

## TECHNOLOGY ACCEPTANCE MODEL (TAM): THE EFFECT OF FINANCIAL LITERACY ON EFFECTIVENESS OF USING QRIS ON MSME OWNERS IN INDONESIA

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**Abstract:** The purpose of this research is to analyze the impact of Financial literacy to the effectiveness of using QRIS that Technology Acceptance Model (TAM) as moderation variable, study on MSME owners in Indonesia. This research is quantitative and involves 3 variables. The independent variable is Financial literacy, the moderating variable is Technology Acceptance Model (TAM) and the variable dependent is the Effectiveness of using QRIS. The data analysis technique for this research uses Structure Equation Modeling (SEM). The sample for this research was determined using purposive sampling, with the sample criteria being MSME owners using QRIS in micro businesses in 4 (four) cities in Indonesia. A total of 204 MSME owners using QRIS participated in the research, coming from the cities of Medan, Bali, Makassar and Bali. The research instrument used a questionnaire distributed to MSME owners. The results of this research reveal that financial literacy has a positive effect on the effectiveness of using QRIS for MSME owners in Indonesia. Second, TAM can neither strengthen nor weaken the influence of financial literacy on the effectiveness of using QRIS for MSME owners in Indonesia.

**Keywords:** TAM, Financial Literacy, MSME, QRIS

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### 1. Introduction

In the last few years, QR Code becomes widely used in many countries. The statistics shows that QR Code users increased from 21% in 2013 to 34% in 2017 and the number continues to grow. One of the countries that first usher the use of QR Code is China. They used QR Code in various ways since 2011, such as food ordering, contact sharing, application download, and certainly to transfer payments (Jayanti & Karnowati, 2023). In 2016, it was recorded that a total of \$1.65 trillion transaction was performed solely through QR Code (CNN, 2017).

In Indonesia alone, the citizens are no stranger to the term QR Code. QR Code offers ease and comfort to its users, hence it is widely integrated to many fields, such as education, government, industrial, marketing, and others. QR Code is also used as a payment tool that becomes increasingly popular in recent years. This is supported by the nationally standardized QR Code that is published by Bank Indonesia (BI), i.e., Quick Response Code Indonesia Standard (QRIS). Inside the QRIS socializing material by Bank Indonesia in 2019, the use of QRIS makes it easy for Indonesians to make payments and transactions. To use QRIS, users need only to scan the QR code using their payment app in their phones.

QRIS can be used for various types of transaction, from in-store shopping, buying food at restaurants, to paying loans. QRIS can also be used in many different groups including MSME. In fact, 91.4% of the 26.7 million merchants who are QRIS users is made out of MSMEs all across the Indonesian provinces (Sari & Adinugraha, 2022). The Head of Department of Payment System Policy of Bank Indonesia, Dicky Kartikoyono, states that this year, BI aims to achieve 45 million users in the micro business segment. Dicky states that development and literacy for micro, small, and medium enterprise (MSME) is needed to help them use QRIS easily. With a good financial literacy, MSME can more effectively and efficiently manage their business finances.

According to a survey conducted by Otoritas Jasa Keuangan (OJK) in 2013, the level of financial literacy amongst MSME is only 15.68%. The low level of financial literacy affects the credit absorption by the bank sector. The BI's data between 2011 to 2012 shows that there were 55 million MSME but only 8 million of them utilizes banking product. Resulting in the issue of non-developing MSME due to lack of capital becoming significant. Therefore, MSME owners must have a good financial literacy to understand fundamental financial reports, the ability to understand numbers, and making accurate judgment and decision when using and managing fund to develop their business well (Brown et al., 2018).

The importance of financial literacy of MSME owners becomes the foundation of this research. Furthermore, with the increasing popularity of QRIS usage amongst MSME owners indicate a strong awareness of owners to grow their business using the assistance of QRIS for cashless payment. Following are some of the literatures relating to this research.

