

Analysis of Supporting Factors for Payment Technology Utilization in MSMEs using Technology Acceptance Model (TAM) Method

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Abstract

This study aims to analyze the factors that influence the adoption of digital payment technology in micro, small and medium enterprises (MSMEs) using the Technology Acceptance Model (TAM) method. This research uses a quantitative approach with a sample of 85 MSMEs in Bandung City that have used QRIS mobile digital payment services. This research uses a quantitative approach with primary data obtained from MSME owners or managers in Bandung City who have used QRIS digital payment services. The results of the analysis show that factors such as perceived ease of use, perceived benefits, and security affect the intention to use QRIS payment technology. In addition, validity, reliability, normality, and multicollinearity tests are also carried out to ensure data reliability and validity. The results of hypothesis testing show that all independent variables, namely Perceive in Use, Perceive in Usefulness and Security in Use, have a significant effect on user behavior in using QRIS. This research contributes to analyzing the acceptance and use of digital payment technology in MSMEs.

Keywords: digital payment technology; MSME; technology adoption; technology acceptance model (TAM)

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1. Introduction

Modern technology is used to support all facets of the economy, including production and consumption, in this era of the fourth industrial revolution. Massive advancements in networking, artificial intelligence, and data storage have led to this situation (Fauzi et al., 2023; Sariyer et al., 2021). Technological expertise in data transformation is one of the key drivers of the industrial revolution. The growth of MSMEs can benefit from a number of factors brought about by the fourth industrial revolution (Yudhaputri & Daihan, 2020). MSMEs must therefore embrace technology and adapt to it, particularly when it comes to digital payments. The growing volume and value of transactions, rising risk, growing transaction complexity, and technical advancements all contribute to the evolution of the payment system (Alfarizi et al., 2023). Information technology provides services that help firms implement their business strategies. One of the difficulties in boosting efficacy is the barriers that MSME owners confront when utilising digital payment technology services (Candraningrat et al., 2021; Sadikin et al., 2023). Therefore, there is a positive correlation between the effectiveness level offered by MSME owners and the interest level in using digital payment technology to facilitate transactions and payments (Bagale et al., 2021; Rachmad et al., 2023).

The relatively increasing accumulation of transaction value and development of digital payments in MSMEs indicates that there are several determining factors that make digital payment technology very popular with business people and users (Sari & Wulandari, 2023; Wardana et al., 2023). This creates a new challenge for MSMEs to be able to adopt digital payment technology so that MSMEs can gain benefits in encouraging digital business development and sales (Achmad, 2023; J. Halik et al., 2021; J. B. Halik et al., 2023).

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Digital payment technology in micro, small and medium enterprises (MSMEs) includes various systems and instruments. Several digital payment systems and instruments are developing, namely Internet Banking, which allows MSMEs to carry out various financial transactions via the internet, providing convenience and efficiency. (Kusuma & Darma, 2020). Furthermore, there is QRIS (Quick Response Code Indonesian Standard) payment technology. QRIS enables MSMEs to accept digital payments using QR codes, offering a convenient and widely used payment method (Fajri et al., 2024). Non-cash payment instruments include credit and debit cards issued by banks, as well as electronic money, giving MSMEs additional options for digital transactions (Prihatiningtias & Wipraganang, 2022). Adoption of digital payment technology such as QRIS for MSMEs offers benefits such as increased market access, cost efficiency and increased competitiveness (Sugiana et al., 2023; Yusriadi et al., 2022). The use of digital payment technology aims to modernize and update MSMEs, making financial transactions more convenient and efficient for businesses and their customers.

Quick Response Code Indonesia Standard (QRIS), a standardisation initiative for the digital payment system, was introduced by Bank Indonesia in 2019. QRIS is mandatory for all QR code payment service providers operating in Indonesia. Bank Indonesia promotes the widespread adoption of QRIS, particularly among SME participants. Bank Indonesia classifies the adoption of QRIS as an endeavour to innovate the payment system (Nafisa et al., 2022). By the end of 2023, the total count of enterprises utilising QRIS in Indonesia had ascended to 5.1 million. Among these, the micro and small business sector occupied the most significant proportion, accounting for 84.93% or approximately 4.4 million merchants (Asmara et al., 2022). All merchants who maintain an account with the Payment System Service Provider (PJSP) are eligible to utilise QRIS. Because this QRIS system is operating in Merchant Presented Mode (Isa, 2020), users of any e-wallet application including Gopay, Dana, OVO, and LinkAja can transact with merchants by scanning the QRIS code available at the merchant using one of their e-wallet applications without having to adjust to the application owned by the QRIS service provider in the store. Consequently, the efficiency of payment transactions will be enhanced, users will have the convenience of completing payments, and the security of digital transactions will be preserved.

