QRIS usage dynamics in Banjarmasin: trust mediating perceived usefulness and perceived ease of use

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Abstract

This study explores the pivotal role of trust in mediating the impact of perceived usefulness and ease of use on the adoption of QRIS (Quick Response Code Indonesian Standard) among the residents of Banjarmasin. Employing a purposive sampling method, the research gathered data from 353 QRIS users, predominantly women, across various districts and demographic backgrounds. The results of this research showed that both perceived usefulness and perceived ease of use strongly influence trust, which in turn significantly affects the usage decision. The research corroborates similar studies, emphasizing the necessity of enhancing system usability and trust to foster higher adoption rates. This study provides crucial insights for stakeholders aiming to optimize QRIS as a widely accepted payment platform in Banjarmasin, highlighting the importance of focusing on user-centric design and trust enhancement to drive technological adoption and usage.
Keywords*: perceived usefulness, ease of use, trust, usage decision, QRIS*

Introduction

The advent of digital payment systems in Indonesia marked a significant leap forward with the introduction of the Quick Response Code Indonesian Standard (QRIS), which was officially implemented by Bank Indonesia on January 1, 2020. QRIS emerged as a groundbreaking initiative aimed at consolidating various digital payment methods under a unified standard, thereby simplifying transactions across the nation's diverse payment ecosystem. This introduction delves into the dynamics of QRIS usage in Banjarmasin, exploring how this standard is pivotal in redefining financial interactions, particularly emphasizing its impact on micro-businesses and small-scale merchants (Silalahi et al., 2022).

Developed under the regulatory framework of PADG No.21/18/2019, QRIS was launched on August 17, 2019, as part of Bank Indonesia's broader vision to enhance the infrastructure of retail payments. The system was designed to ensure that payments are real-time, seamless, and available at all times, aligning with the strategic objectives of Payment System Vision 2025. This initiative also includes other significant projects like BI-Fast and the National Payment Gateway (GPN), which together facilitate a more efficient, secure, and

reliable payment system while prioritizing expanded access and consumer protection (Tobing et al., 2021).

The implementation of QRIS has shown rapid adoption rates across various sectors of the economy. By July 2020, the number of transactions processed through QRIS had increased by 47% since March 2020, and the system was actively used by over 333,992 merchants, marking a 26% increase. This growth is even more pronounced among small and medium enterprises (SMEs) and micro, small, and medium enterprises (MSMEs), with SMEs experiencing a 125% increase in adoption, and MSMEs a 9% increase. Additionally, there was a notable rise in QRIS usage among merchants involved in donation-based services, which saw a 132% increase (Silalahi et al., 2022).

One of the most transformative impacts of QRIS is its significant contribution to financial inclusion, particularly for micro-businesses and individuals in less accessible areas who previously had limited or no access to traditional banking services. The interoperability feature of QRIS enables these smaller entities to participate in the digital economy by accepting payments from various e-wallets and banking applications without the need for multiple QR codes or payment setups (Putra et al., 2023). This convenience not only simplifies the transaction process for both merchants and consumers but also reduces operational costs, which is particularly beneficial for micro-businesses operating with minimal profit margins.

Sari and Adinugraha (2022) explained that integration of the Quick Response Code Indonesian Standard (QRIS) represents a significant shift towards secure and transparent digital transactions, which minimizes the traditional reliance on cash susceptible to theft and fraud. This transition not only provides a safer and more efficient business environment but also fosters a trusting relationship between merchants and their customers. Particularly for micro-businesses, this trust is essential as it boosts customer confidence, potentially leading to increased sales and loyalty. The trust that develops through consistent use of QRIS becomes a critical mediating factor between the perceived usefulness and the perceived ease of use of the system. As small-scale merchants and micro-business owners gain confidence in the security and efficiency of QRIS-enabled transactions, their inclination to adopt and continuously use the system grows. This enhanced trust not only influences their initial decision to adopt QRIS but also shapes their overall perception of its utility and user-friendliness (Setiyono, 2021).

The link between perceived usefulness, trust, and usage decision of QRIS from the consumer's perspective is important for understanding their adoption and utilization of this payment system (Liébana-Cabanillas et al., 2015). Perceived usefulness refers to how beneficial consumers believe QRIS to be in facilitating their payment needs (Srivastava et al., 2013). Ahmad et al. (2020) said that trust plays a mediating role as consumers rely on confidence in the system's reliability, security, and performance to determine whether to use it. This relationship requires deeper exploration into how these factors influence users' decisions. Understanding how consumers perceive the usefulness of QRIS, their level of trust in the system, and how these factors influence usage decisions is essential for stakeholders in digital payments Stakeholders can tailor strategies by identifying these interconnections helping enhance consumer confidence

promoting wider adoption thereby furthering financial inclusion and advancing Banjarmasin's digital economy landscape.

