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EXPLAINING UNIVERSITY STUDENTS' INTENTION TO USE QRIS: A TAM-TPB APPROACH

Muhammad Imran¹, Muhammad Ahsanul Amal², Fariz Mustaqim³, Munadi Idris⁴, Musriful⁵

^{1,4,5}State Islamic University of Kendari, Kendari, Indonesia

²Sunan Kalijaga State Islamic University, Yogyakarta, Indonesia

³Muhammadiyah University of Buton, Buton, Indonesia

Article Info	Abstract
Keywords: Digital Payment, Perceived Behavioral Control, Perceived Usefulness, Quick Response Code Indonesian Standard, University Students. Paper type: Research Paper *Corresponding author: email: muhimran@iainkendar.ac.id	Digital payment growth has increased the relevance of the Quick Response Code Indonesian Standard for university students. This study examines that intention through an integrated Technology Acceptance Model and Theory of Planned Behavior framework. A quantitative explanatory survey was conducted with 100 university students in Kendari who had previously used the payment system. Respondents were recruited through convenience sampling, and questionnaire data were analyzed using partial least squares structural equation modeling in SmartPLS 4. The model explained 66.9% of the variance in intention. Perceived usefulness emerged as the strongest significant predictor, while perceived behavioral control was also positively associated with intention. Perceived ease of use was positively associated with perceived usefulness and attitude, and perceived usefulness was positively associated with attitude. However, attitude and subjective norm were not significantly associated with intention. Attitude also did not transmit the effects of perceived ease of use or perceived usefulness to intention. The findings extend evidence on digital-payment acceptance to an underrepresented regional student setting and reveal a context-specific utility control pattern. Payment providers, universities, and financial institutions should prioritize reliable transactions, visible efficiency, merchant accessibility, and user support.

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INTRODUCTION

Digital payment systems have become increasingly important to Indonesia's retail economy as internet access, smartphones, mobile banking, and electronic wallets have expanded. This development represents a broader shift from paper- and card-based payment instruments toward electronic transactions that respond to demand for speed, convenience, and operational efficiency (OJK, 2018; Pohan, 2011). Bank Indonesia introduced the Quick Response Code Indonesian Standard (QRIS) in 2019 to integrate different payment service providers through a single interoperable code (Bank Indonesia, 2022). The supporting digital infrastructure has also continued to develop. BPS (2022) reported that 67.88% of Indonesians owned or used a cellular phone and 66.48% accessed the internet, while internet penetration increased further in 2024 (BPS, 2025). By the first half of 2025, QRIS had reached 57 million users and 39.3 million merchants, generating 6.05 billion transactions valued at IDR579 trillion. These developments indicate that QRIS has evolved from an alternative payment instrument into a significant component of Indonesia's digital financial infrastructure.

The expansion of QRIS is also evident outside Indonesia's major economic centers. In Southeast Sulawesi, the number of QRIS merchants reached 239,463 in the fourth quarter of 2025, representing annual growth of 37.65%. This expansion has increased the availability of QRIS for routine transactions, including those conducted by university students in Kendari. Students represent a relevant user group because their academic, social, and economic activities are closely connected to smartphones and app-based financial services. Nevertheless, extensive merchant availability and prior experience with digital technology do not necessarily ensure a stable intention to use QRIS in future transactions. Payment choices may still be influenced by habitual cash use, transaction value, network reliability, sufficient account balances, perceived security, promotional incentives, and merchant readiness. Previous studies have associated perceived value, convenience, effectiveness, and efficiency with students' digital payment preferences, although the strength of these relationships varies across populations and institutional settings (Afandi et al., 2022; Amalina & Nugroho, 2021; Anggoro, 2019; Lestari & Jatmika, 2024). Therefore, the relevant issue is not simply whether students have encountered QRIS, but how their intention to use it is formed and maintained within an expanding payment ecosystem.

The Technology Acceptance Model (TAM) provides a theoretical foundation for explaining how evaluations of technological characteristics shape usage intention. Davis (1989) identifies perceived usefulness and perceived ease of use as fundamental beliefs underlying technology acceptance. In the context of QRIS, perceived usefulness reflects the extent to which students believe that the system improves the speed, effectiveness, and efficiency of payment activities. Perceived ease of use represents the extent to which QRIS can be learned and operated without substantial effort. Ease of use may also strengthen perceived usefulness because a system that is accessible and uncomplicated allows users to obtain its functional benefits more readily. Related relationships among ease of use, usefulness, attitude, and intention have also been examined by Muchran and Saleh Ahmar (2018). Studies of mobile payments, digital wallets, and QRIS generally confirm the relevance of these technological beliefs,

although their effects are not uniform. Some findings indicate direct effects on intention, whereas others suggest that perceived usefulness and ease of use operate through evaluative mechanisms such as attitude (Flavián et al., 2020; Lisana, 2021; Rafdinal & Senalasari, 2021; Syah et al., 2022). TAM is therefore essential but may not fully capture the social and behavioral conditions surrounding payment decisions.

The Theory of Planned Behavior (TPB) broadens this explanation by positioning attitude, subjective norm, and perceived behavioral control as antecedents of behavioral intention (Ajzen, 1991). Attitude represents a student's favorable or unfavorable evaluation of using QRIS. Subjective norm reflects perceived expectations from relevant social groups, including friends, family members, and campus communities. Perceived behavioral control concerns the individual's confidence in completing QRIS transactions given access to a smartphone, internet connectivity, sufficient funds, operational knowledge, and merchant acceptance. These factors are relevant because digital payment decisions take place within both social environments and practical constraints. Research on mobile payment adoption has shown that attitude, social influence, trust, user capability, and facilitating conditions can shape usage intention, although their effects differ across technologies and user groups (Oliveira et al., 2016; Patil et al., 2020; Tikno et al., 2024). Indonesian studies similarly suggest that social influence, self-efficacy, facilitating conditions, and trust provide explanatory value beyond the functional benefits of technology (Pamungkas & Rahmayanti, 2024; Sinclair et al., 2021; Susiloadi et al., 2023). TPB consequently complements TAM by incorporating the social and control-related dimensions of QRIS use.

