Students act as rational decision-makers who weigh the certainty of cyber protection (security) and smooth operational efficiency (comfort) before developing an interest in transacting repeatedly using QRIS.

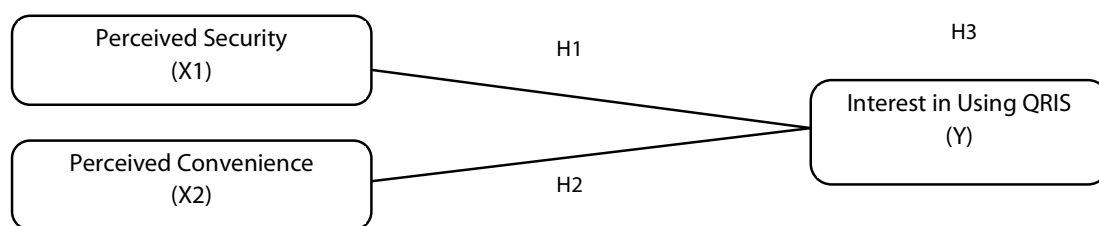


Figure 1. Conceptual Framework

To better explain information system adoption, Davis modified TRA to create the Technology Acceptance Model (TAM). TAM replaces TRA's general attitude constructs with two technology-specific beliefs: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). Perceived usefulness is defined as the degree to which a user believes that using a specific system will enhance their job or task performance, whereas perceived ease of use is defined as the degree to which a user expects the target technology to be effort-free. (Han & Sa, 2022) while traditional TAM constructs effectively capture basic operational software adoption, they are often insufficient for evaluating modern financial technology (FinTech) platforms where financial risk, data privacy, and cybersecurity threats are present. Consequently, contemporary IS literature advocates extending TAM by integrating domain-specific risk and utility constructs. In this study, TAM is extended by incorporating perceived security as a fundamental risk-mitigation evaluator and perceived convenience as a functional utility driver. When university students evaluate QRIS, they weigh the psychological reassurance provided by robust multi-factor authentication and data encryption (security) against the speed, ease, and flexibility of scanning a QR code (convenience)[cite: 1, 2, 3]. Synthesizing these cognitive dimensions determines their overall attitude, which directly shapes their behavioral intention to use QRIS in daily financial transactions.

2.2 Perceived Security

Security perception is a consumer's subjective assessment of how well FinTech technology infrastructure ensures the protection of personal data, identity confidentiality, and the security of financial balances from cybercrime, hacking, or digital fraud (Emiliyana et al., 2024). Unlike conventional cash transactions, which involve physical money and the seller, digital transactions expose users to invisible risks. Therefore, the availability of transparent technical safeguards is a crucial element in creating a sense of security. Operationally, according to (Ofosu-Ampong et al., 2026), the perception of security in QRIS is supported by four main indicators: technical protection, transaction procedures, security statements, and

perceived personal safety. Technical protection is realized through a transaction data encryption system and real-time fraud monitoring. Transaction procedures involve dual authentication such as PIN, One-Time Password (OTP), and biometric verification. Security statements are represented by official regulations from Bank Indonesia as well as compliance guarantees from application providers.

Among students, security assurance provides a strong psychological sense of certainty. When students are confident that the balance in their e-wallet or mobile banking is well protected while scanning QRIS codes, cognitive doubts and anxiety about financial risks can be minimized. This sense of safety builds trust, which directly fosters interest in adopting QRIS as a daily transaction tool. Findings from (Aini et al., 2025; Ofosu-Ampong et al., 2026) confirm that cybersecurity assurance has a positive linear relationship with the intention to adopt digital payment systems.

H1: Perceived security has a positive and significant effect on the intention to use QRIS among university students.

2.3 Perceived Convenience

Syahrin et al. (2025) perceived convenience is a key functional driver within technology adoption frameworks, directly influencing consumer preferences and channel choices in modern marketing environments. In digital financial services, perceived convenience is defined as a consumer's cognitive evaluation that a specific payment service enables them to complete financial transactions with minimal physical effort, time expenditure, cognitive friction, and operational hassle. Within TAM, convenience directly aligns with the core construct of Perceived Ease of Use (PEOU), as both reflect the extent to which a user perceives operating a technology to be effortless and straightforward. In daily transactions, the convenience of QRIS manifests across several operational dimensions by (Yamin & Abdalatif, 2024) :

- a. Ease of Access: Allows users to initiate transactions anytime and anywhere using their smartphones.
- b. Flexibility of Use: Supports multi-platform interoperability across conventional mobile banking apps (e.g., BSI, BCA, BRI, Mandiri) and digital wallets (e.g., GoPay, OVO, ShopeePay, DANA).
- c. Interface Simplicity: Features intuitive app designs requiring minimal navigation steps to complete a payment.
- d. Speed of Execution: Enables instant code scanning, eliminating the need to carry physical cash, wait for change, or manually input bank account details.