QRIS system ease of use is crucial in customer decision-making process. Navigating and using the system directly impacts its adoption and regular usage (Nurhapsari and Sholihah, 2022). Musyaffi et al., 2021 describe that consumers are more inclined to embrace a payment system that is intuitive, user-friendly, and does not require a steep learning curve. Therefore, the ease of use significantly influences consumers utilizing the QRIS for their transactions. Furthermore, trust intertwines with both usefulness and ease of use. Consumers must perceive the system as beneficial and trust that it will function reliably and securely which is closely linked to their perception on its ease of use. If consumers find it easy to use, they are more likely to trust it positively influencing their decision on whether or not to use it (Sullivan and Kim, 2018).

The relationship between perceived ease of use, trust, and usage decision towards QRIS elucidates consumer behavior concerning adopting this payment system interlinked with promoting financial inclusion in Banjarmasin making it imperative for stakeholders to tailor strategies addressing these perceptions. This approach will ultimately contribute toward enhancing consumer confidence expanding QRIS adoption further fueling Banjarmasin's digital economy landscape.

Further research into the role of trust in the adoption and ongoing use of QRIS in Banjarmasin is crucial to fully understand the dynamics of digital payment systems in this region. Sarkam et al. (2022) investigate how trust is built among merchants and consumers and the extent to which it mediates the relationship between perceived usefulness, perceived ease of use, and actual usage of QRIS will offer valuable insights. These findings can assist policymakers, financial institutions, and businesses in enhancing financial inclusion and promoting broader adoption of digital payment methods. Additionally, exploring the potential implications of trust on the sustained use of QRIS and its impact on the financial ecosystem in Banjarmasin is vital. Understanding how trust affects the long-term commitment of merchants and consumers to QRIS, as well as its broader effects on the stability and growth of the digital payment landscape, is paramount for the ongoing development and improvement of the financial infrastructure in the region (Musyaffi et al., 2021).

Despite advancements in the study of digital payment systems like QRIS (Quick Response Code Indonesian Standard), there remains a gap in understanding how perceived ease of use and perceived usefulness influence usage decisions through the mediation of trust. Previous research has primarily focused on the direct benefits and technical aspects, neglecting the psychological mechanisms. Studies have often overlooked trust as a critical mediator in digital transactions, where security and reliability are primary concerns. This study aims to fill this gap by exploring how these factors, mediated by trust, affect QRIS adoption in Banjarmasin. The novelty lies in examining QRIS usage in Banjarmasin, an under-studied location, and providing a comprehensive model that explains adoption decisions by integrating these factors. This approach offers new insights into the psychological mechanisms driving digital payment adoption, aiding stakeholders in designing effective strategies to enhance QRIS usage.

Literature Review

The study was specifically targeted at the residents of Banjarmasin who use QRIS for their transaction needs. Researchers aimed to gather detailed insights into their perspectives regarding various factors associated with QRIS as a payment method. By employing surveys, the study collected valuable data on respondents' opinions on four key aspects: Perceived Usefulness, Perceived Ease of Use, Trust, and their ultimate Decision to Use QRIS. These components are crucial as they directly influence the adoption and continued utilization of digital payment systems.

Furthermore, Priyombodo et al. (2024) delve into the factors influencing the Usage Decision of QRIS, identifying several key indicators that determine whether users decide to adopt this payment system. These include the Security System, which is crucial as it ensures the protection of user data and transactions against potential threats, thereby building user confidence. Providing Benefits refers to the tangible advantages users gain from using QRIS, such as discounts or rewards, which enhance the value of the service. Transparency is critical in clarifying how transactions are processed and how data is handled, fostering trust by ensuring users are well-informed. Trust, as an indicator, underscores the necessity for users to feel confident in the reliability and integrity of the payment system. Lastly, Convenience is essential as it reflects the ease and efficiency with which users can make transactions, significantly impacting their decision to use QRIS regularly. These indicators collectively play a pivotal role in shaping the decision-making process for users considering QRIS as their preferred mode of payment.

H1: Perceived Usefulness positively influences the Trust to Use QRIS.
H2: Perceived Ease of Use positively influences the Trust to Use QRIS.

Meanwhile, Rafida and Ananda (2016) offered a detailed concept of Trust as it breaks it down into several crucial indicators. These indicators include Reliability, which assesses the consistency and dependability of QRIS in processing transactions accurately and without failure; Honesty, which reflects the system's transparency and straightforwardness in handling user data and transactions; Caring, suggesting the system's ability to safeguard user interests and provide prompt support when issues arise; Credibility, which evaluates the trustworthiness and integrity perceived by the users; and Competence, indicating the system's capability to effectively meet the transactional needs of the users. Understanding these trust indicators is vital for comprehending how they influence the overall acceptance and reliance on QRIS by its users, highlighting the essential link between user trust and the successful implementation of new technological solutions in financial transactions. Supporting this, Mawardi and Prabowo (2023) discovered that trust, along with perceived usefulness, positively affects the Usage Decision, underscoring the importance of trust in driving the adoption of QRIS.