QRIS payment technology is a payment instrument that is present due to technological developments. This type of payment instrument is a solution for the need for payment instruments to process transactions quickly and safely. Digital payment technology brings new opportunities that users take advantage of to minimize the use of cash transactions (Nurqamarani et al., 2023; Trinugroho et al., 2022). So the research implications are to analyze the factors that support the use of digital payment technology in MSMEs as cashless payments using QRIS. To analyze the factors that influence transactions using QRIS, this research uses the Technology Acceptance Model (TAM) method.

The TAM model can be used to approach the Quick Response Code Indonesian Standard (QRIS) payment system. It is hoped that the TAM theory can help predict a person's attitude and acceptance of technology and can provide the basic information needed regarding the factors that drive a person's attitude (Taherdoost, 2018). TAM has a theory that a person's intention to use technology is determined by factors of perceived usefulness and perceived ease of use. The level of use and acceptance of the QRIS payment method can be measured using the TAM theory approach, because the TAM theory is a theory used to measure acceptance of technological developments, by using the TAM theory it will be possible to know the reactions and perceptions of users towards the implementation of payment technology using the QRIS method in the future. will be able to influence user attitudes towards acceptance of use (Farida & Ardiansyah, 2022). The difference in this research is that the research variables used are by adding security aspects in the use of payment technology so that there are perception of use variables, perception of usefulness variables, and security variables to determine their relationship with the behavioral intention of use variable so that they can analyze the influence on the efficiency of payment digital technology for MSMEs.

2. Methods

2.1. Research Method

This study uses a quantitative approach. The data source used in this research is primary data obtained directly from respondents who are owners or managers of MSMEs in Bandung City who have used the QRIS mobile digital payment service. The data used is primary data obtained through an online questionnaire with Google Form using the probability sampling method (random sampling). The sample in this research was 85 MSMEs in Bandung City. The sample in this research is the owners and managers of MSMEs in Bandung City who have used the QRIS mobile digital payment service. The sampling method is purposive sampling. The criteria used in determining the sample are: MSMEs in Bandung City who have used the QRIS mobile digital payment service and MSMEs in Bandung City who have used

the QRIS mobile digital payment service for at least 1 year. Distribution of questionnaires to respondents was carried out online using a Google form which was measured using a Likert scale. The Likert scale is used to measure attitudes, opinions and perceptions of a person or group of people towards a social phenomenon (Jebb et al., 2021; Kurniawan et al., 2023). Data analysis techniques are one of the methods used to answer research problems. The research data that has been collected is then analyzed using the SPSS application.

2.2. Operational Definition of Variables

Quantitative research looks at the relationship between variables and objects as cause and effect (Ibrahim et al., 2023; Sugiyono, 2019), so that in this research there are independent and dependent variables. From these variables, we then look for how much influence the independent variable has on the dependent variable. Based on the theoretical basis and previous research, researchers categorized the factors that influence the Behavioral Intention of Use of QRIS payment technology in MSMEs, namely User Ease, Benefits and Security factors as independent variables and Interest as the dependent variable. So it can be concluded that Perceived Ease of Use (variable X1), Perceived Ease of Usefulness (variable X2), and Security of Use (variable X3).

2.2.1. Perceived Ease of Use

The concept of perceived simplicity of use pertains to the extent to which individuals hold the belief that technological systems are straightforward to comprehend and operate. An system is considered to be of high quality when its design prioritises user gratification by ensuring effortless navigation and operation. In this context, "ease of use" encompasses not only the simplicity of learning and operating a system, but also the simplicity of performing a job or task for which the utilisation of a system would be more convenient than performing it manually.

2.2.2. Perceived Ease of Usefulness

Perceived ease of usefulness refers to the extent to which the implementation of a technology is anticipated to yield advantages for every individual employing it. Furthermore, this perception encompasses the subjective likelihood that prospective users will utilise a specific application to enhance their work performance.

2.2.3. Security of Use

The security aspect of use can be interpreted in how safe users are in making transactions related to the payment technology used. In this aspect, it can also lead to obstacles or problems faced by users when making transactions, how often obstacles occur when making transactions. And the most important thing is that there are errors from payment technology that can hinder the transaction process (Sulistyaningsih & Hanggraeni, 2021). The higher the user's sense of comfort in making transactions on payment technology, it can have a positive influence on interest in use.