For university students managing busy academic schedules and frequent micro-transactions, operational speed and usability are primary decision criteria. When students experience frictionless, reliable, and user-friendly payment processes, their evaluation of the system's functional utility increases. This positive user experience reduces operational hurdles and strengthens their behavioral intention to adopt QRIS as a routine payment method on and off campus. Empirical studies in marketing management and FinTech adoption show that perceived convenience significantly enhances consumer adoption intentions. When a digital service reduces transaction friction, consumers exhibit higher adoption rates and repeat usage.

H2: Perceived convenience has a positive and significant effect on the intention to use QRIS among university students.

2.4 Simultaneous Effect of Security and Convenience

In an integrated technology acceptance framework, perceived security and perceived convenience do not operate in isolation. Rather, they function synergistically to influence consumer decision-making and adoption behaviors. Perceived convenience acts as the operational catalyst that attracts initial engagement

by delivering transaction speed, physical effortlessness, and platform accessibility (Bajunaied et al., 2023). Conversely, perceived security provides the fundamental psychological foundation of trust required to sustain technology usage over time (Faraji et al., 2024). Within digital payment ecosystems like QRIS, effort expectancy (convenience) and risk protection (security) create a balanced value proposition for consumers. If a mobile payment application offers high convenience but lacks transparent security assurances, users may hesitate to execute high-value transactions due to privacy and safety concerns (Masud, 2024). Conversely, if a system enforces overly cumbersome security protocols that degrade operational speed and interface simplicity, user satisfaction declines, leading to transaction abandonment. Therefore, high user acceptance is achieved when digital payment platforms harmonize frictionless user experience (UI/UX) with robust encryption and identity authentication protocols.

For undergraduate students who evaluate financial technology through both practical efficiency and personal safety lenses, the simultaneous presence of high convenience and reliable security enhances overall trust and positive attitudes. When students perceive that scanning a QRIS code is fast, versatile, and easy across multiple applications while being protected against cyber threats and data leaks, their behavioral intention to routinely use QRIS increases (Emiliyana et al., 2024).

H3: Perceived security and perceived convenience simultaneously have a positive and significant effect on the intention to use QRIS among university students.

III. Research Method

3.1. Research Design and Population

This study adopts a quantitative explanatory research design aimed at systematically investigating, evaluating, and explaining the causal relationships between independent variables (perceived security and perceived convenience) and a dependent variable (intention to use QRIS) (Sihotang et al., 2023). A quantitative approach is selected because it enables the objective measurement of cognitive constructs through standardized numerical data, facilitates rigorous statistical testing of predefined hypotheses, and minimizes subjective researcher bias during data interpretation. In line with explanatory research principles, this methodology allows for the empirical verification of theoretical frameworks specifically TRA and TAM by quantifying the magnitude and statistical significance of structural relationships within a specified target demographic (Davis et al., 1989; Sihotang et al., 2023).

The target population for this empirical investigation comprises active undergraduate students enrolled at Universitas Muhammadiyah Karanganyar during the 2025/2026 academic year. University students are designated as the focus of this study because they represent digital natives who display high daily transaction mobility, possess advanced digital technology literacy, and frequently utilize non-cash payment methods for academic and daily commercial activities (Daruqhutni & Kurniawati, 2026). The target population encompasses students across all seven active study programs within the university, namely Digital Business, Communication Science, Physiotherapy, Accounting, Computer Engineering, Animal Husbandry, and Informatics. Based on official institutional academic records, the total active student population across these seven departments was documented at 1,485 students. This population serves as the sampling frame from which representative respondents were drawn to evaluate user adoption dynamics in a semi-urban higher education environment.

3.2 Sampling and Data Collection

Using Slovin's formula with a 10% margin of error, the minimum required sample size was calculated as 94 respondents:

$$\pi = \frac{N}{1 + Ne^2}$$

$$e^2 = (0,10)^2 = 0,01$$

$$N \cdot e^2 = 1485 \times 0,01 = 14,85$$

$$(1 + Ne^2) = 1 + 3,7125 = 15,85$$

$$\pi = \frac{1485}{15,85} \approx 93,690$$

Due to specific operational requirements for evaluating technology adoption behaviors, this study employed a non-probability sampling design utilizing the purposive sampling technique (Sugiyono., 2022: Edisi 2 cetakan ke-29). Purposive sampling is a deliberate sampling method where participants are selected based on predefined inclusion criteria to ensure that the gathered data comes from respondents who possess relevant, firsthand experience with the target technology (Sugiyono., 2022: Edisi 2 cetakan ke-29). This technique effectively filters out ineligible participants who lack transaction exposure, thereby enhancing data validity and research accuracy. In this study, three mandatory screening criteria were established for potential respondents. Active Academic Status: Respondents must be officially enrolled as active undergraduate students at Universitas Muhammadiyah Karanganyar during the 2025/2026 academic year, Platform Ownership: Respondents must actively maintain and operate at least one digital payment application on their smartphones, including mobile banking services (such as BSI, BCA, BRI, or Mandiri) or digital e-wallets (such as GoPay, OVO, ShopeePay, or DANA), Transaction Experience: Respondents must have previously executed at least one financial transaction using QRIS as a payment method.