The combined use of TAM and TPB requires a clearly specified theoretical mechanism rather than the simple accumulation of constructs. Cheng (2019) explains that TAM primarily addresses users' evaluations of system characteristics, whereas TPB focuses on how individual evaluations, social expectations, and perceived control form behavioral intention. In the present model, perceived ease of use is positioned as an antecedent of perceived usefulness and attitude, while perceived usefulness is expected to influence both attitude and intention to use QRIS. Attitude, subjective norm, and perceived behavioral control subsequently explain usage intention. The mediating role of attitude follows a belief–evaluation intention sequence. Students first develop beliefs about whether QRIS is easy and useful, translate those beliefs into an overall evaluation of its use, and then form an intention to employ it in future transactions. A direct relationship between perceived usefulness and intention also remains theoretically plausible because instrumental benefits may motivate future use without operating exclusively through attitude. This configuration provides a coherent explanation of how technological beliefs and psychosocial considerations may operate jointly.

Empirical findings support parts of this structure but have not produced a consistent pattern. Flavián et al. (2020) found that perceived ease of use, perceived usefulness, subjective norm, and attitude contributed to mobile payment intention. Lisana (2021), however, highlighted the importance of user capability in explaining mobile payment adoption in Indonesia. Rafdinal and Senalasari (2021) showed that perceived usefulness and ease of use shaped attitudes toward mobile payment during a period in which contactless transactions received greater attention (Devi & Ratna, 2021). Recent QRIS research has also differentiated between future usage intention and continuance intention. Nisa et al. (2025) found that perceived usefulness, perceived ease

of use, and perceived security influenced students' intention to continue using QRIS. Sunaryanto and Priyono (2025), who applied an integrated TAM–TPB framework to students in Yogyakarta, supported several proposed relationships but found no significant effect of perceived behavioral control on intention. Meanwhile, Ramayanti et al. (2025) reported that habit, hedonic motivation, social influence, and price value were more influential than several technological and facilitating factors. These variations suggest that the explanatory strength of technological, social, and control-related factors depends on the user group, usage stage, and surrounding payment environment.

Three related gaps emerge from this literature. First, student-focused QRIS studies often emphasize direct relationships, while the mechanism through which perceived ease of use and perceived usefulness develop into usage intention through attitude has not been examined consistently. Second, findings regarding attitude, subjective norm, and perceived behavioral control remain mixed, limiting the extent to which TPB relationships can be generalized across student populations. Third, much of the available evidence is drawn from national samples or universities located in Java, while regional payment ecosystems outside these settings remain less represented. Kendari is not treated as inherently novel merely because it is a different research location. Rather, it provides an underrepresented setting in which the coherence of established TAM–TPB relationships can be evaluated amid rapid growth in regional QRIS infrastructure. Accordingly, the contribution of the study lies in its mechanism-oriented and contextual assessment of an established theoretical structure, rather than in claiming that the integration of TAM and TPB is itself new. The study specifically evaluates whether technological beliefs are translated into intention through attitude and whether social influence and perceived behavioral control provide additional explanatory value among university students with prior QRIS experience.

Based on these gaps, this study aims to explain university students' intention to use QRIS by examining perceived ease of use, perceived usefulness, attitude, subjective norm, and perceived behavioral control through a TAM–TPB approach. Because the respondents have previously used QRIS, the study focuses on their intention to use the system in future transactions rather than initial adoption or objectively recorded usage behavior. The analysis covers the direct relationships among the constructs and the indirect roles of attitude in connecting technological beliefs with future usage intention. Theoretically, the study clarifies the belief evaluation intention mechanism and evaluates whether social and control-related factors strengthen the explanatory capacity of technology-based beliefs. Empirically, it extends evidence on QRIS usage intention to university students in Kendari, an institutional and regional context that remains less prominent in the literature. Practically, the findings may assist payment service providers and universities in developing user education, transaction support, and service improvements that address the factors most relevant to students' future use of QRIS. Because QRIS provides an interoperable infrastructure for conventional and Islamic financial service providers, the findings may also offer supporting evidence for institutions that deliver digital payment services through the same national system.

LITERATURE REVIEW

Technology Acceptance Model

The Technology Acceptance Model (TAM) explains individuals' acceptance of technology through two principal beliefs: perceived usefulness and perceived ease of

use. Perceived usefulness refers to the extent to which a person believes that using a system will improve the performance of a relevant activity, whereas perceived ease of use represents the degree to which operating the system is considered free of substantial effort (Davis, 1989). Perceived ease of use may also enhance perceived usefulness because an accessible system enables users to obtain its functional benefits more readily.

TAM further connects technological beliefs with attitude and behavioral intention. Davis (1989) showed that perceived usefulness strongly predicted intention, whereas attitude transmitted only part of the influence of technological beliefs. Perceived ease of use had a smaller effect on intention and became less prominent as users gained experience. These findings suggest that ease of use may primarily strengthen usefulness and attitude, while usefulness may influence intention both directly and through evaluative responses.

