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The QRIS Effect: What Truly Motivates MSMEs to Go Digital?

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ABSTRACT

QRIS is now usable in several countries through partnerships, enabling Rupiah-based transactions abroad. This study aims to determine the analysis of the effect of QRIS fees, transaction security, service benefits and ease, and use on interest in using QRIS in buying and selling transactions for MSMEs in Indonesia. This study uses primary data obtained from the collection method on a questionnaire with sampling by purposive sampling method. The questionnaire was randomly distributed online to MSMEs in Indonesia. The questionnaire contains items that need to be completed and sent using the google forms platform. As much as 100 data samples tested with data analysis using the Structural Equation Model (SEM) method through the Partial Least Squares (PLS) approach by conducting a convergent validity test, a discriminant validity test, a reliability test, a determination coefficient test (R^2), and a path coefficient test. The results showed that QRIS fees, transaction security, service benefits and ease, and use simultaneously had positive and significant effects on interest in using QRIS in buying and selling transactions for MSMEs in Indonesia. Bank Indonesia needs to pay attention to these factors in the broader implementation of QRIS. It needs more promotion to introduce the benefits of QRIS usage for Indonesian MSMEs. This research provides help to policymakers develop QRIS.

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Introduction

QRIS can now be used in several countries that have established cooperation with Indonesia. This allows payment transactions overseas to be made using the Rupiah currency. Cross-border QRIS transactions are already available in Thailand, Malaysia, and Singapore (Shofihawa, 2025). Bank Indonesia (BI) continues to expand the reach of QRIS to other countries, such as Japan, India, and Saudi Arabia, as reported on (OCBC, 2025; The Econopest, 2024). Moreover, the development of the Industrial Revolution 4.0 has had a huge impact on global life. Industry 4.0 is a trend that combines automation and cyber technology. Of course, the most pronounced progress is the Internet, or the "Internet of Things" (Ayodya, 2020).

In this context, MSMEs, as a vital sector of the national economy, are also impacted by digitalization, especially through technologies such as QRIS. Digitalization is being produced right now produced through the development of the internet, which is significant progress. Owners of MSME have the potential to encourage digitalization in society by expanding payment types to make buying and selling transactions easier (Sriekaningsih, 2020). QRIS adoption has been shown to significantly enhance transactional efficiency for SMEs (Junaedi et al., 2024; Kuswoyo et al., 2024; Michael et al., 2024; Rafiani et al., 2024). A Study in Solo Raya by (Wijaya et al., 2024) found that promoting QRIS usage among MSMEs can enhance its continued use, supporting the broader goal of a smart economy.

However, despite the many benefits offered, the adoption of QRIS by MSMEs has not gone smoothly and faces several challenges that can affect the level of user trust in this system. The fee charged for using QRIS (Merchant Discount Rate) is an important topic for MSMEs, as the fee level will affect profit margins during intense competition, especially in micro merchants (Lestari, 2023a). The fee policy is a critical factor that influences the decision to use QRIS. Security issues are also a major concern for MSMEs (Silaen et al., 2021); (Pratama et al., 2022). The phenomenon of increasing cybercrime and fraud in digital transactions has made MSMEs hesitant to adopt digital payment technology without security guarantees. Transaction security can be achieved through the use of encryption and other security measures. QRIS has implemented a strong security system to protect transaction data. One way is to use a dynamic QR code, which is a unique code created for each transaction to minimize the risk of cyber attacks (Patil & Kondabala, 2022; Wahyu Agung Prasetyo et al., 2023). In addition, security protocols such as elliptic curve cryptography and public key cryptography without certificates are also used to maintain the integrity, confidentiality, and privacy of transactions (Vincent et al., 2020).

QRIS is designed to simplify transactions while providing benefits for MSMEs. The use of QRIS has been proven to increase transaction efficiency, which has a positive impact on MSME business performance (Wijaya et al., 2024). By integrating various digital payment systems, QRIS becomes a practical tool for business actors (Kuswoyo et al., 2024). The payment process also takes place quickly, generally within one minute, thus accelerating the distribution of goods and services (Bakhtiar et al., 2023). However, if users consider QRIS difficult to use or does not provide real benefits, then MSMEs' interest in adopting it tends to be low. Therefore, it is important for QRIS to truly offer practical and efficient solutions according to its objectives. Although the use of QRIS continues to increase due to the encouragement of economic digitalization policies, challenges remain, especially in encouraging more MSMEs to be interested and motivated to use it. The ease of use of QRIS also contributes to positive user attitudes and encourages the intention to continue using it(Bakhtiar et al., 2023).

The ease of use has a mixed impact. While it significantly affects the acceptance of QR code payment systems in some contexts (Hairani et al., 2021), it does not significantly affect trust or the intention

to use QRIS in others (Djoyo et al., 2022; Usman et al., 2024). In certain contexts, perceived safety does not significantly affect the intention to use QRIS (Usman et al., 2024), while (Silaen et al., 2021) and (Pratama et al., 2022) stated vice versa. Perceived benefits or usefulness are consistently highlighted as significant factors. They directly influence the intention to use QRIS and are mediated by trust (Djoyo et al., 2022; Usman et al., 2024). Although this service benefit factor has become questionable since the costs are being them (cost and benefit analysis theory). It is not explicitly studied. There has been no further research since QRIS fees can be a barrier to the desire of MSMEs to use QRIS, on the other hand, MSMEs also feel the benefits of using QRIS to increase their income (Lestari, 2023a).