Primary data collection was systematically carried out between February and August 2026 using a structured online questionnaire hosted on Google Forms and distributed via instant messaging networks, The survey instrument was operationalized into four measurement items per construct, designed to capture respondents' cognitive evaluations regarding safety, convenience, and usage intention. To quantify individual attitudes and behavioral preferences, all questionnaire items were evaluated using a 5-point Likert scale (Sugiyono., 2022: Edisi 2 cetakan ke-29). The measurement scale ranges from 1 = Strongly Disagree (Sangat Tidak Setuju), 2 = Disagree (Tidak Setuju), 3 = Neutral (Netral), 4 = Agree (Setuju), to 5 = Strongly Agree (Sangat Setuju). The use of a 5-point Likert scale allows respondents to express their degree of agreement precisely, transforming subjective psychological evaluations into structured, parametric numerical data suitable for statistical testing and regression modeling (Ghozali, H, 2021).

Table 1. Construct Operationalization and Measurement Indicators

Variable	Indicator	Code	Adopted Item Operationalization Statement	Literature Source
Perceived Security (X_1)	Technical Protections	SEC1	The QRIS payment system utilizes advanced technical protections to safeguard my user data during transactions.	(Emiliyana et al., 2024; Ofosu-Ampong et al., 2026)
	Transaction Procedures	SEC2	The security procedures (PIN/Biometric) in QRIS transactions give me peace of mind against unauthorized access.	
	Security Statements	SEC3	Clear security statements provided by payment service providers increase my trust in using QRIS.	
	Perceived Safety	SEC4	Overall, I feel that conducting financial transactions using QRIS is safe from cyber fraud risks.	

Perceived Convenience (X_2)	Ease of Access	CON1	QRIS allows me to execute financial transactions anytime and anywhere easily via my smartphone.	(Lina et al., 2022; Yamin & Abdalatif, 2024)
	Flexibility of Use	CON2	QRIS provides payment flexibility because it is integrated across various mobile banking and e-wallet applications.	
	Interface Simplicity	CON3	The user interface for scanning QRIS codes is simple, intuitive, and requires minimal effort to complete a payment.	
	Support Facilities	CON4	The availability of transaction receipts and supporting features makes using QRIS highly convenient.	
Intention to Use QRIS (Y)	Regular Future Use	INT1	I intend to use QRIS regularly for my daily financial transactions in the future.	(Bajunaied et al., 2023; Yan et al., 2021)
	Social Recommendation	INT2	I am willing to recommend using QRIS as a payment method to my fellow students and peers.	
	Continuance Intention	INT3	I plan to continue using QRIS as my primary non-cash payment method for ongoing academic and daily expenses.	
	Specific Feature Use	INT4	I intend to utilize QRIS actively across various transaction categories, including campus and retail payments.	

3.3 Data Analysis Methods

Survey data were analyzed using statistical software. The analysis followed a four-stage process:

- Descriptive Demographic Analysis: Frequency and percentage distributions were computed to summarize respondent demographic profiles.
- Instrument Quality Testing: Construct validity was tested using Bivariate Pearson Product-Moment correlation (r -count vs r -table at $\alpha = 0.05$, $N = 94$, $r_{\text{table}} = 0.202$). Reliability was evaluated using Cronbach's Alpha ($\alpha \geq 0.60$).
- Classical Assumption Testing: Standard ordinary least squares (OLS) assumptions were verified prior to regression modeling:
 - Normality: Evaluated via One-Sample Kolmogorov-Smirnov test ($p > 0.05$).
 - Multicollinearity: Evaluated via Tolerance (> 0.10) and Variance Inflation Factor ($VIF < 10.0$).
 - Heteroscedasticity: Evaluated via the Glejser test ($p > 0.05$).
- Hypothesis Testing & Multiple Regression Analysis: The structural relationships were modeled using multiple linear regression:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + e$$

- e. Partial effects (t -test), simultaneous effects (F -test), and model explanatory power (R^2 and Adjusted R^2) were evaluated at a significance threshold of $\alpha = 0.05$.

IV. Results and Discussion

4.1 Demographic Profile of Respondents

The demographic breakdown of the 94 valid respondents is summarized in Table 1:

Table 2. Respondent Demographic Profiles

Profile Category	Classification	Frequency (N)	Percentage (%)
Gender	Female	63	67.02%
	Male	31	32.98%
Age	18-22 years	59	62.77%
	23-27 years	35	37.23%
Study Program	Digital Business	38	40.43%
	Communication Science	15	15.96%
	Accounting	13	13.83%
	Informatics	12	12.77%
	Physiotherapy	9	9.57%
	Animal Husbandry	4	4.26%
	Computer Engineering	3	3.19%
Primary Platform	Mobile Banking (BSI, BCA, BRI, etc.)	48	51.06%
	E-Wallet (GoPay, OVO, ShopeePay, DANA)	46	48.94%
Usage Tenure	> 1 Year	81	86.17%
	< Year	13	13.83%