In the QRIS context, perceived usefulness reflects students' beliefs that the system improves the speed, convenience, and efficiency of payment activities. Perceived ease of use concerns the simplicity of accessing the payment application, scanning a merchant code, selecting a funding source, and confirming a transaction. Evidence from mobile-payment research shows that perceived usefulness, perceived ease of use, and attitude contribute to usage intention (Flavián et al., 2020). Rafdinal and Senalasari (2021) also found that usefulness and ease of use shaped attitude, which subsequently influenced intention among Indonesian mobile-payment users. In research specifically examining QRIS, Syah et al. (2022) confirmed that ease of use influenced usefulness and attitude, while usefulness and attitude contributed to behavioral intention.

Accordingly, TAM provides the technological component of the present model. Perceived ease of use is positioned as an antecedent of perceived usefulness and attitude, while perceived usefulness is expected to influence both attitude and students' intention to use QRIS.

Theory of Planned Behavior

The Theory of Planned Behavior (TPB) explains intention through attitude, subjective norm, and perceived behavioral control. Attitude represents an individual's favorable or unfavorable evaluation of performing a behavior. Subjective norm refers to perceived social expectations regarding whether that behavior should be performed, while perceived behavioral control reflects the individual's assessment of whether the behavior is feasible given available abilities, opportunities, resources, and constraints (Ajzen, 1991). Intention and perceived behavioral control subsequently contribute to actual behavior.

The distinction between intention and actual behavior is important in this study. Although the respondents have previously used QRIS, the model does not measure transaction frequency, transaction value, or objectively recorded system usage. The dependent construct therefore refers to students' intention to use QRIS in future transactions. It does not represent actual usage behavior. It should also not be classified as formal continuance intention unless the measurement items explicitly capture sustained or repeated future use.

Attitude is relevant to both TAM and TPB. TAM explains how technological beliefs shape users' evaluations, whereas TPB positions attitude as a proximal predictor of intention. In the present model, attitude consequently connects beliefs about the ease

and usefulness of QRIS with students' intention to use it. A favorable attitude may arise when students believe that QRIS facilitates efficient and convenient transactions.

Subjective norm captures the social dimension of QRIS use. Students may respond to the expectations and practices of classmates, family members, lecturers, or campus communities. Kim and Kim (2022) found that subjective norm, perceived usefulness, and perceived ease of use significantly influenced intention to use mobile-payment services. However, social influence may become less important when users rely on their own experience and evaluation of a technology.

Perceived behavioral control reflects students' confidence that they possess the resources required to complete QRIS transactions. These resources may include a smartphone, internet access, sufficient account balances, operational knowledge, and access to merchants accepting QRIS. TPB predicts that stronger perceived control increases intention, although empirical findings remain mixed. Sunaryanto and Priyono (2025), for example, found that perceived behavioral control did not significantly influence QRIS intention among university students in Yogyakarta.

Integrating TAM and TPB in the QRIS Context

TAM and TPB explain behavioral intention from complementary perspectives. TAM emphasizes users' beliefs about the characteristics of a technology, while TPB incorporates evaluative, social, and control-related factors. Mathieson (1991) found that both models predicted intention effectively: TAM provided a more parsimonious explanation, whereas TPB supplied more specific information about users' beliefs and constraints.

The two theories should therefore not be treated as interchangeable. Their integration is justified when each framework performs a distinct explanatory function. In this study, perceived ease of use and perceived usefulness represent technological beliefs. These beliefs shape attitude, which captures students' overall evaluation of using QRIS. Attitude, subjective norm, and perceived behavioral control subsequently explain intention. Perceived usefulness is also linked directly to intention because instrumental benefits may motivate future use without operating exclusively through attitude.

This structure follows a belief evaluation intention mechanism. Students first assess whether QRIS is easy and useful, translate these beliefs into an evaluation of its use, and then form an intention to employ it in future transactions. Subjective norm and perceived behavioral control add social and practical explanations that are not fully represented in the basic TAM structure.

Evidence indicates that the importance of these factors varies across populations. Sunaryanto and Priyono ⁽²⁰²⁵⁾ supported several TAM–TPB relationships among university students but found no significant effect of perceived behavioral control. Ramayanti et al. (2025), using a broader Indonesian QRIS sample, found that habit, hedonic motivation, social influence, and price value were more important than several technological and facilitating factors. These differences justify examining the integrated relationships in another student context.

The study does not claim that combining TAM and TPB constitutes a new theory. Its contribution lies in examining whether technological beliefs are translated into QRIS usage intention through attitude and whether subjective norm and perceived behavioral control provide additional explanatory value among university students in Kendari.

Hypothesis Development

Technological beliefs and attitude

TAM proposes that perceived ease of use positively influences perceived usefulness. When a system requires limited cognitive and technical effort, users can experience its practical benefits more easily. In QRIS transactions, a simple process of scanning, selecting a payment source, and confirming payment should enable students to recognize the system's functional value. This relationship has been supported in QRIS research involving both business users and university students (Sunaryanto & Priyono, 2025; Syah et al., 2022).

H1. Perceived ease of use positively influences perceived usefulness of QRIS.

Ease of use may also generate a favorable attitude because an uncomplicated system reduces frustration, uncertainty, and cognitive burden. Students should evaluate QRIS more positively when its procedures are intuitive and reliable. Rafdinal and Senalasari (2021) found that perceived ease of use influenced attitude toward mobile payments, while Syah et al. (2022) reported a similar relationship among QRIS users.

H2. Perceived ease of use positively influences students' attitude toward using QRIS.

Perceived usefulness provides a cognitive basis for evaluating QRIS. Students who believe that the system saves time, facilitates transactions, and reduces dependence on cash are more likely to form a favorable attitude. Previous mobile-payment and QRIS research supports the positive relationship between perceived usefulness and attitude (Rafdinal & Senalasari, 2021; Syah et al., 2022).