2.2.4. Behavioral Intention to Use

Behaviour intention to Use refers to the aspiration of an individual to execute a specific behaviour. the intensity of the user's intent to perform the intended action. Additionally, it states, in accordance with the views of others, that behavioural intention to use is a person's desire to perform a particular action. Behavioural intention to use refers to an individual's volition and desire to engage in specific actions. An alternative viewpoint posits that the fundamental tenet of TAM entails that an increase in users' behavioural intention to use a new technology corresponds with their positive and substantial actions towards its utilisation (Sarmah et al., 2021).

3. Result and Discussion

3.1. Respondent Description

Respondent descriptions provide a detailed description of the characteristics and special characteristics of the individuals who were participants or respondents in this research. The available information covers various aspects, such as age, gender, as well as other relevant factors in the research context. The sample for this research is the owners and managers of MSMEs in Bandung City who have used QRIS payment technology. The sampling technique was carried out using a purposive sampling method and the number of samples that could be processed was 85 respondents. Most of the respondents in this study were female and aged 27-39 years, which is the productive working age and the position in MSMEs was 85% as managers.

3.2. Validity test

The results of the validity test show that the indicators in this study have a cross loading value of > 0.50 so that the questionnaire statement is declared valid.

Table 1. Validity Test Results

Variable	Indicator	r-count	r-table	Results
Intension in Use (Y)	Y1	0.814	0.178	Valid
	Y2	0.82	0.178	Valid
	Y3	0.782	0.178	Valid
	Y4	0.769	0.178	Valid
Perceived Use (X1)	X1.1	0.678	0.178	Valid
	X1.2	0.710	0.178	Valid
Perceived Usefulness (X2)	X2.1	0.665	0.178	Valid
	X2.2	0.689	0.178	Valid
	X2.3	0.749	0.178	Valid
	X2.4	0.736	0.178	Valid
Security of Use (X3)	X3.1	0.710	0.178	Valid
	X3.2	0.720	0.178	Valid
	X3.3	0.774	0.178	Valid

Based on the validity test results listed in the table 1, the calculated r value is greater than the table r value for the 13 question items in all research variables, so it can be taken from the results of the validity test for all questions in this research questionnaire that all statements in the items- The item is considered valid, because the calculated r value is greater than the table r value.

3.3. Reliability Test

Reliability testing is used to determine the consistency of measuring instruments used in research, which generally take the form of questionnaires. The reliability test can be used to determine whether the instrument is reliable or not, if the Cronbach's Alpha value is > 0.6 . So it can be said to be reliable. Reliable means that the instrument can be trusted to be used as a data collection tool. The value of the reliability test results on the questionnaire in this research can be seen as follows: Cronbach's Alpha of the questionnaire is declared reliable (Reliable). If the value of Cronbach's Alpha is > 0.60 then the questionnaire instrument is reliable. If the value of Cronbach's Alpha < 0.60 then the questionnaire instrument is not reliable.

Table 2. Reliability Test Results

Information	Cronbach's Alpha	Critical Value	Results
Interest in Use (Y)	0.925	0.60	Reliable
Perception of Use (X1)	0.928	0.60	Reliable
Perception of Usefulness (X2)	0.926	0.60	Reliable
Security of Use (X3)	0.927	0.60	Reliable

From the table presented, it can be concluded that the Cronbach's Alpha results for each research variable exceed the specified critical value. In the variable interest in using QRIS payment technology, Cronbach's Alpha reached 0.925, which exceeds the limit of 0.60. Meanwhile for the variable perception of use (X1), Cronbach's Alpha reached 0.928 which also exceeds the value of 0.60. The perceived usefulness variable (X2) has a Cronbach's Alpha of 0.926, higher than 0.60. The security of Use(X3) variable has a Cronbach's Alpha of 0.927, which also exceeds the threshold of 0.60. Thus, it can be said that the results of the reliability test for all research instruments or variables in this questionnaire are considered reliable and can be used in data collection.

3.4. Normality test

The normality test is carried out to determine whether the regression model of residual values is normally distributed or not. The normality test in this study used the Kolmogorov Smirnov approach. Data can be said to be normally distributed, if the sig (Significance) value is > 0.05 . Following are the results of the normality test in table 3.