H3: Trust positively influences the Usage Decision to Use QRIS

According to the technology acceptance model developed by Davis (1989) the concept of Perceived Usefulness within the context of QRIS can be broken down into several indicators. These include Time Conservation—highlighting the

efficiency of QRIS in reducing the time needed for transactions; User-Friendliness, which refers to the simplicity of the system's interface; Performance Enhancement, suggesting that QRIS improves the users' transactional capabilities; Effectiveness, which assesses the success rate of completing payments; and Improved Performance, indicating overall enhancement in transactional activities due to QRIS. Supporting this, Nurzanita and Marlena (2020) study demonstrated that the perceived usefulness has a positive and significant impact on usage decision demonstrated that perceived usefulness significantly impacts usage decisions, further underscoring the importance of ease of use in fostering user adoption.

H4: Perceived Ease of Use positively influences the Usage Decision to Use QRIS

Davis (1989) also elaborates on Perceived Ease of Use through several specific indicators that describe the user's interaction with the technology. These are Easy to Learn, meaning that new users can quickly understand how to operate QRIS; User Friendly, which emphasizes the straightforward and intuitive nature of the interface; Controllable, indicating that users feel they have substantial control over the transaction process; Flexible, suggesting the adaptability of QRIS to different user needs; and Clear and Understandable, which ensures that the system's functionalities are transparent and easily grasped by its users. Research by Akhyar and Sisilia (2023) demonstrated that perceived ease of use, along with perceived usefulness, positively affects the Usage Decision, underscoring the significance of ease of use in driving the adoption of QRIS.

H5: Perceived Usefulness positively influences the Usage Decision to Use QRIS

Nurzanita and Marlena (2020) revealed that when trust is involved as a mediator, perceived usefulness still positively and significantly influences usage decisions. This indicates that perceived usefulness not only directly impacts the intention to use QRIS but also does so indirectly by fostering trust in the system. Therefore, enhancing the perceived usefulness of QRIS can lead to higher adoption rates through the mediating role of trust.

H6: Perceived Usefulness positively influences the Usage Decision to Use QRIS with Trust as the Mediating Variable

Similarly, research by Faradila and Soesanto (2016) found that perceived ease of use is a critical factor that influences the intention to use both directly and indirectly through the mediating effect of trust. When users find a system easy to use, their trust in it increases, which in turn enhances their likelihood of using it. This is supported by studies that emphasize the role of ease of use in building user trust and driving technology adoption.

H7: Perceived Ease of Use positively influences the Usage Decision to Use QRIS with Trust as the Mediating Variable

Similar research by Kumala et al. (2020) examining GoPay usage for food and beverage purchases among Generation X in Surabaya revealed that perceived usefulness, perceived ease of use, trust, and security all have a positive and significant impact on the intention to use GoPay. Among these

factors, only trust did not have a significant individual effect. The research emphasized that the ease of using the GoPay application was the most influential factor, aligning with the fact that Generation X members are not digital natives. Therefore, the simplicity and convenience of the e-wallet application are essential in motivating this generation to use GoPay for their transactions, particularly for purchasing food and beverages.

Another recent studies by Pambudi (2019) continue to confirm the significant impact of perceived ease of use and perceived usefulness on the behavioral intention to use digital payment systems. Research has shown that the perceived ease of use of OVO significantly boosts users' intention to adopt the application, suggesting that the app's simplicity encourages consumer adoption. Similarly, studies have demonstrated that perceived usefulness positively affects behavioral intention, indicating that users' perceptions of OVO's benefits drive their intention to use it. These studies emphasize that the ease of use and perceived advantages of mobile payment applications like OVO are crucial for attracting and retaining users. These findings align with previous research highlighting the importance of ease of use and usefulness in technology adoption. Incorporating these insights, the current study aims to broaden the perspective and strengthen the theoretical foundation, particularly in understanding how perceived ease of use and perceived usefulness influence the adoption of digital payment systems in similar contexts.

Research Method

This quantitative study focuses on residents of Banjarmasin who use QRIS for transactions, aiming to gain insights into their perceptions of QRIS's Perceived Usefulness, Perceived Ease of Use, Trust, and Usage Decision. Respondents were selected based on specific criteria: they had to be 17 years or older, reside in Banjarmasin, and have prior experience using QRIS. These criteria ensured that participants were mature, had relevant experience, and accurately represented the local population using the digital payment system. Surveys were distributed via Google Forms. Data analysis used the Partial Least Square (PLS) approach, including descriptive analysis, outer model tests (validity and reliability), and inner model tests (r-square, q square, f-square, goodness of fit, hypothesis, mediation), conducted with SmartPLS version 4.0.