As shown in Table 2, female students represent the majority of the sample (67.02%, $n = 63$), while male students account for 32.98% ($n = 31$). In terms of age, most respondents are concentrated in the 18–22 age bracket (62.77%, $n = 59$), corresponding to typical undergraduate ages. Participants aged 23–27 comprise the remaining 37.23% ($n = 35$). Across study programs, students majoring in Digital Business represent the largest group (40.43%, $n = 38$), followed by Communication Science (15.96%, $n = 15$), Accounting (13.83%, $n = 13$), Informatics (12.77%, $n = 12$), Physiotherapy (9.57%, $n = 9$), Animal Husbandry (4.26%, $n = 4$), and Computer Engineering (3.19%, $n = 3$). Regarding platform preference, usage is evenly split between traditional bank mobile applications (51.06%, $n = 48$) and digital e-wallets (48.94%, $n = 46$). This indicates that both banking applications and non-bank FinTech e-wallets serve as effective hosts for QRIS payment transactions. Finally, 86.17% of respondents ($n = 81$) reported using digital payment applications for more than one year. This high proportion of experienced users indicates that participants possess sufficient familiarity with digital payment systems to evaluate perceived security and convenience accurately.

4.2 Instrument Quality Testing Results

Table 3. Validity and Reliability Test Results

Variable Construct	Item Code	r_{count}	r_{table}	Sig. (p -value)	Validity Status	Cronbach's Alpha (α)	Reliability Status
Perceived Security (X_1)	SEC1	0.709	0.202	0.000	Valid	0.760	Reliable
	SEC2	0.771	0.202	0.000	Valid		
	SEC3	0.799	0.202	0.000	Valid		
	SEC4	0.742	0.202	0.000	Valid		

Perceived Convenience (X_2)	CON1	0.590	0.202	0.000	Valid	0.601	Reliable
	CON2	0.698	0.202	0.000	Valid		
	CON3	0.787	0.202	0.000	Valid		
	CON4	0.622	0.202	0.000	Valid		
Intention to Use (Y)	INT1	0.641	0.202	0.000	Valid	0.657	Reliable
	INT2	0.777	0.202	0.000	Valid		
	INT3	0.735	0.202	0.000	Valid		
	INT4	0.688	0.202	0.000	Valid		

As detailed in Table 3, all four measurement items for Perceived Security (X_1) yielded correlation coefficients between $r = 0.709$ and $r = 0.799$ ($p = 0.000 < 0.05$). Items for Perceived Convenience (X_2) produced correlation values ranging from $r = 0.590$ to $r = 0.787$ ($p = 0.000 < 0.05$). Similarly, items for Intention to Use (Y) achieved correlation coefficients between $r = 0.641$ and $r = 0.777$ ($p = 0.000 < 0.05$). Because every item exceeded the critical threshold ($r_{\text{count}} > 0.202$), construct validity was established. Reliability testing produced Cronbach's Alpha values of $\alpha = 0.760$ for Perceived Security (X_1), $\alpha = 0.601$ for Perceived Convenience (X_2), and $\alpha = 0.657$ for Intention to Use (Y). Because all constructs exceeded the threshold of 0.60, internal consistency reliability was confirmed across all survey scales.

4.3 Classical Assumption Testing Diagnostics

Table 4. Data Normality Test

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		94
Normal Parameters^{a,b}	Mean	0.0000000
	Std. Deviation	1.62739610
Most Extreme Differences	Absolute	.071
	Positive	.066
	Negative	-.071
Test Statistic		.071
Asymp. Sig. (2-tailed)		.200 ^{c,d}

The One-Sample Kolmogorov-Smirnov test was conducted on unstandardized residuals to verify normal distribution. The test yielded a Kolmogorov-Smirnov Z statistic of 0.071 with an Asymptotic Significance (2-tailed) value of $p = 0.200$. Because $p = 0.200 > 0.05$, the null hypothesis of normal residual distribution was accepted, confirming that regression error terms are normally distributed.

Table 5. Multikolonieritas Test

Coefficients ^a		
Model	Collinearity Statistics	
	Tolerance	VIF
X1	.756	1.323
X2	.756	1.323

To ensure independent variables are not highly collinear, Variance Inflation Factors (VIF) and Tolerance values were calculated. Both Perceived Security (X_1) and Perceived Convenience (X_2) yielded identical Tolerance values of 0.756 and VIF values of 1.323. Because Tolerance values exceed 0.10 ($0.756 > 0.10$) and VIF values remain well below 10.0 ($1.323 < 10.0$), the regression model is free from multicollinearity concerns.

Table 6. Heteroskedasticity Test

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1.	(Constant)	.674	1.123		.600	.550
	X1	.067	.059	.134	1.120	.265
	X2	-.029	.071	-.049	-.411	.682

Heteroscedasticity was evaluated using the Glejser test procedure, regressing absolute residual errors ($|e_i|$) against the independent variables. The test produced significance values of $p = 0.265$ for Perceived Security (X_1) and $p = 0.682$ for Perceived Convenience (X_2). Because both significance values exceed $\alpha = 0.05$, absolute residuals do not systematically vary with the predictors, establishing homoscedasticity.