A study conducted by Anastasia Anggi Palupi, (2022) concluded that financial literacy positively affect MSME's decision to use QRIS in Beji and Sukmajaya Region in Depok city. A similar research by (Givelyn et al., 2022) states that financial literacy has a significant positive correlation on the decision to use QRIS, the higher the financial literacy the higher the likelihood that QRIS will be used amongst muslim entrepreneurs in Surakarta city. A study conducted (Najib & Fahma, 2020) suggests that literacy of finance, income, and perceived usefulness and perceived ease of use have a significant positive effect on the interest of QRIS use. Even in other researches, the finance literacy of university students in Indonesia is affected by gender, whereby female students are higher financial literacy awareness compared to their male counterpart (Nainggolan et al., 2018).

Financial literacy is an awareness and knowledge that can determine the attitude and behavior of increasing the decision making and management of money to achieve community financial welfare (OJK). Based on the survey conducted by OJK in 2022, the literacy index of the Indonesian community is 49.68%, indicating the need for financial education to increase financial literacy. Chen and Volpe theorized that there are four aspects of financial literacy which are, basic personal finance which encompass the basic understanding of personal finance (1), savings and loan, in bank savings and borrowing for credit card use (2), insurance includes basic understanding about insurance product such as life, health, transport, or financial protection insurance among others (3), and investing which includes the understanding about interest, fund, and investment risk. Besides financial literacy, the growth of BI's digital payment method also aims to increase digital financial literacy. The digital financial literacy is a knowledge or understanding of the financial service activity or payment methods available digitally (Yong et al., 2018). One of BI's effort to increase digital financial literacy is by launching QRIS.

Quick Response Code Indonesian Standard or better known as QRIS is a standardized payment system and cashless payment system in Indonesian that is developed by BI and the

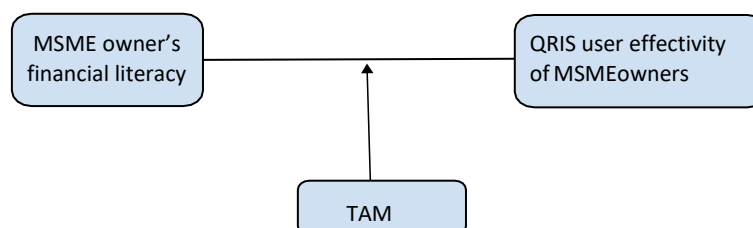
Association of Payment System Indonesian (ASPI). QRIS consolidates the many types of QR offered by various Indonesia payment system provider (PJSP) into one QR Code (Bank Indonesia, 2022). BI understood the benefit of cashless payment for the economy and community from the efficiency and effectivity perspective offered. Therefore, BI created QRIS to implement QR Code for a faster, more practical, and safe transaction. The growth of QRIS continues to advance every year. In an interview with CNBC, the BI Governance, Perry Warjiyo states that in 2023, QRIS have reached 37 million users and a total of 26.7 million merchants with a nominal transaction of Rp.49.65 trillion, indicating a 104.64% growth year on year. BI plans to expand the use of QRIS for international usability. With this effort, it is hoped that QRIS can increase the payment transaction effectivity and increase the inclusion of the economy and digital finance.

Effectivity refers to the assessment of the target achievement that has been previously set. Effectivity is a measure to assess how far is the target, be it quantity, quality, or the duration in which it will be achieved. The higher the likelihood of achieving the target, the higher the effectivity (Maharani & Hidayat, 2020). In terms of QRIS use, according to (Hanina, 2021), there are five important indicators which are: system quality, information quality, information quality, customer satisfaction, and net profit.

Based on Law No. 20 of 2008 regarding MSME, micro business is a productive business owned by individuals or sole traders with a net value of Rp. 50 million (excluding properties and business lands) and has a maximum annual revenue of Rp. 300 million. Small business is a economically productive business that stands on itself run by individuals or business entity and not a subsidiary or owned by a medium or large business.