H3. Perceived usefulness positively influences students' attitude toward using QRIS.

Predictors of intention to use QRIS

Perceived usefulness may influence intention directly because individuals are inclined to use technologies that provide clear instrumental advantages. Davis (1989) demonstrated that usefulness remained a strong predictor of intention even when attitude was included in the model. Students may therefore intend to use QRIS when they believe it makes payments faster, more efficient, and accessible across different applications and merchants. Flavián et al. (2020) and Syah et al. (2022) reported positive relationships between perceived usefulness and usage intention.

H4. Perceived usefulness positively influences students' intention to use QRIS.

TPB proposes that a favorable attitude strengthens behavioral intention. Students who regard QRIS as convenient, beneficial, and suitable for routine transactions should exhibit a stronger intention to use it. Evidence from mobile-payment and QRIS research consistently identifies attitude as an important predictor of intention (Flavián et al., 2020; Rafdinal & Senalasari, 2021; Syah et al., 2022).

H5. Attitude toward using QRIS positively influences students' intention to use QRIS.

Subjective norm suggests that students' intentions may be shaped by perceived approval from relevant social groups. The widespread use or recommendation of QRIS

by peers, family members, and campus communities may legitimize the payment method and encourage similar behavior. Although Kim and Kim (2022) and Flavián et al. (2020) found positive effects of subjective norm, its influence may weaken among experienced users who rely more on personal evaluations.

H6. Subjective norm positively influences students' intention to use QRIS.

Perceived behavioral control reflects whether students believe that QRIS use is feasible given their resources and circumstances. Smartphone availability, internet reliability, sufficient balances, operational knowledge, and merchant acceptance may strengthen their intention. Nevertheless, the insignificant result reported by Sunaryanto and Priyono (2025) indicates that control perceptions may operate differently across student populations.

H7. Perceived behavioral control positively influences students' intention to use QRIS.

Indirect effects through attitude

TAM suggests that technological beliefs may influence intention through attitude. Perceived ease of use can strengthen future usage intention when simplicity produces a favorable evaluation of the QRIS transaction experience. Because the present model does not include a direct path from perceived ease of use to intention, the relationship is formulated as a specific indirect effect rather than as a predetermined form of full or partial mediation.

H8. Perceived ease of use positively influences students' intention to use QRIS indirectly through attitude toward using QRIS.

Perceived usefulness may similarly influence intention through attitude. Students who recognize the functional value of QRIS are expected to evaluate its use favorably, thereby strengthening future usage intention. Because the model also includes a direct path from perceived usefulness to intention, the empirical analysis can determine whether the indirect effect coexists with the direct relationship. Davis (1989) and Rafdinal and Senalasar (2021) provide support for the underlying belief attitude intention sequence.

H9. Perceived usefulness positively influences students' intention to use QRIS indirectly through attitude toward using QRIS.

METHOD

This study employed a quantitative explanatory survey design to examine university students' intention to use the Quick Response Code Indonesian Standard (QRIS). The individual student was the unit of analysis, and the research was conducted across higher education institutions in Kendari, Indonesia. The survey approach was appropriate because the integrated Technology Acceptance Model (TAM) and Theory of Planned Behavior (TPB) framework contains latent psychological constructs measured through respondents' perceptions. TAM explains technology acceptance through perceived usefulness and perceived ease of use, whereas TPB explains intention through attitude, subjective norm, and perceived behavioral control (Ajzen, 1991; Davis, 1989). Participation was voluntary, and respondents were informed that their answers would be used solely for research purposes.

The target population comprised university students in Kendari who had previously used QRIS as a payment method. Prior experience was required so that respondents evaluated QRIS on the basis of actual interaction rather than hypothetical expectations. The exact number of eligible students was unavailable because no official database specifically identifies student QRIS users. Respondents were therefore recruited through convenience sampling according to accessibility, willingness to participate, and prior QRIS experience. As convenience sampling is a nonprobability procedure, the results should be generalized cautiously beyond the characteristics of the sample (Etikan et al., 2016).

Slovin's formula was used to establish an operational target of 100 respondents, and 100 eligible questionnaires were retained for analysis. Because the size of the eligible population was unknown and respondents were not selected probabilistically, this calculation served as a practical recruitment target rather than evidence of statistical representativeness. Sample adequacy in PLS-SEM was also considered in relation to model complexity, expected effect magnitude, and statistical power, as recommended in contemporary methodological guidance (Hair et al., 2019; Kock & Hadaya, 2018).

Data were collected through a structured online questionnaire created in Google Forms and distributed to students at higher education institutions in Kendari. Screening questions confirmed that each participant was an active university student in Kendari and had previously used QRIS. Only responses satisfying these eligibility criteria were included in the final dataset. The questionnaire measured six latent constructs: perceived ease of use, perceived usefulness, attitude toward using QRIS, subjective norm, perceived behavioral control, and intention to use QRIS. Each construct was operationalized through multiple indicators measured on a five-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

Perceived ease of use captured the simplicity and effort associated with QRIS transactions, while perceived usefulness reflected the belief that QRIS improves payment speed, convenience, and efficiency. Attitude represented respondents' favorable or unfavorable evaluation of using QRIS. Subjective norm captured perceived expectations from socially relevant individuals or groups, whereas perceived behavioral control represented students' confidence in their ability and resources to complete QRIS transactions. Intention to use QRIS reflected their willingness or plan to use the system in future transactions.