Despite the widespread adoption of digital payment systems globally, many MSMEs in Indonesia have faced barriers to entry because of fragmented platforms, high transaction fees, and security concerns. The QRIS presents a novel approach that integrates various payment service providers into a single interoperable system. This study highlights four key innovations of QRIS that distinguish it from previous digital transaction models. This research seeks to examine a combination of several important things holistically. As of it does not only highlight one specific aspect of QRIS usage, such as QRIS fees or ease of use, and analyzes the effect of QRIS fees, transaction security, service benefits, and ease of use on interest in using QRIS in buying and selling transactions for MSMEs in Indonesia. The results of this study are expected to provide useful insights into QRIS service providers and policymakers for increasing the adoption of QRIS among MSMEs.

Literature Review

Diffusion of Innovation Theory

Diffusion of Innovation Theory (DOI), developed by Rogers, 1995), is one of the oldest social theories that explains how new ideas and technologies spread in populations. DOI provides a useful framework for understanding how innovations spread in society. In the context of online e-payment adoption by Chinese companies (He et al., 2006), perceived compatibility was found to be the only significant attribute affecting adoption. Similarly, compatibility is also a critical factor in the adoption of interbank mobile payment services (Kapoor et al., 2013). Convenience is a facilitator for the continuance intention of e-wallet systems, as seen in the case of Touch 'n Go in Malaysia (Tian et al., 2024). Relative advantage, which refers to the perceived benefits of using innovation over existing solutions, is one of DOI attribute. This factor has been considered important in the adoption of mobile payment services in Sweden (Arvidsson, 2014). In addition, complexity the perceived level of difficulty in using an innovation can be a barrier. Complexity has been identified as an important factor in the adoption of digital payment systems (Kapoor et al., 2013). By understanding the various elements and processes involved, individuals and organizations can be more effective in encouraging and implementing new innovations. In the context of this study, this refers to the use of QRIS in buying and selling transactions by MSMEs in Indonesia(Boston University, 2022).

Overview of the development of QRIS in Indonesia

QR Code Indonesian Standard (QRIS) is an important innovation in the digital payment system in Indonesia developed by Bank Indonesia. The goal is to unify various payment methods into one standard, so that digital transactions become more efficient and integrated nationally(Kuswoyo et al., 2024). The quality of the QRIS system greatly affects user satisfaction and their intention to continue using it(Musadad Rusydi et al., 2024). For MSMEs, the use of QRIS has been proven to increase transaction efficiency and

business performance, thereby strengthening business competitiveness and operations(Kuswoyo et al., 2024). The level of acceptance of QRIS varies between generations, with Generation X considered to be more adaptable to this technology. Factors such as ease of use, perceived benefits, and social influence contribute to adoption decisions(Tiovilda & Melissa, 2025).

Therefore, building user trust and reducing anxiety about technology are important aspects in encouraging the use of QRIS. Continuous improvement of system quality is also needed to create a better user experience(Musadad Rusydi et al., 2024). The role of policy makers and service providers is essential in shaping positive public perceptions and providing services that encourage the use of QRIS. Collaboration with community leaders is also considered effective in strengthening social influence and accelerating the transition from cash to non-cash transactions (Hamzah Muchtar et al., 2024).

MSMEs tend to be more open to using QRIS if they feel that this technology is easy to integrate into business activities and can increase income(Michael et al., 2024; Rafiani et al., 2024; Syanova & Fajar, 2024). These factors significantly affected the participants' behavioral intention to use QRIS. The role of social influence is crucial, as MSMEs are often swayed by peers, customers, and societal trends toward adopting QRIS (Michael et al., 2024; Syanova & Fajar, 2024). In addition, social pressure from customers and the surrounding environment also influences interest in adopting QRIS (Amri et al., 2025). Based on the Theory of Planned Behavior, perceptions of trust and ease of use are the main factors that shape a person's behavioral interest in using digital technology, including QRIS (Palupi et al., 2022);(Silaen et al., 2021). The potential for increased revenue and operational efficiency makes QRIS a promising choice for MSMEs in today's digital era (Rafiani et al., 2024).

The Effect of QRIS Fee on Interest in Using QRIS in Buy and Sell Transactions for MSMEs in Indonesia

QRIS is a process of standardizing QR codes from various Payment System Service Providers (PJSP) so that they can be used universally(Aryawati et al., 2022). Bank Indonesia defines the Merchant Discount Rate (MDR) as a fee charged to merchants by banks or payment service providers(Finaka, 2023).Based on research (Lestari, 2023b), QRIS usage fees such as MDR and transaction settlement fees need to be adjusted to the capabilities of micro-business actors. Fees that are too high can be a barrier to QRIS adoption. However, some business actors are still willing to pay these fees because of the high consumer demand for digital transactions, which has the potential to increase sales volume(Junaedi et al., 2024). found that perceptions of costs have a significant effect on QRIS acceptance, indicating that users are quite sensitive to the burden of fees charged. Therefore, reducing costs can increase interest in use. However, different results were found by(Wiryawan et al., 2023) in the context of museums, where reducing costs did not have a significant impact on behavioral intentions to use QRIS, indicating that other factors may be more dominant depending on the context of use. Based on these findings, the following hypothesis can be formulated:

H1 = QRIS fees significantly affect MSMEs' interest in using QRIS for buying and selling transactions in Indonesia

The Effect of Transaction Security on Interest when Using QRIS in Buy and Sell Transactions for MSMEs in Indonesia

According to (Jøsang, 2007), security generally refers to a condition when someone or something is in a situation that is free from the threat of danger. Research by(Silaen et al., 2021) and (Pratama et al.,

2022), shows that perceptions of security and risk play an important role in shaping user trust in transaction systems, including in the use of QRIS. Security in transactions is an important factor that drives user trust, which ultimately strengthens their intention to adopt QRIS(Djoyo et al., 2022). When users feel confident that the QRIS system is safe, their tendency to use and continue using this system increases significantly. The trust that arises from the perception of security serves as an important bridge in the process of adopting this technology (Djoyo et al., 2022; Musyaffi et al., 2021).