4.4 Hypothesis Testing

Table 7. Multiple Linear Regression Analysis

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1.	(Constant)	5.954	1.827		3.259	.002
	X1	.369	.097	.391	3.816	.000
	X2	.237	.116	.209	2.039	.044

Based on Table 4, the unstandardized multiple linear regression equation is expressed as: $Y = 5.954 + 0.369X_1 + 0.237X_2 + e$

The regression parameters are interpreted as follows:

- Constant ($\alpha = 5.954$): When perceived security and perceived convenience are evaluated at zero, baseline student intention to use QRIS stands at 5.954 units.
- Perceived Security Coefficient ($\beta_1 = 0.369$): Holding convenience constant, every 1-unit increase in perceived security increases student usage intention by 0.369 units.
- Perceived Convenience Coefficient ($\beta_2 = 0.237$): Holding security constant, every 1-unit increase in perceived convenience increases student usage intention by 0.237 units.

Hypothesis 1: Partial Effect of Perceived Security : Hypothesis 1 posits that perceived security significantly affects the intention to use QRIS. The regression analysis yielded $t_{\text{calculated}} = 3.816$, which exceeds the critical table threshold of $t_{\text{table}} = 1.986$ at $\alpha = 0.05$ ($3.816 > 1.986$), with $p = 0.000 < 0.05$. Consequently, H_1 is accepted, confirming that perceived security exerts a positive and statistically significant partial effect on usage intention. Furthermore, comparing standardized Beta coefficients ($\beta = 0.391$ vs $\beta = 0.209$) reveals that perceived security is the dominant predictor shaping student adoption intentions.

Hypothesis 2: Partial Effect of Perceived Convenience : Hypothesis 2 posits that perceived convenience significantly affects the intention to use QRIS. The empirical analysis produced $t_{\text{calculated}} = 2.039$, exceeding the critical threshold of $t_{\text{table}} = 1.986$ ($2.039 > 1.986$), with $p = 0.044 < 0.05$. Therefore, H_2 is accepted, confirming that perceived convenience exerts a positive and statistically significant partial effect on usage intention.

Hypothesis 3: Simultaneous Effect of Security and Convenience : Hypothesis 3 posits that perceived security and perceived convenience simultaneously affect the intention to use QRIS. ANOVA output yielded an F -statistic of 17.476, exceeding the critical table threshold of $F_{table} = 3.09$ ($17.476 > 3.09$), with $p = 0.000 < 0.05$. Thus, H_3 is accepted, demonstrating that perceived security and perceived convenience simultaneously exert a statistically significant combined effect on student intention to use QRIS.

Table 10. Analysis of the Coefficient of Determination (R^2)

Model Summary ^b				
Model	R	R Square	Adjusted R Square	Std. Error Of The Estimate
1.	.527 ^a	.278	.262	1.645

The model yielded a coefficient of determination (R^2) of 0.278 and an Adjusted R^2 of 0.262. This indicates that perceived security and convenience collectively account for 27.8% of the variance in intention to use QRIS among students at UMUKA. Calibrating this finding, the model demonstrates moderate explanatory power. The remaining 72.2% of variance is governed by external variables outside the structural model—such as digital financial literacy, social influence, perceived financial cost, merchant density, and structural institution trust

4.4 Academic and Humanist Discussion

The empirical findings offer theoretical and practical insights into technology adoption dynamics among young consumers in semi-urban higher education settings. The acceptance of H_1 , H_2 , and H_3 aligns with extended TAM and TRA frameworks, confirming that technology acceptance is driven by evaluations of both risk mitigation and operational utility. A key empirical finding of this study is that perceived security serves as the primary, dominant predictor shaping QRIS usage intention ($\beta = 0.391, t = 3.816, p = 0.000$). This outcome challenges early TAM assertions that ease of use is the primary driver of technology adoption among young digital natives. Instead, it supports contemporary FinTech literature emphasizing that financial transactions carry psychological risks regarding asset protection and data privacy. Although undergraduate students possess digital literacy and value operational convenience, their bounded financial resources make them cautious about potential transaction failures, unauthorized deductions, or cyber fraud. Robust technical protections such as multi-factor authentication, biometric verification, PIN prompts, and clear regulatory security guarantees reduce psychological anxiety and build trust. This aligns with empirical studies by (Aini et al., 2025; Masud, 2024; Ofosu-Ampong et al., 2026), which assert that security mechanisms provide the essential psychological foundation for sustained financial technology usage.

Perceived convenience was also confirmed as a positive and statistically significant predictor ($\beta = 0.209, t = 2.039, p = 0.044$). While less dominant than security, operational convenience remains a fundamental catalyst for technology acceptance. Students manage fast-paced daily schedules and value practical efficiency. QRIS minimizes transaction friction by enabling quick code scanning across diverse banking and e-wallet platforms, eliminating the need to carry physical cash or wait for change. This finding aligns with consumer behavior research by (Lina et al., 2022; Syahrin et al., 2025; Yamin & Abdalatif, 2024), which demonstrates that reducing physical effort and time expenditure enhances technology adoption intentions. Comparing these results with existing literature highlights key theoretical nuances. Studies conducted in major metropolitan urban retail sectors (Alamoudi, 2021) often report that operational convenience and transaction speed outweigh security concerns due to mature digital infrastructure. However, in semi-urban educational environments like Karanganyar, where network stability can vary and financial habits are forming, students prioritize security guarantees over speed. This highlights the importance of considering contextual and demographic factors when applying technology acceptance models.