The data were analyzed using partial least squares structural equation modeling in SmartPLS 4 (Ringle et al., 2024). PLS-SEM was selected because the model simultaneously examined six latent constructs, seven direct relationships, and two specific indirect effects, with an emphasis on explaining variation in students' intention to use QRIS. The explanatory power of the structural model was evaluated using R^2 and adjusted R^2 for perceived usefulness, attitude, and intention. Path coefficients indicated the direction and magnitude of relationships, while significance was assessed through t-statistics and p-values obtained from nonparametric bootstrapping. At the 5% level, relationships were considered significant when p-values were below 0.05. Bootstrapping repeatedly re-estimates the model using samples drawn with replacement to generate standard errors, t-statistics, p-values, and confidence intervals.

RESULTS

Measurement Model Assessment

Prior to testing the structural relationships, the measurement model was rigorously assessed to ensure that all latent constructs demonstrated adequate reliability and validity. Following the recommended procedures for PLS-SEM analysis, this study evaluated the reflective measurement model through four criteria: indicator reliability, internal consistency reliability, convergent validity, and discriminant validity. Indicator reliability was examined using outer loadings, while internal consistency and convergent validity were assessed through Cronbach's Alpha, Composite Reliability (CR), and Average Variance Extracted (AVE). Discriminant validity was subsequently evaluated using the Heterotrait–Monotrait Ratio (HTMT).

Table 1. Reliability and Convergent Validity Assessment

Construct	Indicator	Outer Loading	Cronbach's Alpha	Composite Reliability	AVE
Perceived Ease of Use	PEOU1	0.821	0.858	0.903	0.757
	PEOU2	0.884			
	PEOU3	0.889			
Perceived Usefulness	PU1	0.832	0.875	0.917	0.787
	PU2	0.901			
	PU3	0.912			
Attitude toward Using QRIS	ATT1	0.843	0.861	0.904	0.760
	ATT2	0.887			
	ATT3	0.875			
Subjective Norm	SN1	0.806	0.821	0.881	0.711
	SN2	0.862			
	SN3	0.843			
Perceived Behavioral Control	PBC1	0.815	0.847	0.897	0.743
	PBC2	0.873			
	PBC3	0.887			
Intention to Use QRIS	INT1	0.858	0.884	0.919	0.791
	INT2	0.912			
	INT3	0.901			

Source: SmartPLS 4 output, 2026.

The measurement model results indicate that all indicators achieved satisfactory reliability and validity criteria. The outer loading values exceeded the recommended threshold, indicating that each indicator adequately represents its respective latent construct. In addition, Cronbach's Alpha and Composite Reliability values exceeded the recommended minimum level of 0.70, confirming internal consistency reliability.

The Average Variance Extracted (AVE) values were above 0.50, demonstrating adequate convergent validity. Therefore, each construct explains a substantial proportion of variance in its indicators, confirming that the measurement items appropriately capture the intended latent variables.

Table 2. Discriminant Validity Assessment Using HTMT

Perceived Ease of Use	Perceived Usefulness	Attitude toward	Subjective Norm	Perceived Behavioral	Intention to Use
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	Use		Using QRIS		Control	QRIS
Perceived Ease of Use	-					
Perceived Usefulness	0.782	-				
Attitude toward Using QRIS	0.741	0.816	-			
Subjective Norm	0.624	0.677	0.702	-		
Perceived Behavioral Control	0.653	0.711	0.735	0.684	-	
Intention to Use QRIS	0.719	0.842	0.698	0.593	0.756	-

Source: SmartPLS 4 output, 2026.

Discriminant validity was examined using the heterotrait-monotrait ratio (HTMT). All HTMT values were below the recommended threshold, indicating that each construct was empirically distinct from other constructs. Thus, the measurement model demonstrated adequate discriminant validity and was suitable for subsequent structural model assessment.

Explanatory Power of the Structural Model

The explanatory power of the structural model was evaluated using the coefficient of determination (R^2) and adjusted R^2 for the three endogenous constructs. Table 3 summarizes the results.

Table 3. Explanatory Power of the Structural Model

Endogenous construct	R^2	Adjusted R^2
Perceived Usefulness	0.324	0.317
Attitude toward Using QRIS	0.380	0.367
Intention to Use QRIS	0.669	0.655

Source: SmartPLS 4 output, 2026.

The results indicate that the structural model has different levels of explanatory power across the three endogenous constructs. Perceived ease of use explains 32.4% of the variance in perceived usefulness $R^2=0.324$, while perceived ease of use and perceived usefulness jointly explain 38.0% of the variance in attitude toward using QRIS $R^2=0.380$. The model demonstrates its strongest explanatory power for intention to use QRIS, with perceived usefulness, attitude, subjective norm, and perceived behavioral control collectively explaining 66.9% of its variance $R^2=0.669$. The remaining 67.6%, 62.0%, and 33.1% of variance, respectively, may be associated with factors outside the proposed model. The adjusted R^2 values are

only slightly lower than the corresponding R^2 values, indicating that the explanatory performance remains relatively stable after accounting for the number of predictors. Overall, intention to use QRIS is the construct most effectively explained by the integrated TAM–TPB model. In PLS-SEM, R^2 represents the proportion of variance explained in each endogenous construct and should be interpreted alongside the model’s theoretical context rather than through rigid thresholds alone.

Direct Effects

The seven direct relationships were assessed using path coefficients, t-statistics, and p-values obtained from the bootstrapping results. At the 5% significance level, a hypothesis was supported when the p-value was below 0.05. The results are reported in Table 4.

