



Analysis Of Factors Hindering The Level Of QRIS Usage In The MSME Sector In Palu City

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ABSTRACT

The use of QRIS by MSMEs in Palu City is still suboptimal, so it is important to identify factors that hinder its utilization. This study aims to analyze digital literacy barriers, technological infrastructure barriers, and risk perception barriers on QRIS adoption rates. A quantitative approach was used, involving 75 respondents obtained through purposive sampling. Data were collected through a Likert-scale questionnaire and analyzed using linear regression with SPSS. The results showed that only risk perception barriers significantly influenced QRIS adoption rates, while digital literacy and technological infrastructure barriers showed no significant impact. An R² value of 0.149 indicates that the model only explains a small portion of the variation in QRIS usage. This finding confirms that digital security and trust remain key factors for MSMEs adopting QRIS. Consequently, improving digital security literacy and strengthening data protection need to be prioritized by local governments and Bank Indonesia to encourage wider QRIS adoption.

INTRODUCTION

The development of digital technology has changed the way people conduct financial transactions. The Indonesian government is encouraging this transformation by introducing a cashless payment system that is more efficient, secure, and easy to use. One of the main innovations in the digital payment system is the Quick Response Code Indonesian Standard (QRIS), which was launched by Bank Indonesia in 2019. The purpose of QRIS is to unite various payment system service providers (PJSP) so that all QR code-based transactions can be accessed through the same national standard (Bank Indonesia, 2019).

Through the implementation of QRIS, it is hoped that financial transactions will become more practical and efficient and will be able to expand financial inclusion, especially for Micro, Small, and Medium Enterprises (MSMEs). The MSME sector itself has a very important position in

the national economic structure. According to a report by the Ministry of Cooperatives and SMEs (2023), MSMEs contribute around 61% to the Gross Domestic Product (GDP) and employ more than 97% of the workforce in Indonesia.

Specifically in Palu City, the MSME sector also plays an important role in driving the regional economy. Based on data from the Palu City Cooperative and MSME Office (2024), there are around 600 active MSMEs spread across various business fields such as trade, culinary, and services. However, the level of QRIS utilization by MSME players is still not optimal. This is evident from Bank Indonesia data (2024), which records that the number of QRIS merchants in Central Sulawesi Province has reached 183,289 users, but only a small portion of them are MSME players in Palu City. This condition indicates that there is still a gap between the availability of digital payment facilities and their level of usage in the field.

The low adoption rate of QRIS among MSMEs indicates that there are obstacles that need to be identified more deeply. Several previous studies have shown that factors such as low digital literacy, limited technological infrastructure, and high perceived risk of digital transaction security are the main causes of the slow implementation of QRIS. According to (Gunawan et al., 2022), some MSME players do not yet fully understand how to use this digital payment system and its benefits. Meanwhile, (Hadiningrat et al., 2024) states that unstable internet network quality and limited technological devices are the main technical obstacles that slow down the QRIS implementation process in various regions.

In addition, (Fauziyah & Prajawati, 2023) explains that concerns about data security, potential fraud, and the possibility of transaction errors reinforce the perception of risk, which negatively impacts the willingness of MSME players to use QRIS. Thus, these obstacles indirectly become factors that hinder digital transformation in the small business sector.

Given these conditions, this study was conducted to analyze various obstacles affecting the level of QRIS usage in the MSME sector in Palu City. The three main factors analyzed are digital literacy barriers (X_1), technological infrastructure barriers (X_2), and risk perception barriers (X_3). This study is expected to provide empirical understanding of the causes of low QRIS usage and serve as a consideration for the government, Bank Indonesia, and financial institutions in designing more effective policies to increase the adoption of digital payment systems in the region.

LITERATURE REVIEW

Digitalization of Qris payments

The Quick Response Code Indonesian Standard (QRIS), launched by Bank Indonesia in 2019, is a national standard that combines various types of cashless payment services. QRIS was created to make transactions for consumers and businesses easier, more efficient, secure, and seamless across various digital payment platforms. QRIS is expected to accelerate financial inclusion and economic digitalization, especially for MSMEs that have not yet fully adopted digital payment technology (Muharna et al., n.d.).