In order to gain detailed insights into the factors influencing QRIS adoption, a structured questionnaire was developed. The questionnaire aimed to measure four key aspects: Perceived Usefulness, Perceived Ease of Use, Trust, and Usage Decision. Each aspect was assessed through a series of statements that respondents rated on a Likert scale from 1 (strongly disagree) to 5 (strongly agree). Table 1 shows the specific items included in the questionnaire for Perceived Usefulness and Perceived Ease of Use.

Of the 353 individuals surveyed, a significant majority were women, totaling 255, compared to 98 men. This gender distribution highlights a predominance of female users in the digital payment system, which could reflect broader trends in technology adoption and usage among women in urban Indonesian settings.

Table 1. Item Measurement

Variable	Indicator	Item
Perceived Usefulness	Time Saving	I feel that using QRIS saves me time in making transactions
		Using QRIS speeds up the payment process compared to cash payments
	Ease of Use	I find QRIS very easy to use.
		I feel comfortable using QRIS for various types of transactions
	Performance Improvement	Since using QRIS, I feel my transaction efficiency has increased
		QRIS allows me to conduct more transactions in a shorter amount of time
	Effectiveness	Using QRIS ensures transactions are completed without errors
		With QRIS, I can make payments more effectively compared to other methods
	Performance Enhancement	With QRIS, I do not need to carry large amounts of cash for transactions
		Using QRIS helps me reduce the risk of losing money
Perceived Ease of Use	Easy To Learn	I find it easy to learn how to use QRIS.
		I do not need much time to get used to using QRIS as a transaction tool.
	User Friendly	The process of making payments with QRIS feels simple.
		I rarely experience difficulties when using QRIS for various types of transactions.
	Controllable	Using QRIS, I can monitor the transactions I have made.
		I feel I have full control over the transactions I make using QRIS.
	Flexible	I find QRIS reliable for transactions in various situations.
		QRIS simplifies my transaction process with various service providers.
	Clear and Understandble	The information provided by QRIS is easy to understand.
		I find the instructions provided by QRIS clear.
Trust	Reliability	I believe QRIS consistently provides reliable service.
		I find QRIS to be a dependable payment method for various types of transactions.
	Honesty	I feel that QRIS does not hide additional fees from me.
		I trust that QRIS displays transparent transaction information.
	Caring	I feel that QRIS cares about the security of my personal data.
		I am confident that QRIS prioritizes user comfort.
	Credibility	I have confidence in QRIS's reputation as a secure payment method.
		I believe that QRIS is backed by secure technology.
	Competence	I feel that QRIS can handle financial transactions quickly.

		I believe QRIS can address many issues in the digital payment system (such as transaction security, platform integration, and broader access for all users).
Usage Decision	Security System	I feel that transactions using QRIS are secure from fraud.
		Using QRIS makes me less worried about transaction security risks.
	Providing Benefit	QRIS offers transaction convenience that I cannot get from other payment methods.
		Using QRIS makes my transactions more efficient compared to using cash.
	Transparency	QRIS provides clear information about each transaction.
		I can easily understand the fee details charged in each QRIS transaction.
	Trust	I trust that QRIS is a reliable payment method.
		Successful previous transactions with QRIS increase my trust to continue using it.
	Convenience	I can easily find merchants that accept QRIS.
		I can use QRIS without needing help from others.

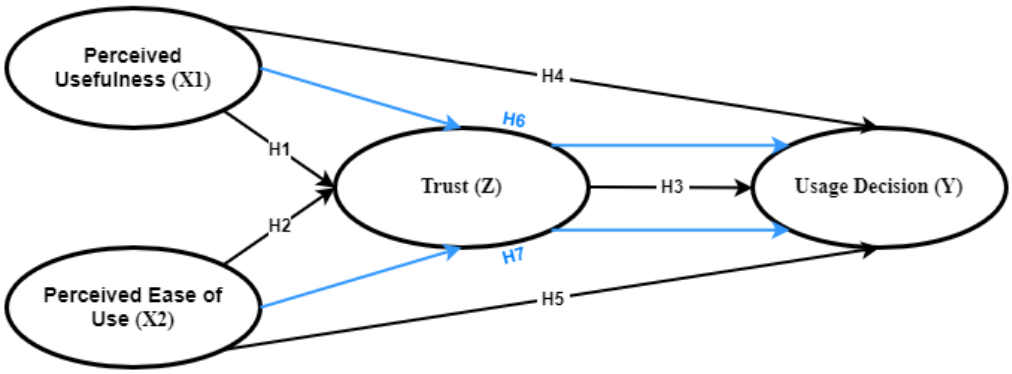

Figure 1. Conceptual Framework

The respondents were not only diverse in terms of gender but also came from various districts within Banjarmasin, with the majority (157) hailing from Banjarmasin Utara. This geographic concentration is primarily because many respondents were students whose residences are centered in Banjarmasin Utara. This area hosts the two largest universities in Banjarmasin, namely Universitas Lambung Mangkurat and Islam Kalimantan, along with numerous primary and secondary schools (SD to SMA). Therefore, the concentration of educational institutions in Banjarmasin Utara naturally resulted in a higher number of respondents from this area.