Table 3. Kolmogorov-Smirnov Normality Test

N	Value
Mean	8
Std. Deviation	1.70
Absolute	0.079
Positive	0.076
Negative	-0.79
Statistical Tests	0.079
Asymp. Sig. (2-tailed)	0.210 ^{cd}

Based on the results of the normality test on the transformed data that has been carried out in table 3, it can be explained that the Asymp.sig.(2-tailed) value was 0.21, which means the data significance value is greater than 0.05. So it can be stated that the data tested has a normal distribution.

3.5. Multicollinearity Test

Multicollinearity Test This test aims to determine whether or not there is a correlation between independent variables in the regression model by looking at the Tolerance and VIF values. It can be said that the research model does not have multicollinearity if the Tolerance value is > 0.10 and the VIF value is < 10 . The results of the multicollinearity test from the research data can be seen in table 4.

Table 4. Multicollinearity Test

Coefficients ^a				Results
Model		Collinearity Statistics		
		Tolerance	VIF	
1	Perception of Use	0.560	1.809	Multicollinearity Free
	Perception of Usefulness	0.536	1.930	Multicollinearity Free
	Security in Use	0.447	2.294	Multicollinearity Free

a. Dependent Variable: Behavioral Intention in Use

Based on the results of the multicollinearity test on Table 4, the Tolerance value of the User Ease variable is 0.560, the Benefit variable is 0.536, and the Security variable is 0.447. This shows that these three variables have a Tolerance value above 0.10 or Tolerance > 0.10 . So it can be concluded that there is no multicollinearity between the independent variables in the research.

3.6. Hypothesis testing

Table 5. Hypothesis Testing

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant	1.671	0.960		1.741	0.085
X1	0.444	0.130	0.237	3.425	0.001
X2	0.385	0.077	0.360	5.052	0.000
X3	0.452	0.097	0.358	4.614	0.000

Based on the results of the multiple linear regression analysis presented in Table 5, the value used in the multiple linear regression analysis model equation is the unstandardized coefficient B value. So, the equation in the linear regression analysis model in this research is as follows:

$$Y = 1.671 + 0.444X_1 + 0.385X_2 + 0.482X_3 + e$$

The constant value (α) shows a positive value of 1.671, meaning that if all the independent variables including Perceive of Use (X_1), Perceive of Usefulness (X_2), Security in Use (X_3), are equal to zero (0), then MSMEs will be interested in making transactions using QRIS payment technology will experience an increase or impact.

The regression coefficient for the variable Perceive of Use (X_1) shows a value of 0.444, which indicates that the influence of MSME interest in using QRIS payment technology and Perceive of Use has a directly proportional relationship. In other words, when Perceive of Use increases, interest in using QRIS also increases, and vice versa. If the perception of Perceive of Use decreases, interest in using QRIS will also decrease.

The regression coefficient for the variable Perceive of Usefulness (X_2) shows a value of 0.385, which indicates that the influence of MSME interest in using QRIS payment technology and Perceive of Usefulness has a directly proportional relationship. In other words, when Perceive of Usefulness increases, interest in using QRIS also increases, and vice versa. If the perception of Perceivedness of Usefulness decreases, interest in using QRIS will also decrease.

The regression coefficient for the Security in Use variable (X_3) shows a value of 0.482, which indicates that the influence of MSME interest in using QRIS payment technology and Security in Use has a directly proportional relationship. In other words, when Security in Use increases, interest in using QRIS also increases, and vice versa. If the perception of Security in Use decreases, interest in using QRIS will also decrease.

Based on the description of the results of the regression analysis, it can be concluded that all independent variables have an effect on the dependent variable. This is also shown by the results of the F test, which shows the significance value of the variables Perceive of Use (X_1), Perceive of Usefulness (X_2), Security in Use (X_3) simultaneously on Behavior Intention in Use (Y), namely $0.000 < 0.005$ and the calculated F value is $88.637 > F$ table 2.782. So it can be concluded that the variables Perceive of Use (X_1), Perceive of Usefulness (X_2), Security in Use (X_3) together have a positive and significant effect on Behavioral Intention in Use (Y). This statement is reinforced by the results of the R^2 determination test which shows that the Adjusted R Square value is 0.88, meaning that the variables Perceive of Use (X_1), Perceive of Usefulness (X_2), Security in Use (X_3) together have an effect of 88.8 % of Behavior Intention in Use.