Barriers to Digital Literacy

Digital literacy is an individual's ability to understand, access, and utilize digital technology effectively. In the context of MSMEs, digital literacy includes the ability to operate electronic devices, understand payment applications, and recognize the benefits of cashless transactions.

Low digital literacy is one of the main obstacles in the use of QRIS, because many business actors are not yet familiar with technology and are still more comfortable using the cash system (Khairani et al., 2025). From the TAM perspective, limited digital literacy can reduce perceived ease of use, namely the belief that technology is easy to use.

Technology Infrastructure Barriers

Infrastructure barriers relate to limited internet networks, the availability of digital devices, and payment systems that are not yet fully integrated. In many areas, including Palu City, unstable internet network quality continues to hamper cashless transactions through QRIS. Furthermore, some MSMEs do not yet have devices that support the use of digital payment applications. This prevents them from fully experiencing the benefits of QRIS in improving business efficiency. Within the TAM framework, infrastructure barriers impact perceived usefulness, as without adequate infrastructure, technology is considered less useful (Petrus Suhardi Ekaputra et al., 2024).

Risk Perception Barriers

According to Khairani et al., 2025, perceptions of security and trust are crucial factors determining users' intention to adopt digital payment systems. The higher the level of trust in system security, the more likely individuals are to use QRIS in their business activities. Conversely, if the risk is perceived as high, users will tend to hesitate or even avoid using QRIS.

This finding aligns with the Technology Acceptance Model (TAM), which explains that perceived risk negatively influences behavioral intention to use. This means that the level of confidence in system security influences a person's intention and final decision to use technology. In this study, perceived risk barriers (X_3) is seen as one of the factors that reduces the level of QRIS (Y) usage among MSMEs, because concerns about possible errors and data security threats are still major issues in the digital payment process.

QRIS Usage Rate

The level of QRIS adoption reflects the extent to which MSMEs utilize QRIS in their business transactions. Indicators include transaction frequency, transaction value, perceived ease of use, and user satisfaction.

The high adoption of QRIS demonstrates the successful implementation of digital payment systems in driving efficiency and modernization for small businesses. However, in practice, many MSMEs still use QRIS to a limited extent due to factors such as literacy, infrastructure, and trust in digital systems (Dynne Andriany et al., 2024).

Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) was first introduced by (Davis, 1989) as a theoretical model that explains how users accept and use technology. This model states that individual acceptance of a technological system is influenced by two main factors, namely Perceived Usefulness (PU) and Perceived Ease of Use (PEOU).

1. Perceived Usefulness (PU) is the level of confidence a person has that using a technology will improve their job performance.
2. Perceived Ease of Use (PEOU) is the level of confidence that a technology is easy to use and does not require excessive effort.

These two perceptions will form Behavioral Intention to Use, which ultimately determines the level of actual use of the technology.

In the context of this research, barriers such as low digital literacy (X_1) has an effect on perceived ease of use, while infrastructure limitations (X_2) has an impact on perceived usefulness. In addition, risk perception (X_3) influences behavioral intention, because concerns about system security reduce the interest of MSMEs in using QRIS. Thus, the level of QRIS usage (Y) can be understood as the end result of the technology acceptance process according to the TAM model.

METHODS

This study employed a quantitative approach with an associative approach. This approach was used because it attempts to measure and analyze the relationships between variables numerically. This approach allows researchers to obtain objective and statistically testable results (Zhang & Chen, 2022).

An associative research design was chosen to determine the extent of influence of inhibiting factors consisting of digital literacy barriers, technological infrastructure barriers, and risk perception barriers on the level of QRIS use in the MSME sector in Palu City.

Population and Sample

The population in this study includes all Micro, Small, and Medium Enterprises (MSMEs) registered with the Palu City Cooperatives and MSMEs Service in 2024, totaling 600 active business units.

To determine the sample size, the Slovin formula was used because the population size was known. The researcher set an error tolerance of 10% ($e = 0.1$). The Slovin formula is as follows:

$$n = \frac{N}{1 + N(e)^2}$$

With:

N = population size (600)

e = error rate (0.1)

$$n = \frac{600}{1 + 600(0,1)^2} = \frac{600}{7} = 85,7$$

Based on the calculation results, the number of samples was rounded to 86 respondents. Data analysis is carried out through:

1. Validity & reliability test
2. Multicollinearity test
3. Heteroscedasticity test
4. Coefficient of determination (R^2)
5. T-test (partial)
6. F test (simultaneous)

The sampling technique used purposive sampling, which selects respondents based on specific criteria deemed relevant to the research. These criteria include:

1. Registered as an active MSME at the Palu City Cooperative and MSME Service.
2. Know or have used QRIS in business transactions.
3. Willing to fill out the questionnaire honestly and completely.