Therefore, improving QRIS security is a strategic step in expanding its adoption. This step includes protecting user data, maintaining transaction integrity, and preventing potential misuse (Musyaffi et al., 2021). In addition, building trust through the implementation of a transparent security system and effective communication regarding security features can strengthen user interest in continuing to use QRIS (Musyaffi et al., 2021; Syafaastuti et al., 2024).

Thus, security plays a crucial role in strengthening trust and increasing the intention to adopt QRIS by users. When combined with ease of use and perceived benefits, a comprehensive approach will be created in encouraging increased use of QRIS on an ongoing basis (Djoyo et al., 2022; Musyaffi et al., 2021; Syafaastuti et al., 2024). Based on this, the following hypothesis can be formulated:

H2 = Transaction security significantly affects MSMEs' interest in using QRIS for buying and selling transactions in Indonesia.

The Effect of Service Benefits on Interest in Using QRIS for Buy and Sell Transactions among MSMEs in Indonesia

Service benefits refer to various advantages and improvements in service quality felt by consumers and business actors when using a standard digital payment system developed by Bank Indonesia together with the Indonesian Payment System Association (ASPI). According to(Kusuma et al., 2023), high service quality and transaction speed are important aspects that can improve user experience and encourage interest in using QRIS. Meanwhile,(Saputri, 2020), emphasized that time efficiency, ease of payment process, and increased merchant productivity are service benefits that contribute significantly to QRIS adoption.Based on these findings, the following hypothesis can be formulated:

H3 = Service Benefits significantly affect MSMEs' interest in using QRIS for buying and selling transactions in Indonesia.

Effect of Ease of Use on Interest in Using QRIS in Buy and Sell Transactions for MSMEs in Indonesia

The use of information technology has been proven to increase user comfort and work efficiency compared to manual or non-digital methods (Sudiatmika, 2022). Previous research by(Palupi et al., 2022) and (Silaen et al., 2021), showed that the ease of use of the QRIS system, such as an intuitive interface and simple transaction process, are important factors in encouraging its use. Thus, the hypothesis that can be formulated is:

H4 = Ease of Use significantly affects MSMEs' interest in using QRIS for buying and selling transactions in Indonesia.

The purpose of this study is to analyze the effect of QRIS costs, transaction security, service benefits, and ease of use on the interest in using QRIS in buying and selling transactions by MSMEs in Indonesia. In this study, variable X1 represents MDR QRIS, X2 is Transaction Security, X3 is Service

Benefits and X4 is Ease of Use. Then, variable Y, namely transaction interest in using the Quick Response Code Indonesia Standard (QRIS), can be described as follows:

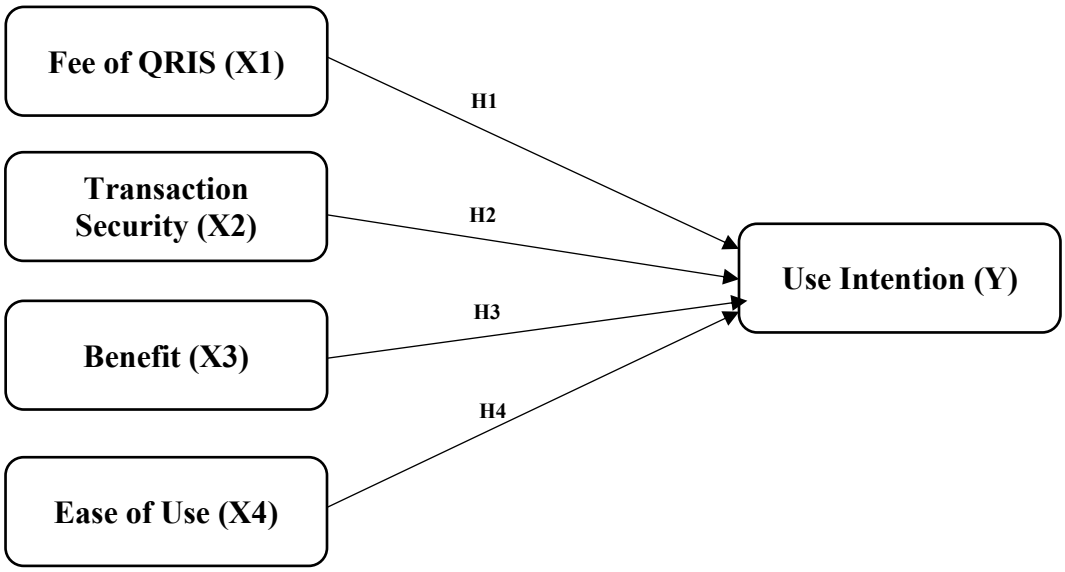

Figure 1. Variable model

Source: Author (2025)

Methodology

The type of research is primary data with the object of research, namely, MSMEs that use QRIS as a means of buying and selling in transactions. Using data collection techniques with questionnaire distribution and quantitative research methods. The data analysis uses a Structural Equation Model (SEM) with the partial least squares (PLS) approach.