In terms of occupation, the majority of respondents were students, aligning with the age profile of most respondents being under 30 years old and pursuing undergraduate degrees. This demographic detail indicates that QRIS usage is predominantly among younger individuals who are in the process of obtaining higher education. The high representation of students also reflects the influence of educational environments on the adoption of digital payment systems like

QRIS.

Furthermore, the data shows that the majority of respondents were under 30 years old, indicating that QRIS users are mostly young people. Additionally, 90% of respondents had at least a high school diploma or a bachelor's degree. This suggests that QRIS users in Banjarmasin are predominantly well-educated, with minimal usage among those without a high school diploma. This educational background implies that understanding and utilizing QRIS is more prevalent among individuals who have completed higher levels of education, while those with less education may have limited engagement with this digital payment system.

Result and Discussions

Outer loading represents the degree to which observable variables reflect latent constructs in partial path analysis. It demonstrates the intensity of the connection between the indicators and the measured latent variables, calculated as the regression coefficient between them with values from 0 to 1. A higher value signifies that an indicator plays a more substantial role in measuring the latent variable. Outer loadings are deemed favorable if they exceed 0.7. Therefore, indicators with outer loading values below 0.7 should be eliminated from the research model framework, as recommended by (Hair et al., 2014).

Table 2. Outer Loading 1

No	Indicator	*Outer Loading*	Status	No	Indicator	*Outer Loading*	Status
1	X1_1	0.677	Invalid	21	Y_1	0.624	Invalid
2	X1_2	0.744	Valid	22	Y_2	0.713	Valid
3	X1_3	0.755	Valid	23	Y_3	0.734	Valid
4	X1_4	0.784	Valid	24	Y_4	0.744	Valid
5	X1_5	0.785	Valid	25	Y_5	0.766	Valid
6	X1_6	0.739	Valid	26	Y_6	0.732	Valid
7	X1_7	0.502	Invalid	27	Y_7	0.812	Valid
8	X1_8	0.815	Valid	28	Y_8	0.824	Valid
9	X1_9	0.472	Invalid	29	Y_9	0.565	Invalid
10	X1_10	0.580	Invalid	30	Y_10	0.609	Invalid
11	X2_1	0.742	Valid	31	Z_1	0.716	Valid
12	X2_2	0.664	Invalid	32	Z_2	0.703	Valid
13	X2_3	0.774	Valid	33	Z_3	0.636	Invalid
14	X2_4	0.612	Invalid	34	Z_4	0.715	Valid
15	X2_5	0.723	Valid	35	Z_5	0.741	Valid
16	X2_6	0,673	Invalid	36	Z_6	0,797	Valid
17	X2_7	0.670	Invalid	37	Z_7	0.827	Valid
18	X2_8	0.773	Valid	38	Z_8	0.833	Valid
19	X2_9	0.818	Valid	39	Z_9	0.782	Valid
20	X2_10	0.795	Valid	40	Z_10	0.785	Valid

The table presents a detailed overview of the outer loading values and validation status for various indicators used in a study. Indicators with an outer

loading value below a certain threshold, often around 0.7, are generally considered to not sufficiently represent their respective latent variable and are thus deemed invalid. Specifically, indicators X1_1, X1_7, X1_9, X1_10, X2_2, X2_4, X2_6, X2_7, Y_1, Y_9, Y_10, and Z_3 are invalid and should be eliminated from further analysis. Removing or revising these indicators may enhance the reliability and validity of the study's findings by ensuring that only robust measures contribute to the model's construction.

Table 3. Outer Loading 2

No	Indicator	*Outer Loading*	Status	No	Indicator	*Outer Loading*	Status
1	X1_2	0.760	Valid	15	Y_4	0.768	Valid
2	X1_3	0.763	Valid	16	Y_5	0.780	Valid
3	X1_4	0.819	Valid	17	Y_6	0.748	Valid
4	X1_5	0.831	Valid	18	Y_7	0.826	Valid
5	X1_6	0.786	Valid	19	Y_8	0.833	Valid
6	X1_8	0.813	Valid	20	Z_1	0.712	Valid
7	X2_1	0.785	Valid	21	Z_2	0.715	Valid
8	X2_3	0.776	Valid	22	Z_4	0.689	Invalid
9	X2_5	0.752	Valid	23	Z_5	0.743	Valid
10	X2_8	0.739	Valid	24	Z_6	0.804	Valid
11	X2_9	0.864	Valid	25	Z_7	0.830	Valid
12	X2_10	0.842	Valid	26	Z_8	0.838	Valid
13	Y_2	0.690	Invalid	27	Z_9	0.791	Valid
14	Y_3	0.758	Valid	28	Z_10	0.715	Valid

This table presents the validation status of several indicators after the indicator in the first outer loading test that are invalid are being eliminated, measured by their outer loading values in a research study. In this case, indicators Y_2 and Z_4 are identified as invalid with outer loadings of 0.690 and 0.689 respectively, falling below the common acceptability threshold, typically around 0.7. These indicators do not sufficiently represent their respective constructs and could potentially compromise the validity of any constructs they are part of.