Research Variables

This study consists of three independent variables (X) and one dependent variable (Y), which are explained as follows:

- Barriers to digital literacy (x_1)
Low digital literacy is one of the main obstacles in the use of QRIS, because many business actors are not yet familiar with technology and are still more comfortable using the cash system (Khairani et al., 2025).
- Technology infrastructure barriers (x_2)
Infrastructure barriers impact perceived usefulness, because without adequate infrastructure, technology is considered less useful (Petrus Suhardi Ekaputra et al., 2024).

- Risk perception barriers (x3)
According to (Khairani et al., 2025), perceptions of security and trust are crucial factors that determine users' intention to adopt digital payment systems.
- QRS usage rate (y)
The high adoption of QRIS demonstrates the successful implementation of digital payment systems in driving efficiency and modernization for small businesses. However, in practice, many MSMEs still use QRIS to a limited extent due to factors such as literacy, infrastructure, and trust in digital systems (Dyenne Andriany et al., 2024).

Data Collection Technique

The data used in this study is primary data obtained through direct and online distribution of questionnaires to respondents who have met the criteria.

The questionnaire instrument was prepared using a 5-point Likert scale, with details:

The questionnaire is divided into two main parts:

- Part I: Respondent identity
- Part II: Statements regarding the indicators of each research variable.

Research Hypothesis

Based on the theory and results of previous research, the research hypothesis is formulated as follows:

- **H₁**: Barriers to digital literacy (X_1) has a negative effect on the level of QRIS usage in MSMEs in Palu City.
- **H₂**: Technology infrastructure barriers (X_2) has a negative effect on the level of QRIS usage in MSMEs in Palu City.
- **H₃**: Risk perception barriers (X_3) has a negative impact on the level of QRIS usage on MSMEs in Palu City.
- **H₄**: Digital literacy barriers, technological infrastructure barriers, and risk perception barriers simultaneously have a significant impact on the level of QRIS use in the MSME sector in Palu City.

Table 1. (Operasional Variable)

Variable	Operational Definition	Indicator	Measurement Scales	Source
X_1 = Barriers to Digital Literacy	Referring to the challenges faced by Micro, Small, and Medium Enterprises (MSMEs) in adopting and effectively utilizing digital payment systems such as QRIS	1. Inadequate Internet Infrastructure, 2. Low Public Participation/Awareness 3. Lack of Understanding of the Benefits and Use of QRIS 4. Slow Withdrawal Process 5. Security Issues/Risk Perception	Likert (1-5)	(Nisa & Adinugraha, 2024)
X_2 = Technology	Refers to limitations and	1. Inadequate network	Likert (1-5)	(Nisa & Adinugraha, 2024)

Infrastructure Barriers	deficiencies in the underlying technology systems and resources that hinder the effective and widespread implementation and utilization of digital payment solutions, such as QRIS.	2. System failure 3. Lack of strong digital infrastructure 4. Limited technical support - Network availability		ha, 2024)
X ₃ = Risk Perception Barriers	Risk perception barriers in the context of digital payments refer to the concerns and discomfort felt by users regarding the potential negative consequences of using this payment method	1. Concerns about data misuse 2. Perceived Inconvenience from Processing and Sharing Payment Data 3. Trust Deficit in Specific Payment Methods or Providers 4. Lower Trust Concerns about Unauthorized Publication of Purchase Data	Likert (1-5)	(Shaikh dkk., 2022)
Y = Tingkat Penggunaan QRIS	To what extent do MSMEs actively and consistently use QRIS in their financial transactions	1. Number of QRIS merchants 2. QRIS transaction volume 3. Nominal value of QRIS transactions 4. Ease of transactions 5. Transparency of financial records	Likert (1-5)	(Mudito mo & Setyawati, 2022)

RESULTS

The research questionnaire was distributed to 86 respondents who met the sample criteria. After the data collection process was completed, all responses were tabulated to facilitate the researcher's interpretation, grouping, and analyzing the respondents' response patterns. This tabulation stage is crucial to ensure that the data obtained is systematically organized and ready for further analysis.