The sample criteria in this study are QRIS user MSMEs with a minimum of one year of business. The population calculation in this study used the Lemeshow formula:

$$n = \frac{z^2 P(1-P)}{d^2}$$

From the formula then determination of the minimal number of samples needed with a maximum estimate of 50% and an error rate of 10% can be determined as follows:

$$n = \frac{1{,}96^2 0{,}5(1-0{,}5)}{0{,}5^2}$$

$$n = \frac{0{,}9604}{0{,}01}$$

$$n = 97$$

Data Collection Methods and Samples

The data collection technique used there is a widely used quantitative research method, namely, a questionnaire. The use of the following interval scale assessment instruments used: Score one means Strongly Disagree (SD), Score two means Disagree (D), Score three means Neutral (N), Score four means Agree (A), and Score five means Strongly Agree (SA) (Yudha et al., 2024).

Research Variables and Indicators

Independent Variable

Table 1. QRIS feed-variable instrument (X1)

Indicator	Sub Indicator	No Items	Scale
Understanding	Understand QRIS	1	Likert
	Understand how to use QRIS	2	
	Knowing the type of MSMEs	3	
	Understand the amount of MDR that applies	4	
Payment	Availability of payment types	5	
	Speed of payment process	6	
Benefits	Able to help achieve targets	7	
	Compatible with other technology (cellphone/gadget)	8	
Barriers	The effect of QRIS on the income received	9	
Revenue	Total income in a certain period	10	

Source: (Fahrudin & Isnaini, 2023) and (Wardhani et al., 2023).

Table 2. Transaction Security variable instrument (X2)

Indicator	Sub Indicator	No Items	Scale
Concerns	There is a QRIS performance disruption	11	Likert
	Worried about information being misused	12	
Worried about information	Not worried about providing personal information	13	
Trust related to funds	There are guarantees related to transactions	14	
	High level of security	15	
	Believe funds are safe in transactions	16	
Protection against fraud	QRIS has protection against fraud	17	
QRIS provider responsibility	QRIS provider is responsible for security	18	
Protection against misuse	Protection against misuse	19	
	Secure information from third parties	20	

Source: (Waspada, 2012), (Kurnia Rahman & Supriyanto, 2022), (Fauziyah & Prajawati, 2023), (Wardhani et al., 2023), and (Fahrudin & Isnaini, 2023).

Table 3. Variable instrument for service benefits (X3)

Indicator	Sub Indicator	No Items	Scale
Improved work performance	Understanding the period of use of digital payment methods	31	Likert
Acceleration of work completion	The existence of interest and consistency in the use of QRIS	32	
Effectiveness	Ease of transaction management	33	
Productivity	Useful in daily activities	34	
User Satisfaction	User satisfaction with the service (feeling happy and inclined to use)	35	
Service innovation	Suitability to business needs	36	
	Enables new service innovations	37	
	Improving user satisfaction by providing transaction experience (rating)	38	
Improving transaction accuracy	Reducing input and change errors	39	
Competitive advantage	Provides a competitive advantage to users	40	Likert

Source: (Jogiyanto, 2007), (Wardhani et al., 2023), (Fahrudin & Isnaini, 2023), and (Amamilah et al., 2024).

Table 4 Ease of Use variable instrument (X4)

Indicator	Sub Indicator	No Items	Scale
Operation	Simple operation	21	Likert
	Easy to understand	22	
	User friendly	23	
	Works for 24 hours	24	
Flexibility	Adaptability to QRIS payment tools	25	
Process speed	Ease of use without distance limitations	26	
	Can be used on various devices	27	
	Can integrate with other applications	28	
	Fast response when used	29	
	Saves users time in transactions	30	

Source: (Noviatun & Riptiono, 2021), (Bangsa & Khumaeroh, 2023), (Wardhani et al., 2023), and (Fahrudin & Isnaini, 2023).

Dependent Variable

Table 5. Instrument variable Interest in Use (Y)

Indicator	Sub Indicator	No Items	Scale
Personal factors	Knowing the benefits of QRIS	41	Likert
	Sustainable use plan	42	
	Personal experience	43	
Social influence	Recommendations from other parties	44	
	Influence of buyer type	45	
MSMEs business profile	Knowing the duration of the business	46	
	Knowing the number of employees	47	
	Knowing the length of use	48	
Satisfaction	Recommend to others	49	
	Satisfaction after using QRIS	50	

Source: (Jogiyanto, 2007), (Wardhani et al., 2023), and (Fahrudin & Isnaini, 2023).

Data Analysis Technique

SmartPLS software, used as a statistical data analysis tool, is presented in tabular form. Statistical tests are divided into two types, namely Inner Model and Outer Model. Then, there is a hypothesis test, which aims to see how the influence of each independent variable on the dependent variable. This test was performed by comparing the t-count (t-statistic) value with the t-table.

1. H0 is accepted, and Ha is rejected if the t-count value < t-table or the significance value> 5%, meaning that there is no significant influence of the independent variable on the dependent variable.
2. H0 is rejected and Ha is accepted if the t-count value> t-table or the significance value < 5%, indicating that there is a significant influence between the independent variable and the dependent variable.

Results and Discussion

Results

Respondent data collection in the questionnaire was distributed online, namely through Google Forms, making it easier for MSME users to fill out this research questionnaire. Based on the number of samples obtained (i.e., 100 respondents, it is by the two-sample criteria are needed. So that the following we can describe the characteristics of the sample in the form of gender, period of MSMEs, number of employees, and monthly turnover obtained by each MSME.