The presented table showcases the outer loading values of various indicators used in a research study, all of which have been marked as valid. Each indicator has a loading value that meets or exceeds the threshold typically set for validity, commonly around 0.7. This implies that these indicators are adequate in measuring the constructs they are intended to represent, contributing effectively to the theoretical framework of the study.

The concept of construct validity pertains to the accuracy with which the indicators used represent the intended constructs, ensuring that they reflect the nature of the latent variables being measured. This is essential for establishing a model that aligns with relevant theory (Hair et al., 2014). On the other hand, reliability concerns the consistency of measurement results from identical indicators when evaluating a specific construct. A high level of reliability indicates consistent measurement outcomes within a given population Hair et al., (2014). In SmartPLS, Cronbach’s Alpha can be employed to evaluate both construct

validity and reliability. It serves as an indicator's internal consistency for describing latent variables in partial path analysis using values typically ranging between 0 and 1; higher values signify enhanced reliability. This method assesses whether indicators measuring a particular construct demonstrate adequate consistency, where higher alpha values point towards greater uniformity in measuring said construct. Cronbach's alpha is widely utilized in quantitative analysis to gauge questionnaire or instrument reliability. The decision regarding Cronbach's Alpha test relies on evaluating its value; if it surpasses 0.7, it meets required standards for research usage (Hair et al., 2014).

Table 4 Outer Loading 3

No	Indicator	*Outer Loading*	Status	No	Indikator	*Outer Loading*	Status
1	X1_2	0.760	Valid	14	Y_4	0.778	Valid
2	X1_3	0.764	Valid	15	Y_5	0.793	Valid
3	X1_4	0.819	Valid	16	Y_6	0.764	Valid
4	X1_5	0.831	Valid	17	Y_7	0.833	Valid
5	X1_6	0.787	Valid	18	Y_8	0.842	Valid
6	X1_8	0.811	Valid	19	Z_1	0.715	Valid
7	X2_1	0.785	Valid	20	Z_2	0.802	Valid
8	X2_3	0.776	Valid	21	Z_5	0.720	Valid
9	X2_5	0.752	Valid	22	Z_6	0.742	Valid
10	X2_8	0.739	Valid	23	Z_7	0.804	Valid
11	X2_9	0.864	Valid	24	Z_8	0.831	Valid
12	X2_10	0.842	Valid	25	Z_9	0.834	Valid
13	Y_3	0.756	Valid	26	Z_10	0.805	Valid

HTMT approach involves calculating the ratio between the correlation of variables with other variables and the correlation of a variable with itself, which is referred to as heterotrait-monotrait rasio (Garson, 2016). If this ratio falls below 0.90, which serves as the threshold value, it indicates that discriminant validity has been achieved. The HTMT method entails assessing discriminant validity by analyzing how distinct a variable is from others through comparing its relationships with other variables to its self-correlation. A HTMT ratio lower than 0.90 confirms that the variables are adequately distinct from each other and thus supports discriminant validity.

Table 5. Cronbach Alpha

Variable	*Cronbach's Alpha*
Perceived Usefulness (X1)	0.884
Perceived Ease of Use (X2)	0.882
Usage Decision (Y)	0.883
Trust (Z)	0.909

Based on the table provided above, the HTMT values for each variable are below 0.9, indicating that every variable meets the HTMT prerequisite and satisfies discriminant validity.

Table 6. HTMT Table

	Perceived Usefulness	Perceived Ease of Use	Usage Decision	Trust
Perceived Usefulness		0.826	0.786	0.752
Perceived Ease of Use	0.826		0.787	0.786
Usage Decision	0.786	0.787		0.882
Trust	0.752	0.786	0.882	