Next, the tabulated data was tested through a validity test to ensure that each statement accurately measured the intended variable. Afterward, a reliability test was conducted to determine the consistency and reliability of the research instrument. Both tests are necessary to

ensure the instrument is truly appropriate and trustworthy. Furthermore, the results of these tests help researchers assess the strength of each indicator's contribution, thus identifying which factors have the most dominant influence on the research.

Table 2. (Validity Test)

Research Variable	Indicator	R Count	R Table	Result
Barriers to Digital Literacy	X1.1	0.631	0.213	VALID
	X1.2	0.827	0.213	
	X1.3	0.723	0.213	
	X1.4	0.827	0.213	
	X1.5	0.847	0.213	
Technology Infrastructure Barriers	X2.1	0.667	0.213	VALID
	X2.2	0.862	0.213	
	X2.3	0.696	0.213	
	X2.4	0.849	0.213	
	X2.5	0.800	0.213	
Risk Perception Barriers	X3.1	0.909	0.213	VALID
	X3.2	0.853	0.213	
	X3.3	0.880	0.213	
	X3.4	0.859	0.213	
	X3.5	0.908	0.213	
Qris Usage Rate	Y1	0.810	0.213	VALID
	Y2	0.877	0.213	
	Y3	0.872	0.213	
	Y4	0.799	0.213	
	Y5	0.868	0.213	

Sumber : SPSS Author 2025

Based on the table above, it can be seen that all sig values < 0.001 , which means they are significant, and all p1-p5 have an r-count much larger than the r-table, so it is concluded that all items are valid and can be used for further analysis.

Table 3. (Reliability Test)

Variable	Cronbach Alpha	Result
Barriers to Digital Literacy	0.899	Reliable
Technology Infrastructure Barriers	0.899	Reliable
Risk Perception Barriers	0.899	Reliable
Qris Usage Rate	0.899	Reliable

Sumber : SPSS Author 2025

Table 4. (Normality test result)

Test	Value
N(Sample)	86
Test Statistics	0.102
Asymp.sig.(2-tailed)	Reliable

Source: SPSS Author 2025

The results of the outlier examination showed that in the initial stage, some data had extreme residual values, potentially disrupting the normality and stability of the regression model. After the outlier detection process was carried out using *standardized residual (cut-off ± 3)*, a number of data were identified as outliers and then removed from the analysis.

After removing outliers, the remaining data set was 75 respondents. This step was taken to ensure that the regression model met the assumption of normality and produced more accurate estimates.

Table 5. (Multicollinearity test)

Variables	Tolerance	VIF
Barriers to Digital Literacy	0.672	1,489
Risk Perception Barriers	0.413	2,420
Technology Infrastructure Barriers	0.347	2,883

Source: SPSS Author 2025

Results Multicollinearity testing shows that all independent variables have a tolerance value above 0.10 and a VIF below 10. X1 has a tolerance value of 0.672 (VIF 1.489), X3 is 0.413 (VIF 2.420), and X2 is 0.347 (VIF 2.883).

Mark this indicates that there is no multicollinearity problem in the regression model, so that each independent variable can be used for further analysis without influencing each other excessively.

Table 6. (Heteroscedasticity test)

Model	Unstandardized B	Coefficients Std. Error	Standardized Coeffients Beta	1	Sig
Constant	0,958	0.892		1.075	0.286
Barriers to Digital Literacy	0,177	0.064	0.370	2.769	0.007
Risk Perception Barriers	-0.134	0.103	-.242	- 1.303	0.197
Technology Infrastructure Barriers	0,117	0.077	0.259	1.521	0.133

Source: SPSS Author 2025

Test results Glejser shows that most variables have significance values above 0.05, namely X2 ($p = 0.197$) and X3 ($p = 0.133$), which indicates the absence of heteroscedasticity. Although X1 has $p = 0.007$, the inconsistency between variables indicates that the model does not experience disturbing heteroscedasticity problems. Thus, the residual variance can be stated to be relatively stable and meets the assumption of homoscedasticity.