Outer Model (Measurement Model)

Convergent validity testing

Table 6. Outer loading values

Indicator	Outer loadings				
	X1	X2	X3	X4	Y
X1.1	0.843				
X1.2	0.837				
X1.3	0.803				
X1.4	0.823				
X1.5	0.833				
X1.6	0.789				
X1.7	0.925				
X1.8	0.813				
X1.9	-0.891				
X1.10	0.747				
X2.1		-0.735			
X2.2		-0.753			
X2.3		0.810			
X2.4		0.794			
X2.5		0.840			
X2.6		0.855			
X2.7		0.861			
X2.8		0.804			
X2.9		0.830			
X2.10		0.744			
X3.1			0.802		
X3.2			0.844		
X3.3			0.754		
X3.4			0.760		
X3.5			0.871		
X3.6			0.876		
X3.7			0.878		
X3.8			0.790		
X3.9			0.876		

Indicator	Outer loadings				
	X1	X2	X3	X4	Y
X3.10			0.777		
X4.1				0.734	
X4.2				0.763	
X4.3				0.764	
X4.4				0.773	
X4.5				0.834	
X4.6				0.769	
X4.7				0.825	
X4.8				0.846	
X4.9				0.823	
X4.10				0.764	
Y1.1					0.777
Y1.2					0.716
Y1.3					0.752
Y1.4					0.824
Y1.5					0.808
Y1.6					0.791
Y1.7					0.764
Y1.8					0.782
Y1.9					0.797
Y1.10					0.749

Source: Primary data, processed (2025)

Based on the convergent value test convergent value test above, the outer loadings value has shown that each indicator has a value > 0.70, and although there are three indicators that have a value of indicator has a value of > 0.70, and although there are three indicators that have negative outer loadings have a negative outer loadings value, but because the value is > 0.70, which means it is significantly negative. which means it is significantly negative. Thus, the outer loadings value can be declared valid and the convergent validity test has been fulfilled.

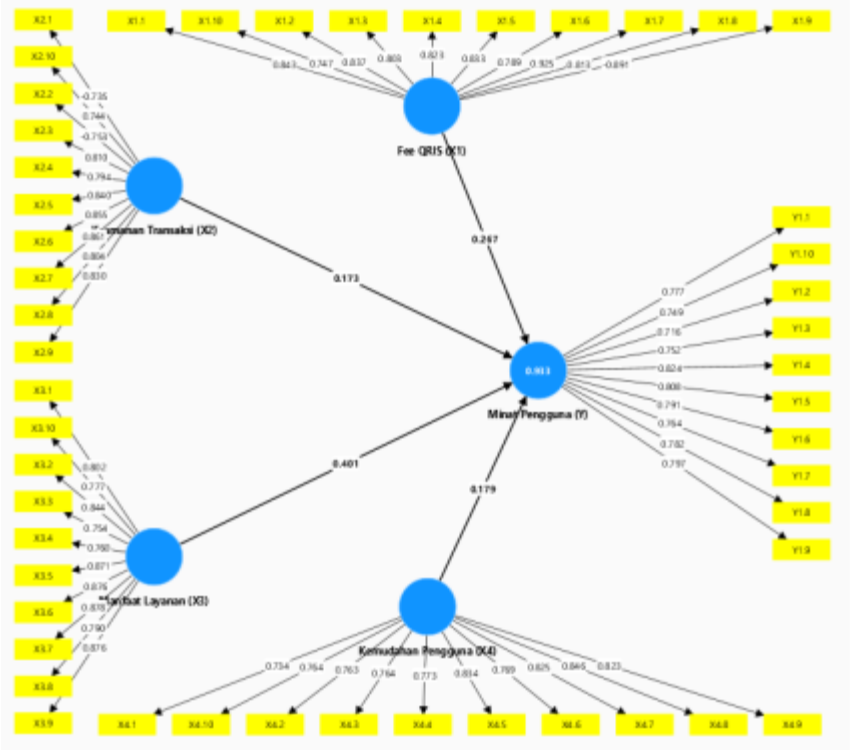

Figure 2. Outer loading model.

Source: Primary data, processed (2025)

Discriminant Validity Test

Table 7. Cross-loading values

Indicator	X1	X2	X3	X4	Y
X1.1	**0.843**	0.646	0.729	0.681	0.767
X1.2	**0.837**	0.749	0.714	0.709	0.760
X1.3	**0.803**	0.624	0.663	0.627	0.704
X1.4	**0.823**	0.722	0.721	0.726	0.786
X1.5	**0.833**	0.673	0.756	0.727	0.786
X1.6	**0.789**	0.541	0.641	0.655	0.681
X1.7	**0.925**	0.705	0.803	0.756	0.816
X1.8	**0.813**	0.624	0.712	0.694	0.727
X1.9	**-0.891**	-0.644	-0.733	-0.688	-0.743
X1.10	**0.747**	0.637	0.648	0.668	0.684
X2.1	-0.475	**-0.735**	-0.618	-0.570	-0.619
X2.2	-0.571	**-0.753**	-0.643	-0.602	-0.645
X2.3	0.617	**0.810**	0.706	0.633	0.719
X2.4	0.602	**0.794**	0.690	0.681	0.691
X2.5	0.686	**0.840**	0.749	0.707	0.756
X2.6	0.739	**0.855**	0.759	0.729	0.748
X2.7	0.678	**0.861**	0.772	0.667	0.761
X2.8	0.724	**0.804**	0.735	0.716	0.753