Technology Acceptance Model (TAM) is an information system theory that explains how to encourage users to accept and utilize new technology (Tshabalala et al., 2014). TAM has two important indicators to understand the relationship between human and technology which are perceived usefulness, which is the level of trust one has that using a certain system will maximize performance, and perceived ease of use which is an individual's required level of effort to use a system. According to Nurhapsari & Sholihah, (2022), a number of advantages of using TAM is due to the strong theoretical foundation, the evidence backed by research showing TAM is an effective model, a simple but valid model, and its ability to explain the failure of many information technology implementation being the lack of user's interest. However, the cashless implementation of QRIS in MSME is accelerated by TAM, which pushes BI to socialize QRIS all over Indonesia (Sholihah & Nurhapsari, 2023).

Because QRIS requires high level of technology usage that could either strengthen or otherwise, the researcher wants to explore the effect of financial literacy on the effectiveness of use of QRIS amongst MSME owners in Indonesia with TAM as a moderator. The conceptual framework of this study is depicted in Figure 1.



**Figure 1.** The conceptual framework

## **2. Research Method**

The research method consists of research design, study population and sample, tools used, location, data collection technique, definition of variable and data analysis technique. This study is a quantitative causality. This study explores the relationship between the variables. The independent variable is financial literacy of MSME owners. The dependent variable is the QRIS user effectiveness of MSME owners. And the moderation variable is the TAM.

The study population is all the MSME owners in Indonesia. The object criteria are the use of QRIS in their business for selling or service. The data collecting method uses purposive sampling where the sample is taken based on the purpose of the study. The respondent criteria of this study are MSME owner who uses QRIS in their payment transaction. Therefore, this study respondent is represented with four cities; Medan with 38 MSME owners, Surabaya with 53 MSME owners, Sulawesi with 48 MSME owners, Bali with 44 MSME owners, and Kalimantan with 4 MSME owners.

The financial literacy variable consists of five indicators that are represented into 19 questions in a survey distributed through G-form. TAM has two indicators that are represented into 9 questions. QRIS user effectivity has 6 indicators that is represented into 19 questions (Azma Hanina, 2021). The data analysis technique used structural equation model (SEM) (Harahap, 2018). The SPSS Statistic 26 was used to analyze the data. The SEM is as follows:

$$Y = \alpha + aX + e(1)$$

$$Y = \alpha + aX + bM + c'X.M + e \quad (2)$$

The first stage of this research assesses the validity and reliability of the research instrument, namely the goodness of fit and hypothesis testing. The validity test is a test that looks at the accuracy of items when measuring something. Items consist of statement and questions for respondents through the research questionnaire. This research uses the SPSS Statistics 23 software to perform Pearson correlation. This method correlates the score of each item with the total score of all the items of the dependent variable. The significance test is conducted using the two-tailed r-table, with significance level of  $< .05$ . If the r-value is positive and above the r-table value, the items are considered valid. Items are invalid if r-value  $<$  r-table. The reliability test is a test to identify the consistency of the measurement when repeatedly administered. This test was done in the SPSS Statistics 23 using the Cronbach Alpha. An item is considered valid when the value is  $\geq 0.6$ , items lower than 0.6 are invalid, 0.7 value is acceptable and above 0.8 is good.

### *The Hypothesis Testing (F-test, t-test and coefficient of determination)*

T-test is a test is a partial regression coefficient test to test the significance level of the independent variable on the dependent variable (Sugiyono, 2012). If the significant value is below  $< .05$ ,  $H_0$  is rejected, meaning that there is an effect of independent variable on dependent variable. F-test is a regression coefficient test that simultaneously test significance level of multiple independent variables on dependent variable. If the significance level is  $< .05$ ,  $H_0$  is rejected, and there is a significant effect of the independent variable on the dependent variable. The coefficient determination value that is closer to 1 shows a stronger relationship between the independent and dependent variable, meanwhile a value closer to 0 shows a weaker relationship between the independent and dependent variable.