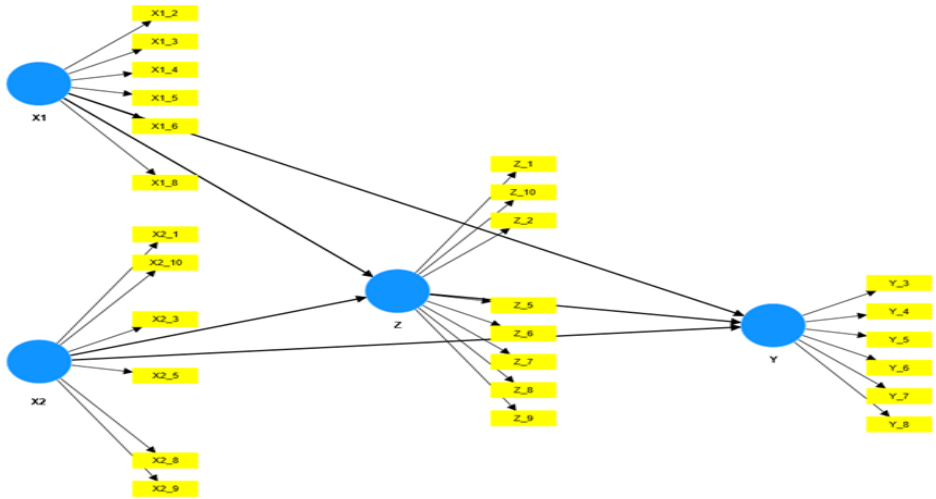

Figure 2. Structural Analysis Model

Table 7. Summary of Path Analysis Result

Path	T statistics	P values
Perceived Usefulness -> Usage Decision	6.466	0.000
Perceived Usefulness -> Trust	6.784	0.000
Perceived Ease of Use -> Usage Decision	6.553	0.000
Perceived Ease of Use -> Trust	9.594	0.000
Trust -> Usage Decision	7.217	0.000

The analysis revealed strong positive relationships across all paths, each with highly significant t-statistics and p-values of 0.000, indicating robust support for the hypothesized relationships within the model. Specifically, the path from Perceived Usefulness to Usage Decision demonstrated a t-statistic of 6.466, and the path from Perceived Usefulness to Trust showed an even higher t-statistic of 6.784, underscoring the strong influence of perceived usefulness on both trust in and the decision to use QRIS. Similarly, Perceived Ease of Use also showed a significant effect, with a t-statistic of 6.553 on Usage Decision and a notably high t-statistic of 9.594 on Trust. This highlights that ease of use not only directly impacts the usage decision but is also a critical determinant of trust in the QRIS system.

The path from Trust to Usage Decision had a t-statistic of 7.217, confirming trust as a vital mediating variable. This suggests that trust in QRIS significantly mediates the impact of perceived usefulness and ease of use on the decision to adopt QRIS, enhancing the likelihood of its usage among consumers in Banjarmasin. The findings align with the Technology Acceptance Model (TAM),

which posits that perceived ease of use and perceived usefulness are primary determinants of user acceptance of technology. This study extends TAM by demonstrating that trust serves as a crucial mediating factor, amplifying the effects of perceived ease of use and usefulness on adoption decisions.

The argument of these findings is that enhancing perceived usefulness and ease of use can foster greater trust in QRIS, which in turn significantly influences users' adoption decisions. This highlights the interdependency between these factors and their collective impact on technology acceptance. From a theoretical perspective, the study supports and extends the Technology Acceptance Model by integrating trust as a mediating variable, providing a more comprehensive understanding of the factors driving digital payment adoption. The empirical evidence underscores the importance of both perceived usefulness and ease of use in building trust, which subsequently leads to higher adoption rates of QRIS.

For stakeholders aiming to improve and promote QRIS usage, these insights are crucial. By focusing on strategies that enhance the perceived usefulness and ease of use of QRIS, developers and policymakers can build user trust, thereby increasing the likelihood of adoption. This approach can lead to more effective interventions and marketing strategies that align with the theoretical underpinnings of TAM, ultimately fostering higher adoption rates of QRIS in Banjarmasin.

Table 8. Summary of Indirect Influence Results (Indirect Effects)

Path	T statistics	P values
Perceived Usefulness -> Trust -> Usage Decision	4.906	0.000
Perceived Ease of Use -> Trust -> Usage Decision	6.208	0.000

The path from perceived usefulness through trust to usage decision showed a T-statistic of 4.906 with a P-value of 0.000, indicating a highly significant indirect effect. This suggests that the perceived usefulness of QRIS strongly influences trust, which in turn significantly affects the decision to use the system. In other words, users who find QRIS useful are likely to develop trust in the system, which positively impacts their decision to use it. Similarly, the path from perceived ease of use through trust to usage decision recorded a T-statistic of 6.208 with a P-value of 0.000, also indicating a highly significant effect. This result implies that when users find QRIS easy to use, their trust in the system increases, which significantly enhances their likelihood of adopting QRIS.

The argument of these findings is that both perceived usefulness and perceived ease of use are not only direct determinants of QRIS adoption but also exert a significant influence through the mediation of trust. This highlights the crucial role of trust as a mediating factor that enhances the effects of perceived usefulness and ease of use on the decision to adopt QRIS. These findings align with the Technology Acceptance Model (TAM), which identifies perceived ease of use and perceived usefulness as primary factors influencing technology acceptance. However, this study extends TAM by incorporating trust as a key mediating variable, demonstrating that trust significantly amplifies the impact of these factors on adoption decisions.