X2.9	0.632	**0.830**	0.707	0.671	0.733
X2.10	0.604	**0.744**	0.685	0.708	0.694
X3.1	0.663	0.709	**0.802**	0.655	0.750
X3.2	0.727	0.717	**0.844**	0.705	0.779
X3.3	0.646	0.588	**0.754**	0.720	0.707
X3.4	0.649	0.622	**0.760**	0.728	0.697
X3.5	0.782	0.808	**0.871**	0.769	0.846
X3.6	0.746	0.826	**0.876**	0.745	0.820
X3.7	0.753	0.836	**0.878**	0.796	0.838
X3.8	0.659	0.644	**0.790**	0.711	0.715
X3.9	0.760	0.809	**0.876**	0.744	0.823
X3.10	0.669	0.663	**0.777**	0.675	0.760
X4.1	0.571	0.561	0.594	**0.734**	0.633
X4.2	0.642	0.615	0.674	**0.763**	0.716
X4.3	0.622	0.604	0.703	**0.764**	0.678
X4.4	0.675	0.660	0.697	**0.773**	0.711
X4.5	0.699	0.756	0.746	**0.834**	0.759
X4.6	0.649	0.699	0.665	**0.769**	0.693
X4.7	0.753	0.740	0.779	**0.825**	0.783
X4.8	0.721	0.727	0.783	**0.846**	0.758
X4.9	0.640	0.627	0.676	**0.823**	0.705
X4.10	0.602	0.568	0.608	**0.764**	0.656
Y1.1	0.685	0.683	0.710	0.654	**0.777**
Y1.2	0.697	0.582	0.649	0.658	**0.716**
Y1.3	0.664	0.624	0.696	0.718	**0.752**
Y1.4	0.704	0.745	0.798	0.730	**0.824**
Y1.5	0.750	0.791	0.786	0.727	**0.808**
Y1.6	0.715	0.726	0.737	0.718	**0.791**
Y1.7	0.710	0.702	0.695	0.682	**0.764**
Y1.8	0.730	0.738	0.741	0.674	**0.782**
Y1.9	0.678	0.654	0.758	0.708	**0.797**
Y1.10	0.641	0.631	0.727	0.717	**0.749**

Source: Primary data, processed (2025)

Based on the discriminant validity test, the cross-loading value of each associated indicator was found to be a higher value than other variables that were associated. Thus, the cross-loading value can be declared valid, and the discriminant validity test has been fulfilled.

Convergent and Reliability Validity Tests

Table 8. Average variance extracted (AVE) and Cronbach's Alpha Value

Variable	AVE Value	Cronbach's Alpha Value
QRIS Fee (X1)	0.692	0.856
Transaction Security (X2)	0.646	0.758

Service Benefits (X3)	0.679	0.947
Ease of Use (X4)	0.625	0.933
Interest in Use (Y)	0.603	0.927

Source: Primary data, processed (2025)

Based on the second test of convergent validity above, the Average Variance Extracted (AVE) value shows that the AVE value of each research variable has met the requirements> 0.50, so that for both convergent validity tests has been fulfilled. Based on the reliability test above, the Cronbach's Alpha value of each variable shows that Cronbach's alpha is > 0.70, so it can be stated that the variables in this study are reliable data.

Inner Model (Structural Model)
Coefficient of Determination (R^2)

Table 9. Coefficient of determination (R^2) Value

Variable	R-square	R-square adjusted
Interest in Use (Y)	0.933	0.930

Source: Primary data, processed (2025)

Based on the Coefficient of Determination (R^2) value above, it shows that the QRIS Fee variable (X_1), Transaction Security (X_2), Service Benefits (X_3), and Ease of Use (X_4) simultaneously have a positive and significant effect on the Interest in Use variable (Y). This value shows that the four independent variables influence 93.30% on the dependent variable.

Path Coefficient Test

Table 10. Path coefficient values.

Variable	Original Sample
QRIS Fee-> Interest in Use	0.267
Transaction Security -> Interest in Use	0.173
Service Benefits -> Interest in Use	0.401
Ease of Use -> Interest in Use	0.179

Source: Primary data, processed (2025)

Based on the Path Coefficient Test, we obtain the Original Sample value. The value listed is positive> 0 close to +1, so it can be concluded that the QRIS Fee variable (X1), Transaction Security (X2), Service Benefits (X3), and Ease of Use (X4) have a positive relationship to the Interest in Use variable (Y).

Hypothesis Test

The bootstrapping process was used to obtain both T-statistics and P-values.

Table 11. PLS Path Coefficients & Bootstrapping Testing

Variable	*Original Sample* (O)	*T statistics* (|O/STDEV|)	*P values*
QRIS Fee-> Interest in Use	0.267	3.352	0.001
Transaction Security -> Interest in Use	0.173	2.659	0.008
Service Benefits -> Interest in Use	0.401	4.851	0.000
Ease of Use -> Interest in Use	0.179	2.622	0.009

Source: Primary data, processed (2025)

Based on the results of hypothesis testing above, the results show that the QRIS Fee variable (X1) on Interest in Use (Y) has a T-statistic value of 3.352 or stated 3.352> 1.96, which means T-Statistics is smaller than 1.96. as well as a P-value of 0.001 or stated 0.001> 0.05, which means P-Values greater than 0.05. This means that the QRIS Fee variable (X1) has a significant influence on the Interest in Use variable (Y), and it can be stated that there is an acceptance of H1.

The second test shows the results of the Transaction Security variable (X2) on Interest in Use (Y) has a T-Statistics value of 2.659 or stated 2.659> 1.96, which means the T-Statistics is greater than 1.96. and a P-Values of 0.008 or stated 0.008 <0.05, which means the P-Values is smaller than 0.05. This means that the Transaction Security variable (X2) has a significant effect on the Use Interest variable (Y), or it can be stated that there is an acceptance of H2.