### 3. Results and Discussion

#### 3.1. Results

The descriptive statistics of the respondents are age, highest level of education, domicile, business group and how long has the MSME been established. The result of the descriptive statistics is shown below. There were 204 respondents that are eligible for this study

**Table 1. The Descriptive Statistics of MSME Owners**

| Characteristic             | Category                        | Number of respondents |
|----------------------------|---------------------------------|-----------------------|
| Age                        | <25 years                       | 58 people             |
|                            | 25-34 years                     | 54 people             |
|                            | 35-45 years                     | 41 people             |
|                            | >45 years                       | 35 people             |
| Highest level of education | Primary                         | 4 people              |
|                            | Middle                          | 4 people              |
|                            | Highschool                      | 89 people             |
|                            | Diploma                         | 8 people              |
|                            | Bachelor's                      | 76 people             |
|                            | Master's                        | 6 people              |
| Domicile                   | Medan Sumatera                  | 42 people             |
|                            | Kalimantan                      | 4 people              |
|                            | Jawa                            | 58 people             |
|                            | Sulawesi                        | 55 people             |
|                            | Bali                            | 45 people             |
| Business group             | Farm, Fishery, Livestock        | 1 person              |
|                            | Manufacturer                    | 17 people             |
|                            | Trade, Hospitality, Restaurants | 149 people            |
|                            | Service                         | 15 people             |
|                            | Fashion                         | 6 people              |
| Business's age             | <1 year                         | 15 people             |
|                            | 1-2 years                       | 61 people             |
|                            | 3-4 years                       | 32 people             |
|                            | 5-6 years                       | 19 people             |
|                            | >6 years                        | 61 people             |

Source: Internal data, 2023

Based on Table 1 above, MSME owners majority are aged under 25 years old, and the majority of the highest degree owned is high school with 89 people. The respondents mostly domiciled in Java and the surrounding region at 58 people. The largest business group is trade with 149 people. The majority of the business are above 6 years old with 61 people.

The validity and reliability test of the research instrument was done to test the validity and reliability of items. There are three variables that are being tested; financial literacy of MSME owners, the effectivity of QRIS usage and TAM. The result is shown in Table 2 and Table 3



**Table 2. The Results of Validity Test**

| Financial Literacy Indicators (X) | Pearson Correlation | Conclusion | Effectivity Indicator Items (Y) | Pearson Correlation | Conclusion | TAM Indicator Items | Pearson Correlation | Conclusion |
|-----------------------------------|---------------------|------------|---------------------------------|---------------------|------------|---------------------|---------------------|------------|
| X1_1                              | 0,140               | Valid      | Y1_1                            | 0,572               | valid      | Z1_1                | 0,641               | valid      |
| X1_2                              | 0,258               | valid      | Y1_2                            | 0,565               | valid      | Z1_2                | 0,663               | valid      |
| X1_3                              | 0,207               | valid      | Y1_3                            | 0,584               | valid      | Z1_3                | 0,643               | valid      |
| X1_4                              | 0,310               | valid      | Y1_4                            | 0,590               | valid      | Z1_4                | 0,647               | valid      |
| X1_5                              | 0,099               | Tidakvalid | Y1_5                            | 0,564               | valid      | Z1_5                | 0,656               | valid      |
| X1_6                              | 0,278               | valid      | Y1_6                            | 0,625               | valid      | Z1_6                | 0,661               | valid      |
| X1_7                              | 0,379               | valid      | Y1_7                            | 0,656               | valid      | Z1_7                | 0,721               | valid      |
| X1_8                              | 0,247               | valid      | Y1_8                            | 0,552               | valid      | Z1_8                | 0,701               | valid      |
| X1_9                              | 0,271               | valid      | Y1_9                            | 0,660               | valid      | Z1_9                | 1,00                | valid      |
| X1_10                             | 0,217               | valid      | Y1_10                           | 0,673               | valid      |                     |                     |            |
| X1_11                             | 0,342               | valid      | Y1_11                           | 0,691               | valid      |                     |                     |            |
| X1_12                             | 0,233               | valid      | Y1_12                           | 0,642               | valid      |                     |                     |            |
| X1_13                             | 0,264               | valid      | Y1_13                           | 0,452               | valid      |                     |                     |            |
| X1_14                             | 0,206               | valid      | Y1_14                           | 0,418               | valid      |                     |                     |            |
| X1_15                             | 0,417               | valid      | Y1_15                           | 0,571               | valid      |                     |                     |            |
| X1_16                             | 0,397               | valid      | Y1_16                           | 0,605               | valid      |                     |                     |            |
| X1_17                             | 0,371               | valid      | Y1_17                           | 0,629               | valid      |                     |                     |            |
| X1_18                             | 0,336               | valid      | Y1_18                           | 0,711               | valid      |                     |                     |            |
| X1_19                             | 1,00                | valid      | Y1_19                           | 0,794               | valid      |                     |                     |            |
|                                   |                     |            | Y1_20                           | 1,00                | valid      |                     |                     |            |