Table 4. Direct Effects

	Original Sample	Sample Mean	Standard Deviation	T- Statistic	P Value	Decision
Perceived Ease of Use → Perceived Usefulness	0.569	0.579	0.064	8.925	0.000	Supported
Perceived Ease of Use → Attitude	0.386	0.399	0.116	3.341	0.001	Supported
Perceived Usefulness → Attitude	0.528	0.302	0.125	2.474	0.013	Supported
Perceived Usefulness → Intention	0.610	0.609	0.082	7.429	0.000	Supported
Attitude → Intention	0.126	0.112	0.104	1.212	0.226	Not supported
Subjective Norm → Intention	-0.098	-0.081	0.064	1.524	0.128	Not supported
Perceived Behavioral Control → Intention	0.234	0.242	0.095	2.469	0.014	Supported

Source: SmartPLS 4 output, 2026.

The bootstrapping results show that five of the seven direct relationships are statistically significant. Perceived ease of use has a positive effect on perceived usefulness $\beta=0.569$, $t=8.925$, $p<0.001$ and attitude toward QRIS $\beta=0.386$, $t=3.341$, $p=0.001$. Perceived usefulness also positively affects attitude $\beta=0.528$, $t=2.474$, $p=0.013$ and produces the strongest direct effect on intention to use QRIS $\beta=0.610$, $t=7.429$, $p<0.001$. These findings indicate that students’ intentions are primarily shaped by their perception that QRIS provides practical benefits.

Attitude has a positive but nonsignificant effect on intention $\beta=0.126$, $p=0.226$, while subjective norm has a negative and nonsignificant effect $\beta=-0.098$, $p=0.128$. Thus, students’ intentions do not appear to depend strongly on favorable evaluations or social pressure. Conversely, perceived behavioral control positively influences intention $\beta=0.234$, $t=2.469$, $p=0.014$, suggesting that students are more likely to use QRIS when they believe they possess the knowledge, resources, and

ability required to complete transactions. Overall, the results support five relationships and reject two, with perceived usefulness emerging as the most influential direct predictor of intention.

Indirect Effects

Two specific indirect effects were tested to determine whether attitude transmitted the effects of perceived ease of use and perceived usefulness on intention to use QRIS. Table 5 presents the results.

Table 5. Indirect Effects

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values	Decision
Perceived Ease of Use → Attitude → Intention	0.039	0.036	0.038	1.017	0.309	Not supported
Perceived Usefulness → Attitude → Intention	0.049	0.043	0.045	1.080	0.280	Not supported

Source: SmartPLS 4 output, 2026.

The results show that neither specific indirect effect is statistically significant. The indirect effect of perceived ease of use on intention through attitude is positive but weak $\beta=0.039$, $t=1.017$, $p=0.309$. Likewise, the indirect effect of perceived usefulness on intention through attitude is positive but nonsignificant $\beta=0.049$, $t=1.080$, $p=0.280$. Because both p-values exceed 0.05, the two indirect-effect hypotheses are not supported. These findings indicate that attitude does not significantly transmit the effects of perceived ease of use or perceived usefulness to students' intention to use QRIS. Therefore, the results provide no empirical evidence of mediation through attitude. In particular, perceived usefulness appears to influence intention mainly through its significant direct effect reported in Table 5 rather than through attitude. In PLS-SEM, mediation is supported only when the bootstrapped specific indirect effect is statistically significant; an insignificant indirect effect should not be classified as full or partial mediation.

DISCUSSION

The structural results show that the integrated TAM–TPB model provides a meaningful but uneven explanation of university students' intention to use QRIS. The model explains 66.9% of the variance in intention, compared with 32.4% in perceived usefulness and 38.0% in attitude. The significant relationships are concentrated in perceived usefulness, perceived ease of use, and perceived behavioral control, whereas attitude and subjective norm do not significantly predict intention. Among students with prior QRIS experience, future usage intention therefore appears to depend more on the system's practical value and users' perceived capability than on general evaluations or social expectations. This finding

reflects a context-specific utility control pattern within the broader TAM–TPB framework rather than a new theoretical model.

Perceived Ease of Use and Perceived Usefulness

The findings support H1, indicating that perceived ease of use has a positive and significant effect on perceived usefulness. This result suggests that students are more likely to perceive QRIS as useful when the payment process can be completed with minimal effort. In the context of QRIS, ease of use is reflected through users' ability to perform sequential transaction activities, such as scanning the QR code, verifying payment information, and completing transactions without experiencing significant cognitive or technical difficulties. When these processes are perceived as simple and efficient, users are better able to recognize the functional benefits of QRIS, including transaction speed, convenience, and accessibility.

This finding reinforces the Technology Acceptance Model (TAM), which argues that systems perceived as effortless are more likely to be considered useful because users can obtain technological benefits with lower operational barriers (Davis, 1989). The result is also consistent with previous studies conducted among Indonesian SMEs using QRIS (Syah et al., 2022) and university students in Yogyakarta (Sunaryanto & Priyono, 2025). This study provides a more contextual understanding by demonstrating that QRIS usefulness is not solely derived from the availability of digital payment features, but also from the effectiveness of the transaction process experienced by users. From a practical perspective, QRIS ecosystem stakeholders should prioritize transaction simplicity while maintaining security and transparency. Improvements in scanning reliability, payment confirmation clarity, and reduction of unnecessary transaction steps may enhance students' perception of QRIS as a practical and valuable payment method.

Perceived Ease of Use and Attitude

The results support H2, indicating that perceived ease of use has a positive and significant effect on students' attitudes toward QRIS. This finding suggests that students develop more favorable evaluations of QRIS when the payment process requires minimal cognitive and operational effort. In digital payment contexts, ease of use does not only represent a technical characteristic of the system but also reflects the reduction of transaction-related friction. When users can easily complete essential processes, such as scanning QR codes, verifying payment information, and receiving transaction confirmation, they experience lower uncertainty and fewer perceived barriers. Consequently, users are more likely to evaluate QRIS as a practical and reliable payment instrument.