The third test shows the results of the Service Benefits variable (X3) on Interest in Use (Y) has a T-Statistics value of 4.851 or stated 4.851> 1.96, which means T-Statistics is greater than 1.96. and a P-Values of 0.000 or stated 0.000 <0.05, which means the P-Values is smaller than 0.05. This means that the Service Benefits variable (X3) has a significant influence on the Interest in Use variable (Y). or it can be stated that acceptance of H3 occurs.

The fourth test shows the results of the Ease of Use (X4) variable on Interest in Use (Y) has a T-Statistics value of 2.622 or stated 2.622> 1.96, which means T-Statistics is greater than 1.96. and a P-Values of 0.009 or stated 0.009 <0.05, which means P-Values are smaller than 0.05. This means that the Ease of Use (X4) variable has a significant effect on the Interest in Use (Y) variable, or it can be stated that acceptance of H4 occurs. Based on the above tests, the following conclusions can be drawn by summarizing the results of hypothesis testing as follows:

Table 12. Hypothesis Test Results

Hypothesis	Statement	Results
H1	QRIS Fee (X1) has a significant influence on Interest in Use (Y)	Accepted
H2	Transaction Security (X2) has a significant effect on Interest in Use (Y)	Accepted
H3	Service Benefits (X3) has a significant influence on Interest in Use (Y)	Accepted
H4	Ease of Use (X4) has a significant effect on Interest in Use (Y)	Accepted

Source: Primary data, processed (2025)

Discussion

The effect of Fee QRIS on Interest in using QRIS in buying and selling transactions for MSMEs in Indonesia.

Based on the results of hypothesis testing, the QRIS Fee variable (X1) has a significant effect on Interest in Use (Y), with a T-Statistics value of 3.352 and P-values of 0.001. The T-Statistics value is greater than the 1.96 threshold, and the p-values are smaller than 0.05, indicating that fees or transaction costs are the main factor in determining user interest in QRIS. The first hypothesis shows that QRIS fees help MSMEs experience an increase in income, so interest in using QRIS in buying and selling transactions for MSMEs in Indonesia also increases. the result was in line with the previous studies conducted by (Junaedi et al., 2024; Lestari, 2023b; Wiryawan et al., 2023). After conducting interviews, business actors are willing to pay MDR fees and settlement fees because they can help increase the number of sales. Therefore, Fee QRIS (X1) has a significant influence on Interest in Use (Y). Users are willing to pay higher fees for digital wallets due to promotions and integrated life-service applications (Kamal et al., 2023).

However, there is a general preference for lower fees in mobile banking transactions (Kamal et al., 2023). This suggests that although QRIS fees might be a consideration, they are not the primary factor influencing interest in using QRIS. MSMEs see QRIS as a tool that increases customer happiness, streamlines financial record-keeping, and boosts business productivity (Jannah et al., 2023). In a similar vein, Kusumawardhani et al. (2023) discovered that MSMEs are more likely to embrace QRIS when they see immediate advantages such as increased access to non-cash clients and better operational convenience. The Technology Acceptance Model (TAM), which highlights perceived utility and perceived ease of use as key factors in technology adoption, is theoretically consistent with this behavior (Davis, 1989). These views allay worries about transaction costs and strengthen MSMEs' resolve to adopt QRIS. As a result, although transaction fees play a role, they are not the main obstacle; rather, MSMEs' ongoing interest in implementing QRIS is greatly influenced by the value-added advantages it offers in enhancing business performance.

The effect of Transaction Security on Interest in Using QRIS in buying and selling transactions for MSMEs in Indonesia.

Based on the results of hypothesis testing, it was found that the Transaction Security variable (X2) has a significant effect on Interest in Use (Y), with a T-Statistics value of 2.659 and a P-value of 0.008. The T-Statistics value is greater than the 1.96 threshold, and the p-values are smaller than 0.05, indicating that transaction security is a major factor in determining user interest in QRIS. The second hypothesis shows that if transaction security increases, interest in using QRIS for buying and selling transactions for MSMEs in Indonesia will also increase. This is in line with previous research conducted by (Silaen et al., 2021)and (Pratama et al., 2022)showing that perceived security and risk have a significant positive effect on interest in using QRIS. Studies show that perceived security significantly influences QRIS utilization, with users feeling more confident in the safety of their transactions (Gunawan et al., 2023; Odeta et al., 2023). Additionally, perceived trust in the security system of QRIS is crucial for behavioral intention (Gunawan et al., 2023). The importance of safe digital payment systems is highlighted by the notable impact that transaction security has on MSMEs' desire to implement the Quick Response Code Indonesian Standard (QRIS). MSMEs continue to worry about possible data breaches and fraudulent activity despite improvements in QRIS security features like end-to-end encryption and two-factor authentication. For example, instances of fraudulent QRIS codes have brought to light weaknesses that cybercriminals may

take advantage of, resulting in monetary losses and undermining confidence in digital payment systems (Kristanty, 2024).

Due to their potential vulnerability to phishing tactics and social engineering assaults, MSMEs with low levels of digital literacy are especially concerned about security (Rahmadi et al., 2024). Improving QRIS security features can be a smart marketing move to overcome these obstacles. Service providers can reduce concerns and encourage broader adoption among MSMEs by clearly demonstrating the strength of security measures, such as real-time transaction monitoring and AI-driven fraud detection (Usmiati et al., 2024).Additionally, instructional programs that raise understanding of security procedures and digital literacy can enable MSMEs to use QRIS with assurance, fostering a more secure and inclusive digital payment ecosystem.

The Effect of Service Benefits on Interest when Using QRIS in buying and selling transactions for MSMEs in Indonesia.