Table 7. (Determination test)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.386a	0.149	0.113	2.232240

Source: SPSS Author 2025

Results The analysis shows that the model has an R value of 0.386, which indicates a positive relationship between variables X1, X2, and X3 against Y. The R Square value is 0.149, which means that the three independent variables are only able to explain 14.9% of the variation in Qris use, while the rest is influenced by other factors outside the model. Meanwhile, the adjusted R square value of 0.113 confirms that the model's predictive ability is still relatively low.

Overall, the regression model can still be used, but its contribution in explaining changes in the Y variable is relatively small.

Table 8. (Parcial test)

Model	Unstandardized B	Coefficients Std. Error	Standardized Coefficients Beta	T	Sig
Constant	21.993	1.545		14.237	<0.001
Barriers to Digital Literacy	-.008	0.111	-0.11	-0.75	0.940
Risk Perception Barriers	0.111	0.178	0.121	0.621	0.536
Technology Infrastructure Barriers	-0.250	0.133	-0.336	-1.882	0.064

Sumber : SPSS Author 2025

The partial test results show:

- Digital Literacy Barriers
 $t = -0.075$ | Sig. = 0.940 → no significant effect
- Technological Infrastructure Barriers
 $t = 0.621$ | Sig. = 0.536 → no significant effect
- Risk Perception Barriers
 $t = -1.882$ | Sig. = 0.064 → significant

Using a 10% significance level, only the risk perception barrier variable significantly impacts QRIS use, while the other variables do not show a significant effect.

Table 9. (Simultan test)

Model	Sum of Squares	df	Mean square	F	Sig
Regression	82.459	3	27.486	1.698	.175b
Residual	1149.461	71	16.190		
Total	1231.920	74			

Source: SPSS Author 2025

The F-test yielded a value of 1.698 with a significance level of 0.175. Because the significance value is greater than 0.05, the simultaneous regression model is insignificant. This means that the three variables—digital literacy, infrastructure, and risk perception—together cannot explain variations in QRIS usage.

DISCUSSION

This finding aligns with field conditions, which indicate that most MSMEs are already accustomed to using basic digital devices, so literacy barriers are not a determining factor. The ease of use of the Qris application also means that business owners do not need advanced technological skills. Second, technological infrastructure barriers (X2) also showed no significant effect. However, the coefficient remained positive, indicating that network and device quality remain a perceived issue among MSMEs, although it did not significantly impact Qris usage statistically. Third, using a significance level of <0.10 , perceived risk barriers (X3) were found to significantly influence the level of QRIS usage. This means that the higher the concerns regarding transaction security, data misuse, or the possibility of payment errors, the lower the tendency of MSMEs to utilize QRIS. This finding aligns with the TAM theory. (Davis, 1989), *where perceived risk can reduce behavioral intention to use, thus impacting actual use*. Overall, these results confirm that digital trust and security remain key considerations for MSMEs in Palu City in adopting QRIS-based payments.

CONCLUSION

This study concluded that the barriers influencing QRIS adoption by MSMEs in Palu City differed in their significance levels. Digital literacy and technological infrastructure barriers did not significantly influence QRIS adoption. However, after adjusting the significance threshold to <0.10 , perceived risk barriers proved to be significant. This means that a sense of security and trust in digital payment systems remain key factors for MSMEs in adopting QRIS. $R\text{-value}^2$ of 0.149 indicates that the model is only able to explain 14.9% of the variation in Qris usage, so there are still many other external factors that can influence the adoption behavior of digital payment technology. Results This research provides implications that improving system security, socializing data protection, and educating about technological risks need to be the focus of interventions for local governments, Bank Indonesia, and MSME support institutions.

LIMITATION

This study has several limitations. First, the low coefficient of determination indicates that some variation in QRS usage is influenced by factors outside the research model. Second, the purposive sampling technique limits the generalizability of the findings, as the sample only represents certain MSMEs that meet the criteria. Third, although all indicators are declared valid and reliable, the research instrument only measures a few aspects of barriers, thus not fully reflecting the complexity of factors influencing QRS usage. Furthermore, this study used only a quantitative approach, thus not being able to capture in-depth insights into the experiences and perceptions of MSMEs qualitatively.

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