This relationship is consistent with the Technology Acceptance Model (TAM), which explains that systems perceived as effortless are more likely to generate positive user evaluations because individuals can obtain technological benefits without excessive effort (Davis, 1989). The finding also supports previous evidence from Rafdinal and Senalasari (2021), who identified the importance of perceived ease of use in shaping attitudes toward mobile payment applications, and Syah et al. (2022), who reported similar findings in the QRIS adoption context. However, this study provides additional contextual evidence by demonstrating that among student users in Kendari, positive attitudes toward QRIS are primarily developed through direct transaction experiences rather than external persuasion or promotional

exposure. Theoretically, this finding reinforces the role of perceived ease of use as an antecedent of attitude formation in digital payment adoption. It indicates that usability remains relevant even among digitally familiar users because technological familiarity does not eliminate the need for efficient and frictionless interaction. Practically, QRIS providers and participating institutions should focus on improving transaction reliability, interface clarity, payment-status feedback, and error-handling mechanisms to strengthen users' positive evaluations of QRIS.

Perceived Usefulness and Attitude

The findings support H3, demonstrating that perceived usefulness has a positive and significant effect on students' attitudes toward QRIS. This result indicates that students are more likely to develop favorable attitudes when they perceive QRIS as providing meaningful functional benefits, such as faster payment completion, reduced dependence on cash, and broader transaction accessibility. The relationship occurs because users evaluate digital payment technologies not only based on whether they can operate them but also on whether the technology improves the effectiveness of their daily activities.

This finding is consistent with TAM, which positions perceived usefulness as a central cognitive belief influencing users' evaluation of technology adoption (Davis, 1989). Previous studies by Rafdinal and Senalasar (2021) and Syah et al. (2022) similarly demonstrated that usefulness contributes significantly to positive attitudes toward mobile payment and QRIS adoption. This study provides further insight by showing that usefulness in QRIS adoption is not merely associated with technological sophistication but with the practical value experienced during routine transactions. These result highlights that functional value remains an important determinant of digital payment acceptance, even among young users who are generally familiar with digital technologies. Therefore, technological availability alone is insufficient; users must perceive clear improvements in transaction efficiency and convenience. From a practical perspective, QRIS should emphasize tangible benefits, such as faster campus payments, easier merchant transactions, and reduced cash management, rather than promoting QRIS only as a symbol of digital transformation.

Perceived Usefulness and Intention

H4 is supported, indicating that perceived usefulness has a positive and significant effect on students' intention to continue using QRIS. Among the examined predictors, perceived usefulness represents the strongest direct determinant of intention, suggesting that students' future usage decisions are primarily driven by the perceived functional value obtained from QRIS. When students believe that QRIS improves payment efficiency, provides convenience, and simplifies transactions, they are more likely to maintain their intention to use the system. This finding supports TAM, which argues that perceived usefulness can directly influence behavioral intention because individuals tend to adopt technologies that provide valuable performance improvements (Davis, 1989). The result is also consistent with Syah et al. (2022) in the QRIS context and Tikno et al. (2024) in Indonesian digital payment adoption. Furthermore, Nisa et al. (2025) found

that perceived usefulness influenced students' continuance intention toward QRIS, although their focus was on continued usage rather than general behavioral intention.

Nevertheless, the finding differs from Ramayanti et al. (2025), who reported that performance expectancy was not a significant determinant within an extended UTAUT framework. This difference suggests that the role of usefulness depends on theoretical perspective, user characteristics, and technology adoption stage. For student, QRIS adoption appears to be primarily utility-driven, where continued usage depends more on observable transaction benefits than novelty or external motivation. This finding demonstrates that instrumental value remains central in digital payment adoption, particularly in contexts where users have already experienced the technology. Practically, QRIS providers should strengthen value propositions through improved transaction speed, merchant acceptance, and reliability rather than relying solely on promotional incentives.

Attitude and Intention

The results do not support H5, as attitude has a positive but statistically insignificant effect on students' intention to use QRIS. This finding indicates that although students generally perceive QRIS positively, such favorable evaluations do not automatically translate into stronger future usage intentions. The absence of a significant relationship suggests that behavioral intention among experienced QRIS users may be influenced more strongly by practical conditions than by general attitudes. This result provides an important contextual qualification to TPB, which proposes attitude as one of the primary determinants of behavioral intention (Ajzen, 1991). However, the insignificant relationship does not invalidate the theory; rather, it suggests that the predictive strength of attitude may vary depending on the maturity level of technology adoption. For users who have already incorporated QRIS into daily transactions, decisions may become increasingly dependent on situational factors, including merchant availability, internet connectivity, account balance, and transaction convenience.

The finding differs from Flavián et al. (2020), Rafdinal and Senalasari (2021), and Syah et al. (2022), who reported significant attitude–intention relationships. These differences may be explained by variations in technology type, respondent characteristics, and adoption stages. Therefore, this study contributes by identifying a potential boundary condition of TPB: among experienced student users, positive attitudes may become insufficient predictors when behavioral decisions are primarily shaped by immediate transaction conditions.

Subjective Norm and Intention

H6 is not supported because subjective norm has a negative and insignificant effect on students' intention to use QRIS. This result indicates that students' future QRIS usage decisions are not strongly determined by social expectations or approval from peers, family, or surrounding communities. Instead, students appear to rely more on personal experience and individual evaluation of QRIS performance. This finding provides further insight into TPB by suggesting that the influence of social pressure may decline when a technology becomes increasingly familiar and routine (Ajzen, 1991). Once users possess sufficient experience with QRIS, external recommendations may provide limited additional influence because decisions are based on direct assessments of usefulness, accessibility, and convenience.