Based on the results of hypothesis testing, it shows that the Service Benefits variable (X3) has a T-Statistics of 4,851 and P-values of 0.000. With T-Statistics> 1.96 and P-values <0.05, it can be concluded that Service Benefits have a significant influence on Usage Interest. This indicates that users see QRIS service benefits as the main expected feature; thus, the benefits offered are enough to significantly increase their interest. The third hypothesis shows that if the service benefits increase, interest in using QRIS in buying and selling transactions for MSMEs in Indonesia also increases. QRIS offers several benefits, including faster payment processing and improved distribution of goods and services. The perceived usefulness of QRIS significantly impacts user satisfaction and intention to use the system (Gotama et al., 2024; Gunawan et al., 2023). Users have found QRIS valuable for its efficiency and effectiveness in facilitating transactions (Ardiana et al., 2021).

Service benefits have a major impact on MSMEs' interest in implementing the Quick Response Code Indonesian Standard (QRIS), which is consistent with well-known frameworks for technology adoption like the Unified Theory of Acceptance and Use of Technology (UTAUT) and the Technology Acceptance Model (TAM). The TAM states that perceived utility and ease of use are the main factors influencing adoption. QRIS satisfies these requirements by facilitating quicker payment procedures, eliminating the need to handle cash, and reaching a wider audience of customers of which improves operational efficiency (Kusuma et al., 2023; Gunawan et al., 2023). Similar to this, QRIS meets both performance expectancy and enabling conditions, which are important factors in determining users' intention to use under the UTAUT paradigm. It does this by providing accessible infrastructure and useful functionality (Jannah & Daryanto, 2023). However, MSMEs' level of digital preparedness frequently determines whether these benefits can be fully realized.

Research has indicated that training and digital education initiatives greatly enhance MSMEs' capacity to use QRIS efficiently. As an illustration of the effectiveness of educational programs in increasing adoption, a case study conducted in East Java revealed that organized mentorship resulted in an 80% satisfaction rating among MSMEs (Zulaikha & Budiyanto, 2023). Therefore, to optimize QRIS's impact on MSMEs, it is crucial to incorporate capacity-building initiatives into implementation plans in addition to providing technology advantages.

The Effect of Ease of Use on Interest in Using QRIS for buying and selling transactions for MSMEs in Indonesia.

Based on the results of hypothesis testing, it shows that the Ease of Use (X4) variable obtained T-statistics of 2.622 and P-values of 0.009. With P-values <0.05, the T-Statistics value> 1.96 indicates that this variable has a significant effect on Usage Interest. These results indicate that users are driven by the convenience factor to increase their interest. The fourth hypothesis shows that if ease of use increases, the interest in using QRIS in buying and selling transactions for MSMEs in Indonesia also increases. This agrees with previous research that has been conducted by researchers (Palupi et al., 2022) and (Silaen et al., 2021). The ease of use of the QRIS system such as an intuitive interface and a simple transaction process. The ease of use is a critical factor influencing the adoption of QRIS. Studies have consistently demonstrated that perceived ease of use positively impacts user satisfaction and behavioral intention to use QRIS (Ardiana et al., 2021; Gotama et al., 2024).

In addition, using the TAM framework indicates that attitudes towards QRIS, influenced by perceived ease of use and perceived usefulness, significantly affect the intention to use QRIS (Syafaastuti et al., 2024). Extended UTAUT models reveal that social influence and facilitating conditions are primary drivers of QRIS adoption among consumers. Trust and behavioral intention also play significant roles in the adoption process among MSMEs (Syanova & Fajar, 2024).

Conclusion

The purpose of this study was to determine how MSMEs in Indonesia were interested in utilizing QRIS for purchasing and selling transactions, including QRIS fees, transaction security, service benefits, and convenience of use. Intention to use QRIS is affected by QRIS pricing, transaction security, service benefits, and convenience to use QRIS. To get a reasonable level of assurance over the study's conclusions, interviews were also performed. According to these interviews, several MSMEs report daily revenue gains of between 5 and 10% after using QRIS, with larger increases on weekends. They also report cost savings by eliminating the need for EDC machines or other payment devices. Therefore, as long as they enjoy the ease and advantages that QRIS provides, MSMEs often do not complain about its prices. To safeguard users from online fraud and uphold confidence, Bank Indonesia, the backend system, must keep improving the security architecture. Furthermore, to promote broader adoption, more outreach and education on the advantages of QRIS are crucial, especially for MSMEs who are not familiar with digital payment technology. This study has several drawbacks, such as its dependence on cross-sectional data, which cannot be able to capture long-term behavioral changes, and its narrow geographic focus, which would not accurately represent the variety of MSME behavior in all Indonesian regions. To provide a more thorough understanding of QRIS adoption among MSMEs, future research should consider integrating additional variables like digital literacy, perceived risk, and government support; using longitudinal data to look at behavioral trends over time; and extending the study to other regions or countries for comparative analysis.

Author's Contribution

All authors have contributed to the final manuscript. The contributions of each author are as follows: Yowelcy Lovea Juwiyan is responsible for managing the process, collecting data, conducting interviews with MSME users, and preparing the original manuscript draft. Kinkan is a strong supporter in data collection and analysis, contributed to the development of methods and SmartPLS, and processed revisions of articles. Irma Lestari, as the corresponding author, provided the topic and conceptual ideas, excellent guidance, supervision, and critical revisions of articles. Heny Kurniawati provided supervision

and overall reviews. Holly Deviarti contributed to preparing the original manuscript draft and developing the results. All authors discussed the results and contributed to the final manuscript.

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Declaration of Competing Interests

The authors declare that they have no conflicts of interest.

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