From an academic humanist perspective, these findings demonstrate that young consumers are thoughtful, rational decision-makers who manage the intersection of financial technology and daily life. They

are not driven solely by novel features or speed; rather, they seek a balance where operational convenience is supported by strong data privacy and asset protection guarantees.

V. Conclusion

This empirical study investigated the partial and simultaneous effects of perceived security and perceived convenience on the intention to use QRIS among undergraduate students at Universitas Muhammadiyah Karanganyar. Based on multiple linear regression analysis of survey data (image), the findings demonstrate that perceived security has a positive and statistically significant partial effect on students' intention to use QRIS (image). The standardized Beta coefficient (image) further confirms that perceived security is the dominant predictor, indicating that psychological reassurance regarding data protection, financial safety, and fraud prevention represents a primary consideration in digital payment adoption among young consumers. Similarly, perceived convenience has a positive and statistically significant partial effect on students' intention to use QRIS (image). Operational speed, interface simplicity, and cross-platform flexibility serve as practical functional drivers that reduce transaction friction in daily activities. Furthermore, perceived security and perceived convenience simultaneously exert a statistically significant effect on students' intention to use QRIS (image). The coefficient of determination (image) indicates that both variables collectively explain image of the variance in QRIS adoption intentions, while the remaining image of variance is attributable to external factors beyond the structural model.

Theoretically, this study contributes to the information systems and consumer behavior literature by validating an extended Technology Acceptance Model (TAM) framework within a semi-urban higher education context. The findings suggest that risk-mitigation considerations, particularly perceived security, play a more prominent role than functional convenience in explaining QRIS adoption intentions within the examined sample. This highlights the importance of incorporating domain-specific security variables into traditional TAM frameworks when investigating financial technology adoption. From a practical perspective, payment service providers and FinTech developers should maintain operational simplicity while incorporating transparent security features into application user interface and user experience (UI/UX) designs. Features such as biometric authentication, instant transaction notifications, real-time fraud alerts, and clear privacy statements can be emphasized to strengthen user trust without creating additional operational barriers. For monetary authorities, particularly Bank Indonesia, public education initiatives should address cybersecurity protocols and user protection rights within the QRIS framework, alongside increasing awareness of Cross-Border QRIS services. Meanwhile, university administrators at Universitas Muhammadiyah Karanganyar (UMUKA) can support digital transformation by expanding QRIS merchant integration across campus facilities, including canteens, libraries, bookstores, and administrative payment channels. The development of a secure cashless campus environment may encourage the formation of contemporary financial habits among students.

Despite its contributions, this study has several methodological and contextual limitations that provide opportunities for future research. First, the sample was limited to 94 undergraduate students from a single university in Karanganyar Regency, which may restrict the generalizability of the findings to broader student populations. Future research should therefore involve larger samples from multiple higher education institutions across urban and semi-urban regions to improve statistical generalizability. Second, the study employed a non-probability purposive sampling technique, which may introduce selection bias. Future studies could adopt probability-based stratified sampling to strengthen sample representativeness. Third, the regression model accounted for image of the variance in usage intention, leaving image of the variance unexplained by the variables included in the model. Future research could extend the theoretical framework by incorporating additional constructs, including digital financial literacy, social influence, perceived financial cost, institutional trust, and merchant availability. In addition, longitudinal research designs could be employed to examine how behavioral intentions develop into sustained actual QRIS usage over time.

References

- Adhe Sarah Ris Dwinomo, N. A., & Nurdiana Fitri Isnaini. (2024). Pengaruh ketersediaan, efektivitas dan kemudahan penggunaan QRIS terhadap keputusan pembelian. *Jurnal Ilmiah Ekonomi, Akuntansi, dan Pajak*, 1(3), 255–264. <https://doi.org/10.61132/jieap.v1i3.424>