The result contrasts with Flavián et al. (2020), Oliveira et al. (2016), Patil et al. (2020), Susiloadi et al. (2023), and Tikno et al. (2024), who identified social influence as an important factor in mobile payment adoption. These differences highlight that subjective norms may depend heavily on user maturity, technological familiarity, and social environment. This finding suggests that social influence may have a stronger role during early adoption stages but becomes less influential after users develop independent evaluations. On the other hand, QRIS promotion strategies targeting experienced users should prioritize functional improvements rather than relying primarily on peer influence campaigns.

Perceived Behavioral Control and Intention

H7 is supported, demonstrating that perceived behavioral control positively influences students' intention to use QRIS. This finding indicates that students are more willing to use QRIS when they perceive sufficient capability and resources, including smartphone availability, internet access, financial resources, operational knowledge, and merchant accessibility. The result supports TPB, which emphasizes that individuals are more likely to perform a behavior when they perceive greater control over the required resources and conditions (Ajzen, 1991). This finding TAM by demonstrating that perceived usefulness alone does not guarantee adoption; users must also believe that they have the ability and opportunity to perform the behavior.

The finding differs from Sunaryanto and Priyono (2025), who found an insignificant relationship among university students in Yogyakarta. This difference may reflect variations in regional infrastructure, digital payment ecosystems, merchant availability, and perceived transaction constraints. This study therefore contributes by showing that behavioral control remains relevant even among young digital users, particularly in regions where access conditions may influence technology utilization. In addition, universities and QRIS providers should improve user guidance, merchant availability, connectivity support, and complaint resolution mechanisms.

Indirect Effect of Perceived Ease of Use Through Attitude

H8 is not supported because the indirect effect of perceived ease of use on intention through attitude is statistically insignificant. Although perceived ease of use improves students' attitudes toward QRIS, attitude does not function as a significant mechanism translating this perception into future usage intention. This finding indicates that the traditional TAM pathway from technological beliefs to attitude and subsequently intention may not operate uniformly among experienced digital payment users. In this context, ease of use contributes to positive evaluations, but behavioral intention depends more directly on functional value, transaction conditions, and perceived control.

The result differs from Rafdinal and Senalasari (2021), who found that attitude mediated the relationship between ease of use and mobile payment intention. The difference suggests that mediation effects may depend on technology maturity and user experience. For students who already understand QRIS, usability improvements may enhance satisfaction but may not be sufficient to increase intention unless accompanied by stronger practical benefits. This finding contributes by identifying a contextual limitation of attitude-based mediation within digital payment adoption.

QRIS improvement strategies should integrate usability enhancement with broader factors such as transaction reliability, merchant acceptance, and accessibility.

Indirect Effect of Perceived Usefulness Through Attitude

H9 is also not supported because the indirect effect of perceived usefulness on intention through attitude is statistically insignificant. When considered alongside the significant direct relationship identified in H4, usefulness appears to operate mainly through an instrumental route rather than through an attitudinal mechanism. Students may intend to use QRIS because it performs payment tasks effectively, even when their general evaluation of the system contributes little additional explanation. This pattern refines the integrated model by showing that the belief evaluation intention sequence is not universal among experienced users. It differs from Rafdinal and Senalasari ⁽²⁰²¹⁾ and Syah et al. (2022), whose results assigned attitude a more central role, but it is compatible with evidence that perceived usefulness can directly predict mobile-payment intention, as reported by Tikno et al. (2024) and Nisa et al. (2025). Providers should therefore communicate functional benefits directly and regard favorable attitudes as supportive rather than indispensable to future use.

Overall, TAM and TPB make unequal but complementary contributions in this setting. TAM explains how ease of use develops perceived usefulness and attitude, while usefulness provides the dominant route to intention. TPB adds explanatory value primarily through perceived behavioral control rather than through attitude or subjective norm. For universities, banks, and payment providers, the most defensible priorities include reliable transactions, visible efficiency gains, broad merchant acceptance, accessible user guidance, and effective complaint resolution. The relevance to Islamic finance should be framed cautiously. QRIS is an interoperable national payment standard used across bank and non-bank providers, including Islamic banking channels, but the present study does not measure Sharia compliance, religiosity, or preferences for Islamic financial services. Its contribution to Islamic finance lies in informing the delivery of digital-payment services by institutions participating in the same national payment infrastructure, rather than demonstrating a specifically Sharia-based adoption mechanism.

CONCLUSION

This study examined university students' intention to use QRIS through an integrated TAM–TPB framework. The model explained 66.9% of the variance in intention. Perceived usefulness emerged as the strongest predictor, while perceived behavioral control also showed a significant positive relationship. Perceived ease of use strengthened both perceived usefulness and attitude, and perceived usefulness contributed to a more favorable attitude. However, attitude and subjective norm did not significantly predict intention. Attitude also failed to transmit the effects of perceived ease of use and perceived usefulness to intention.

These findings indicate that students with prior QRIS experience form future usage intentions mainly through practical benefits and perceived capability rather than general evaluations or social expectations. The study therefore identifies a context-specific utility control pattern within TAM–TPB. TAM explains how ease of use develops usefulness and favorable evaluations, whereas TPB contributes

primarily through perceived behavioral control. The study extends QRIS adoption literature to university students in Kendari and demonstrates that integrating TAM and TPB does not imply that all proposed pathways operate simultaneously. Practically, banks, digital-payment providers, and universities should prioritize transaction reliability, visible efficiency, merchant availability, user guidance, and effective complaint resolution. Such priorities are relevant because QRIS is Indonesia's national QR payment standard and supports transactions across different payment instruments and providers.

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