Source: Internal processed data from SPSS, 2023

The validity test of the financial literacy variable (X) was done by comparing the *r*-value with *r*-table. The initial hypothesis suggests that if *r*-value > *r*-table, the item is valid. The *r*-value can be seen from the Pearson correlation value. If the *r*-value is greater than the *t*-table, the item is considered valid. To get the *r*-table value, look at the statistical *r*-table (two tail, 202). So the *r*-table value is 0.138. Based on the table above, all calculated *r*-values are greater than the *t*-table values, *r*-table values > 0.138. This means that all statement items for the financial literacy variable of MSME owners are valid except for statement item X1\_5 which is invalid.

The validity test of the QRIS usage effectivity (Y) is performed by comparing the *r*-value with the *r*-table. According to the above table, all of the *r*-values are greater than the *r*-table. This indicate that all questionnaire items in the Y variable are valid. The validity test of TAM is also conducted by comparing the the *r*-value with the *r*-table. According to the table above, all of the questionnaire items of TAM variable are valid.

Next, the reliability test is a technique aimed to identify the consistency of the measurement using the Cronbach-Alpha method. The result of the reliability test is shown in Table 3 below.

**Table 3. The Result of the Reliability Test**

| Variables                             | Cronbach Alpha | Description |
|---------------------------------------|----------------|-------------|
| MSME owner's financial literacy       | .90            | Reliable    |
| TAM                                   | .95            | Reliable    |
| QRIS usage effectivity in MSME owners | .97            | Reliable    |

Source: Internal data processed in SPSS, 2023

Table 3 above showed that the Cronbach Alpha is above .90. It suggests that the items in the questionnaire are reliable. The item with the highest QRIS usage effectivity of MSME owners. After obtaining the results from validity and reliability test, the first model equation. In the first research model that explores the effect of the financial literacy of MSME owners on the effectivity of QRIS use for transactions. The output result is shown in Table 4.

**Table 4. The Testing of Model 1**

| Model |            | Sum of Squares | df  | Mean Square | F      | Sig.              |
|-------|------------|----------------|-----|-------------|--------|-------------------|
| 1     | Regression | 7100.570       | 1   | 7100.570    | 63.499 | .000 <sup>b</sup> |
|       | Residual   | 22588.116      | 202 | 111.822     |        |                   |
|       | Total      | 29688.686      | 203 |             |        |                   |

Based on Table 4, the model is valid to use. This is shown by a significant value below .05.