- Aini, Q., Manongga, D., Rahardja, U., Sembiring, I., & Li, Y. M. (2025). Understanding behavioral intention to use of air quality monitoring solutions with emphasis on technology readiness. *International Journal of Human-Computer Interaction*, 41(8), 5079–5099. <https://doi.org/10.1080/10447318.2024.2357860>
- Al Qardh, J., Tarantang, J., Awwaliyah, A., Astuti, M., & Munawaroh, M. (n.d.). Perkembangan sistem pembayaran digital pada era Revolusi Industri 4.0 di Indonesia. IAIN Palangka Raya.
- Alaklabi, S., & Kang, K. (2022). The extended TRA model for the assessment of factors driving individuals' behavioral intention to use cryptocurrency. *Interdisciplinary Journal of Information, Knowledge, and Management*, 17, 125–149. <https://doi.org/10.28945/4948>
- Alamoudi, H. (2021). Examining retailing sustainability in the QR code-enabled mobile payments context during the COVID-19 pandemic. *International Journal of Customer Relationship Marketing and Management*, 13(1), 1–22. <https://doi.org/10.4018/IJCRMM.289210>
- Alfadda, H. A., & Mahdi, H. S. (2021). Measuring students' use of Zoom application in language course based on the technology acceptance model (TAM). *Journal of Psycholinguistic Research*, 50(4), 883–900. <https://doi.org/10.1007/s10936-020-09752-1>
- Azzahroo, R. A., & Estiningrum, S. D. (2021). Preferensi mahasiswa dalam menggunakan Quick Response Code Indonesia Standard (QRIS) sebagai teknologi pembayaran. *Jurnal Manajemen Motivasi*, 17(1), 10–17. <https://doi.org/10.29406/jmm.v17i1.2800>
- Bajunaied, K., Hussin, N., & Kamarudin, S. (2023). Behavioral intention to adopt FinTech services: An extension of unified theory of acceptance and use of technology. *Journal of Open Innovation: Technology, Market, and Complexity*, 9(1). <https://doi.org/10.1016/j.joitmc.2023.100010>
- Baras, T. P. Y., Hendri, I., Pebrianti, W., Ramadania, R., & Heriyadi, H. (2025). Analisis faktor-faktor yang mempengaruhi niat membeli mobil listrik: Attitude, new ecological paradigm, manfaat ekonomi, pengaruh sosial, dan charging infrastructure. *Jurnal Bisnis dan Kewirausahaan*, 14(1), 31–45. <https://doi.org/10.37476/jbk.v14i1.4939>
- Bisma, R., Puspita, Y., & Sulistiyani, E. (2020). Technology compatibility factors in the implementation of the OVO digital payment application.
- Chand, S. A., Singh, B., Narayan, K., & Chand, A. (2025). The impact of financial technology (FinTech) on bank risk-taking and profitability in small developing island states: A study of Fiji. *Journal of Risk and Financial Management*, 18(7), 1–25. <https://doi.org/10.3390/jrfm18070366>
- Chang, V., Chen, W., Xu, Q., & Xiong, C. (2021). Towards the customers' intention to use QR codes in mobile payments. *Journal of Global Information Management*, 29(6). <https://doi.org/10.4018/JGIM.20211101.0a37>
- Daruqhutni, A. R., & Kurniawati, H. D. (2026). Pengaruh digital financial literacy dan adopsi mobile fintech terhadap digital financial inclusion generasi Z dengan moderasi gender dan pendapatan. *Indonesian Journal of Innovation Multidisipliner Research*, 4(2), 1807–1816. <https://doi.org/10.69693/ijim.v4i2.669>
- Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science*, 35(8).
- Effendi, I., Murad, M., Rafiki, A., & Lubis, M. M. (2021). The application of the theory of reasoned action on services of Islamic rural banks in Indonesia. *Journal of Islamic Marketing*, 12(5), 951–976. <https://doi.org/10.1108/JIMA-02-2020-0051>
- Emiliyana, F., Asakdiyah, S., & Susanto, A. (2024). Analisis preferensi mahasiswa dalam menggunakan QRIS sebagai teknologi pembayaran (Vol. 12, No. 1).
- Faraji, M. R., Shikder, F., Hasan, M. H., Islam, M. M., & Akter, U. K. (2024). Examining the role of artificial intelligence in cyber security (CS): A systematic review for preventing prospective solutions in financial transactions. *International Journal of Religion*, 5(10), 4766–4782. <https://doi.org/10.61707/rfyma13>
- Ghozali, I. (2021). Bab 6: Analisis regresi. In *Aplikasi analisis multivariate dengan program IBM SPSS 26*.