3.7. Discussion of Results

3.7.1. The Influence of Perceive of Use on Behavioral Intention in Use of MSMEs in Transactions using QRIS Payment Technology

The first hypothesis of the Perceive of Use variable in this research states that there is a significant influence of the Perceive of Use variable on interest in using QRIS. Based on the data analysis that has been carried out, the t test results show that the Sig. The variable Perceive of Use (X_1) is smaller than the α value, namely $0.001 < 0.05$ and the calculated t value is $3.533 > t$ table 1.992. So it can be concluded that H_1 is accepted, meaning that the Perceive of Use variable has a positive and significant effect, there is interest in MSMEs making transactions using QRIS as a payment method.

Based on the results, it can be explained that MSMEs are aware of the QRIS payment system because information about the QRIS system is easy to obtain, easy to learn and understand, this makes respondents interested in using QRIS as a payment method at this time, apart from that the large number of payment applications connected to QRIS also makes User interest is increasing because they find it easier. Based on this, it can be concluded that the easier access to information and the wider the reach of a payment system, the greater the interest in using the payment system.

3.7.2. The Influence of Perceive of Usefulness on Behavioral Intention in Use of MSMEs in Transactions using QRIS Payment Technology

Based on the results of the analysis that has been carried out, the second independent variable, namely Perceive of Usefulness, states that there is a significant influence of the Perceive of Usefulness variable on interest in using QRIS. Based on the data analysis that has been carried out, the t test results show that the Sig. The variable Perceive of Usefulness (X_2) is smaller than the α value, namely $0.000 < 0.05$ and the calculated t value is $5.143 > t$ table 1.992. So it can be concluded that H_2 is accepted, meaning that the Perceive of Usefulness variable has a positive and significant effect on MSMEs' interest in making transactions using QRIS as a payment method. Respondents stated that QRIS is

very easy to use so it can speed up transactions and increase payment effectiveness. QRIS is considered a fast and practical payment method with guaranteed security, which makes users interested in using this payment system. The many benefits felt by QRIS users make them interested in continuing to use it

3.7.3. The Influence of Security in Use on Behavior Intention in Use of MSMEs in Transactions using QRIS Payment Technology

Based on the results of the analysis that has been carried out, the third independent variable, namely Security in Use, states that there is a significant influence of the Security in Use variable on interest in using QRIS. Based on the data analysis that has been carried out, the t test results show that the Sig. The Security in Use (X3) variable is smaller than the α value, namely $0.000 < 0.05$ and the calculated t value is $4.754 > t$ table 1.992. So it can be concluded that H3 is accepted, meaning that the Security in Use variable has a positive and significant effect on MSMEs' interest in making transactions using QRIS as a payment method.

Based on the results, it can be explained that when using QRIS payment technology, MSMEs feel that their personal data is safe when using QRIS as a transaction tool. This can be seen from the respondents' very good answers with the statement that QRIS is safe. The risks involved in QRIS transactions are so low that respondents ignore them, because the benefits offered by this system are very large compared to the risks. However, users must still be careful when using this payment system.

4. Conclusion

The study's findings indicate that the application of the TAM Theory (Theory of Planned Behaviour) to examine the impact on MSMEs' (Micro and Small Enterprises) adoption and utilisation of QRIS payment technology supported the conclusion that this theory can be utilised to forecast an individual's technological acceptance and attitude, as well as to furnish fundamental insights into the determinants of that attitude. This quantitative study collects primary data from proprietors or administrators of micro, small, and medium enterprises (MSMEs) in Bandung City who have utilised QRIS mobile digital payment services. Upon conducting tests for validity, reliability, normality, and multicollinearity, it was ascertained that the questionnaire instrument exhibited reliability, that all statements contained within it were deemed valid, that the data followed a normal distribution, and that the independent variables in the study did not exhibit multicollinearity. The findings from the multiple linear regression analysis indicate that there exists a partial relationship (α) between Behaviour Intention of Use and all independent variables (Perceived Ease of Use, Perceived Ease of Usefulness, and Security of Use), with a constant value of 1.671. Thus, it can be concluded that the variables of Perceived Ease of Use, Perceived Usability, and Security of Use are associated with the acceptability and utilisation of QRIS payment technology by MSMEs, as well as the perception and influence thereof. Interest in utilising QRIS will increase in correlation with the value of each independent variable, and conversely, a decrease in value will result in decreased interest. Consequently, this study makes a valuable contribution to the analysis of how the implementation of digital payment technology in micro, small, and medium enterprises (MSMEs) impacts efficiency, particularly by incorporating security considerations.

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