**Table 5. The Result of Equality Hypothesis Model 1**

**Coefficients<sup>a</sup>**

| Model |                   | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|-------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                   | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)        | 53.431                      | 4.262      |                           | 12.538 | .000 |
|       | Literasi keuangan | .456                        | .057       | .489                      | 7.969  | .000 |

Based on the results of the first model, it is found that the significance is <.05, therefore, the H0 is rejected and H1 accepted. Thus, MSME owner's financial literacy significantly affect the QRIS usage effectivity amongst MSME.

**Table 6. The Result of Test or Determinant**

| Model | R                 | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1     | .489 <sup>a</sup> | .239     | .235              | 10.57461                   |

Based on the R-square result, financial literacy effect on QRIS usage effectivity is .489. This means that the influence of financial literacy variable is 48.9% against the QRIS usage effectivity in MSME owners. Next, the second model will be explored where moderation variable is considered.

**Table 7. The Result of the Moderation Model**

| Model |                   | Unstandardized Coefficients |            | Standardized Coefficients | t      | Sig. |
|-------|-------------------|-----------------------------|------------|---------------------------|--------|------|
|       |                   | B                           | Std. Error | Beta                      |        |      |
| 1     | (Constant)        | -24.937                     | 20.333     |                           | -1.226 | .221 |
|       | Literasi keuangan | .737                        | .307       | .790                      | 2.403  | .017 |
|       | TAM               | 2.430                       | .499       | 1.111                     | 4.872  | .000 |
|       | XM                | -.013                       | .007       | -.848                     | -1.817 | .071 |

a. Dependent Variable: Efektivitas Penggunaan QRIS

According to the results of the second model, it can be found that the significance of TAM variable is  $<.05$ , therefore, TAM has a significant effect on QRIS usage effectivity. However, TAM does not significantly moderate QRIS usage effectivity with a significance value  $>.05$ . Hence, TAM does not weakens the financial literacy on QRIS usage effectivity in MSME owners.

### 3.2. Discussion

This research method shows the two models. The first model explains that financial literacy positively affects QRIS usage effectivity of MSME owners with the following value:

$$Y = 53,431 + 0,456X \dots\dots\dots(3)$$

Whereby Y is the QRIS usage effectiveness and X is the financial literacy. This explains that every increase of financial literacy experienced by MSME owners in Indonesia will increase the effectivity of QRIS usage as a mode of cashless transaction in MSME business in Bali, Surabaya, Medan, Makassar, and Kalimantan. This result is consistent with previous research by Hanina, (2021) where increase in MSME financial literacy will increase the effectivity of QRIS usage as a mode of digital payment. Financial literacy has an impact on financial decision of using QRIS as acashless transaction toll in MSME in Depok city.

$$Y = - 24,937 + 0,737 X + 2,436M - 0,013X.M \dots\dots\dots(4)$$

Variable Y is the QRIS usage effectivity and variable X is the financial literacy and variable M is the moderator variable TAM. Based on Table 7, model two explained that financial literacy has a positive impact on the effectivity of QRIS usage in MSME owners. This is in line with the results from the first model. However, the moderation variable, TAM, does not strengthen or weaken the relationship between financial literacy toward QRIS usage effectivity. This may be due to the increased awareness among the Generation Z MSME owners about the foundational financial literacy and further financial literacy within technology. Therefore, TAM does not significantly moderate the effect of financial literacy toward QRIS usage effectivity of MSME in Indonesia. In conclusion, future research should explore deeper by grouping the age of MSME owners as an independent variable. Furthermore, creating a category of region as a predicting variable.

### 4. Conclusion

There are two conclusion that can be drawn, which are:

1. Financial literacy positively affects the QRIS usage effectivity amongst MSME owners in Indonesia, and
2. TAM does not strengthen or weaken the effect of financial literacy toward QRIS usage effectivity amongst MSME owners in Indonesia.



Future research should explore deeper by grouping the MSME owners by age groups as an independent variable. As well as, creating a region category as a predictor variable.

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