From a theoretical perspective, the study supports and enriches the Technology Acceptance Model by emphasizing the mediating role of trust. The

empirical evidence provided by the significant indirect effects underscores the importance of trust in the relationship between perceived usefulness, perceived ease of use, and usage decision. This suggests that for digital payment systems like QRIS, enhancing user trust through improved system usefulness and ease of use is vital for driving adoption.

For developers and marketers, these insights highlight the necessity of focusing on attributes that build user trust. By enhancing the perceived usefulness and ease of use of QRIS, stakeholders can foster greater trust among users, thereby increasing the likelihood of adoption. These strategies should align with the theoretical framework of TAM, ensuring that interventions aimed at improving QRIS adoption are grounded in a comprehensive understanding of the factors that influence user acceptance of technology.

Conclusion

The extensive research presents compelling evidence supporting the significant impact of perceived usefulness and perceived ease of use on QRIS adoption, with trust serving as a mediating factor. The results from path analysis confirm strong effects across all tested relationships, validating the hypothesized model. Notable findings reveal that both perceived usefulness and ease of use directly influence the decision to adopt QRIS, while also impacting user trust in the technology. The statistically significant t-statistics and near-zero p-values along these paths indicate robustness and reliability within these connections. Additionally, trust plays a crucial role as a mediator by amplifying the effects of perceived usefulness and ease of use on QRIS adoption. This implies that bolstering user trust through enhancements in system usability and functionality could play a pivotal role in driving higher adoption rates.

Several studies have yielded similar findings to this research. For example, Nurzanita and Marlena (2020) study demonstrated that the perceived usefulness has a positive and significant impact on usage decision. Additionally, Nurzanita and Marlena (2020) study revealed that when trust is involved as a mediator, perceived usefulness still positively and significantly influences usage decision. Similarly, Alfani and Ariani (2023) found that both perceived usefulness and trust have a positive and significant effect on usage decision. Mawardi and Prabowo (2023) study also discovered that trust and perceived usefulness positively affect usage decision. Ningsih et al. (2021) study reported that ease of use significantly impacts usage decision in a positive manner. Furthermore, Akhyar and Sisilia (2023) research concluded that perceived ease of use along with perceived usefulness positively affect Usage Decision.

For stakeholders such as developers, marketers, and policymakers focused on promoting QRIS in Banjarmasin, this study furnishes valuable insights emphasizing the need for user-centered design approaches and targeted marketing strategies. Developers should focus on simplifying the user interface and ensuring the system is intuitive and easy to navigate, conducting usability testing with various user groups to identify and address potential issues. Transparent communication regarding security measures and data privacy is essential for building trust, with clear and accessible information about how QRIS protects user data.

Policymakers and stakeholders can initiate educational campaigns to

increase awareness and understanding of QRIS, using workshops, seminars, and digital literacy programs to demystify the technology. Robust feedback mechanisms that allow users to report issues and suggest improvements can enhance the system and build trust. Offering incentives such as discounts or cashback for using QRIS can encourage adoption and continued use, with tailored incentives for different demographic groups enhancing their effectiveness. Collaborating with universities and schools in Banjarmasin Utara can significantly boost adoption rates, providing QRIS-based solutions for campus transactions. By developing tailored interventions and focusing on enhancing user perceptions, stakeholders can significantly increase QRIS adoption levels, highlighting the importance of usability and trust in technological adoption.

This study has several limitations that should be noted. Firstly, the questionnaire was distributed solely online through Google Forms. This approach may have led to a respondent group that is already knowledgeable about QRIS, potentially introducing bias as it did not reach individuals who are less familiar with technology or QRIS. As a result, the findings might not fully capture the broader population of Banjarmasin, particularly those less acquainted with digital payment systems.

Furthermore, the reliance on self-reported data can introduce biases, as respondents may not always provide accurate or truthful answers. The online distribution of the survey complicates the verification of the authenticity and seriousness of the responses, which could affect the validity of the collected data. The lack of offline distribution means the study might have overlooked perspectives from individuals without internet access or those who prefer traditional payment methods.

Additionally, the use of purposive sampling, although effective for targeting specific groups, may limit the generalizability of the results. The selected respondents were chosen based on specific characteristics relevant to the study's goals, which may not represent the experiences of the entire population.

Future research should consider exploring the role of trust in QRIS adoption in different regions or among diverse user groups. Adopting a mixed-method approach that includes both online and offline data collection could help reduce biases and offer a more comprehensive understanding of QRIS usage. Moreover, future studies could examine the impact of demographic variables such as age, education level, and occupation on QRIS adoption to further enrich the findings.

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