- Gunawan, A., Fatikasari, A. F., & Putri, S. A. (2023). The effect of using cashless (QRIS) on daily payment transactions using the technology acceptance model. *Procedia Computer Science*, 227, 548–556. <https://doi.org/10.1016/j.procs.2023.10.557>
- Hamzah Muchtar, E., Trianto, B., Maulana, I., Alim, M. N., Marasabessy, R. H., Hidayat, W., Junaedi, E., & Masrizal. (2024). Quick response code Indonesia standard (QRIS) e-payment adoption: Customers perspective. *Cogent Business & Management*, 11(1). <https://doi.org/10.1080/23311975.2024.2316044>
- Han, J. H., & Sa, H. J. (2022). Acceptance of and satisfaction with online educational classes through the technology acceptance model (TAM): The COVID-19 situation in Korea. *Asia Pacific Education Review*, 23(3), 403–415. <https://doi.org/10.1007/s12564-021-09716-7>
- Hankins, M., French, D., & Horne, R. (2000). Statistical guidelines for studies of the theory of reasoned action and the theory of planned behaviour. *Psychology & Health*, 15(2), 151–161. <https://doi.org/10.1080/08870440008400297>
- Lina, Y., Hou, D., & Ali, S. (2022). Impact of online convenience on Generation Z online impulsive buying behavior: The moderating role of social media celebrity. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.951249>
- Mailizar, M., Burg, D., & Maulina, S. (2021). Examining university students' behavioural intention to use e-learning during the COVID-19 pandemic: An extended TAM model. *Education and Information Technologies*, 26(6), 7057–7077. <https://doi.org/10.1007/s10639-021-10557-5>
- Masud, S. Bin. (2024). Understanding the financial transaction security through blockchain and machine learning for fraud detection in data privacy and security. *Pakistan Journal of Life and Social Sciences (PJLSS)*, 22(2). <https://doi.org/10.57239/pjlss-2024-22.2.001296>
- Ng, K. Y. N. (2020). The moderating role of trust and the theory of reasoned action. *Journal of Knowledge Management*, 24(6), 1221–1240. <https://doi.org/10.1108/JKM-01-2020-0071>
- Ofosu-Ampong, K., Ansong, E., Akandekumtiim, J. M., Asmah, A., Commey, N. O., Amankwaa, T., & Tsedzah, V. (2026). How AI-enabled security features shape payment security perceptions and trust in digital payment systems. *Telematics and Informatics Reports*, 21, 100298. <https://doi.org/10.1016/j.teler.2026.100298>
- Qolyubi, A., & Munandar, A. (2025). RIS as a digital payment instrument: Its impact on people's financial behavior in the Industry 5.0 era. *Journal Research of Social Science, Economics, and Management*, 5(1), 2544–2552. <https://doi.org/10.59141/jrssem.v5i1.961>
- Rafique, H., Almagrabi, A. O., Shamim, A., Anwar, F., & Bashir, A. K. (2020). Investigating the acceptance of mobile library applications with an extended technology acceptance model (TAM). *Computers & Education*, 145, 103732. <https://doi.org/10.1016/j.compedu.2019.103732>
- Rusdian, S., Sugiat, J., & Tojiri, Y. (2024). Understanding consumer behavior in marketing management: A descriptive study and review of literature. [Nama jurnal tidak tersedia], 4, 76–87.
- Saefudin, S., Ariyadi, M. Y., Augtiah, I., Kurniawati, H. D., Anafih, E. S., & Anshori, M. A. (2024). Analysis of visitor behavior in booking hotels through websites in Indonesia with the theory acceptance model (TAM) approach. *Jurnal Teknologi dan Inovasi Digital*, 1(1), 1–9.
- Saifudin, F., Satriawan, B., Amali, I., Eko, M., & Kalla, Z. (2025). Pengaruh persepsi manfaat, kepercayaan, dan kemudahan penggunaan terhadap minat menggunakan QRIS. *Jurnal Ekonomi Manajemen dan Akuntansi*, 3(2).
- Seputri, W., Soemitra, A., Ahmadi, N., & Rahmani, B. (2023). Pengaruh technology acceptance model terhadap minat mahasiswa menggunakan Quick Response Code Indonesian Standard (QRIS) sebagai cashless society. *MES Management Journal*, 2(2).
- Sihotang, H., Pd, M., Penerbitan, P., Buku, P., & Tinggi, P. (2023). Metode penelitian kuantitatif.
- Singh, S. (2020). An integrated model combining the ECM and the UTAUT to explain users' post-adoption behaviour towards mobile payment systems. *Australasian Journal of Information Systems*, 24, 1–27. <https://doi.org/10.3127/ajis.v24i0.2695>
- Sugiyono. (2022). Metode penelitian kuantitatif, kualitatif dan R&D (Edisi ke-2, Cetakan ke-29).

- Syahfitri, A., Anwar, S. M., & Antong, A. (2026). The influence of financial literacy and financial technology on students' financial behavior. [Nama jurnal tidak tersedia], 6, 333–345.
- Syahrin, K., Arisandy, Y., & Handika, Y. (2025). The influence of convenience, benefits, and security on consumer preferences in adopting QRIS non-cash payments. *Airlangga Journal of Innovation Management*, 6(3), 521–541. <https://doi.org/10.20473/ajim.v6i3.77544>
- Tu, M., Wu, L., Wan, H., Ding, Z., Guo, Z., & Chen, J. (2022). The adoption of QR code mobile payment technology during COVID-19: A social learning perspective. *Frontiers in Psychology*, 12. <https://doi.org/10.3389/fpsyg.2021.798199>
- Yamin, M. A. Y., & Abdlatif, O. A. A. (2024). Examining consumer behavior towards adoption of quick response code mobile payment systems: Transforming mobile payment in the fintech industry. *Humanities and Social Sciences Communications*, 11(1). <https://doi.org/10.1057/s41599-024-03189-w>
- Yan, L. Y., Tan, G. W. H., Loh, X. M., Hew, J. J., & Ooi, K. B. (2021). QR code and mobile payment: The disruptive forces in retail. *Journal of Retailing and Consumer Services*, 58, 102300. <https://doi.org/10.1016/j.jretconser.2020.102300>
- Yemima, A., Sitohang, B., Nadela, F. V., Fauzar, M., & Umar, A. T. (2025). Pengaruh kemudahan pembayaran QRIS terhadap perilaku konsumtif dan intensitas transaksi di kalangan mahasiswa Fakultas Ekonomi Universitas Negeri Medan. [Nama jurnal tidak tersedia], 1(3), 474–482. <https://doi.org/10.70742/asoc.v1i3.226>