Investigating the Adoption of QR Code Indonesian Standard through Organizational and Environmental Factors and Its Impact on Micro Small Medium Enterprise Performance

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Abstract
Purpose: The objective of this study is to examine factors that influence QRIS adoption through organisational and environmental factors and its effect on the MSME performance, particularly MSME in the food and beverage sector.
Design/methodology/approach: Data was collected from 178 food and beverage MSME in Indonesia using a self-administered questionnaire. MSME is QRIS's users and is based in DKI Jakarta, West Java, East Java and Central Java. This study used the TOE (Technology, Organization, Environment) framework and used Structural Equation Modelling (SEM) to assess the hypotheses.
Findings: The finding reveals that adoption of QRIS was determined by knowledge, organisational readiness, competitive pressure, and third-party support. The top management support has an insignificant impact on QRIS adoption. Furthermore, this study shows that QRIS adoption has a significant influence on the performance of MSMEs.
Research limitations/implications: The results of this study contribute to existing research on the effect of the organisational and environmental factors on QRIS technology adoption and its impact on MSME performance.
Practical implications: The regulator (Bank Indonesia) should continue developing training activities and providing assistance to food and beverage MSMEs using QRIS technology. Bank Indonesia must work together with Payment System Provider (PSP) and other institutions to assist.
Originality/value: This study specifically explores the adoption of QRIS on the food and beverage MSME's performance. Previous studies only focused more on analysing the effect of the QR Code on purchasing power and consumer satisfaction.

Keywords: adoption of QRIS; food and beverage MSME; organisational; environmental; MSME performance

1. Introduction

Micro, Small and Medium Enterprises (MSMEs) play an essential role at the local and national levels of a country's economy (Kacani and Myslimi, 2016). MSMEs can create jobs, decrease poverty, and promote regional prosperity (Ruchkina et al., 2017). In Indonesia, MSMEs contribute to Indonesia's economy, accounting for 57.14 per cent of the country's GDP. MSME also employ 96 per cent of Indonesia's overall workforce (MSME Statistics, 2019). However, MSMEs are currently in a highly competitive environment, which may stifle their growth and, as a result, reduce their economic contribution (Klein and Knight, 2005). In today's competitive environment, the ability of MSMEs, especially in developing nations like Indonesia, to learned to adapt with technology has a substansial influence on their competitiveness (Kiminami and Najib, 2011). As a result, understanding SMEs' adoption process and behaviour in Indonesia about new technologies are critical. Along with the advancement of digital technology, many companies have utilised it to boost their competitiveness. Individuals and enterprises are already making utilization digital technologies. They communicate with their stakeholders, as an example buyers and suppliers, through digital technologies. They have just employed digital technology in their payment systems (Turban et al., 2015; Kerviler et al., 2016).

In Indonesia, the digital payment system is rapidly expanding due to higher public acceptance and interest for online transactions (Monetary Policy Review, 2021; Mehrotra et al., 2015). Expansion of e-commerce transactions helps the growing trend in the digital environment (JP Morgan Global Payment Trends, 2019). Non-cash payments for e-commerce transactions have also grown, reaching IDR 548 million in Quarters 1 – 2021 (Monetary Policy Review, 2021). The Covid-19 situation has accelerated the implementation of digital transformation (De' et al., 2020). One of the urgent needs is to use digital/touchless payment technology to reduce contact during transactions (Gardner, 2020; Samantha, 2020; World Health Organization, 2020). During the Covid-19 pandemic, the public's behaviour in completing non-cash payment transactions shifted, forcing business participants, particularly MSME, to go digital (Bhandari, 2020; Economy SEA Report, 2020). Due to Covid-19, one in three (36 per cent) of all digital service consumers in Southeast Asia are new to the service.

QR Code technology is one of the digital payment technologies that MSMEs are now using. To make an electronic payment with QR Code technology, you need a smartphone camera (Yue and Mingjun, 2006). Bank Indonesia provided QRIS to simplify payments and encourage MSME to become digital (Indonesia Payment Systems Blueprint, 2019). QRIS offers many benefits, including more efficient, quicker, and documented financial transactions. Payments using QRIS are more sterile (since no physical touch is required), which is helpful, especially during the Covid-19 outbreak (QRIS Socialization Material, 2019). Despite its numerous advantages, MSME in Indonesia has not entirely accepted QRIS, as seen by the low adoption level of 11.83 per cent as of June 2021 (QRIS Statistic, 2021). The issue is that being a new technological breakthrough, digital payment methods are not often readily accepted by MSME (Ifinedo, 2011), as opposed to large firms having the capacity to integrate digital technology into their corporate operations (Daniel and Grimshaw, 2002). Limited access to digital technology (Najib and Fahma, 2020), restricted knowledge and human resource ability (Irjayanti and Azis, 2012), doubts concerning safety and inability in using technology (Raharja et al., 2019) are all factors contributing to low adoption of digital payments by MSME.

The study theoretically combines several studies on the TOE framework impact on digital payment technology. Previous study have also discussed the impact of organisational and

environmental factors in terms of technology advancement (Zhang et al., 2020). In terms of the theoretical contribution of digital payment technology adoption, its impact on MSME performance is also critical (Kwabena et al., 2021; Erusalkina et al., 2019). Numerous studies have been conducted on digital payment technology adoption in many countries. The previous study in Kenya, Zimbabwe, Tanzania, Ghana, Pakistan, and China looked at the aspects that impact the acceptance of new technology in the form of digital payments, mobile payments, social media and e-commerce, and their impact on MSME performance. However, the aspects that impact QR Code adoption, particularly QRIS, and their impact on MSME performance have not been discovered.

According to the Economy SEA Report (2020), in Indonesia, 37 per cent of total service consumers, there are a growing number of digital consumers. From this number, 93 per cent of new digital service users plan to keep using the service when the pandemic is over. Most of the consumers quickly shifted to food delivery services and considered these services the most beneficial internet services during pandemic (Economy SEA Report, 2020). As seen by the performance throughout the pandemic, the food and beverage sector has proven to be resilient. It is shown that this sector is the most significant contributor to the non-oil and gas industry sector, reaching 38.42 per cent in Quarter 2 – 2021 or contributing 6.66 per cent of GDP (Ministry of Industry and Trade, 2021). Therefore, there was a need for more research into QRIS adoption in food and beverage's MSME, and it is critical to address organisational and environmental aspects while using QRIS technology. As a result, the aim of the research is to examine the impact of QRIS adoption on MSME performance.

The rest of this study is divided into six parts. The second part focuses on detailed literature analysis and the TOE framework related to digital payment technology and MSME performance. The research framework and hypotheses development are covered in the third part. The fourth part consists of the methodology for research, which includes size of the sample and data collecting instruments. It is going to be fascinating to learn concerning the research's analysis and key results in the fifth part. The last part concludes with the study's findings and limitations.

2. Literature Review

2.1. MSME Performance

MSME performance can be classified into operational, financial, and environmental performance (Negrao et al., 2016; Masakure et al., 2009; Pierre and Delisle, 2006). Another research was conducted by Jacks et al. (2011) stated that organisational performance could be defined using three variables, namely and intangible advantages (service performance), efficiency (operational performance), profitability (financial performance). The results of an MSME's business operations are referred to as MSME performance, which can be measured from several indicators, one of which is the MSME growth indicator (Kotane and Kuzimina, 2017). Shepherd and Wiklund (2009) identified five measures of MSME growth, namely sales growth, employees, profits, assets and capital.

2.2. QRIS (QR Code Indonesian Standard)

QRIS is a standardised digital payment technology that utilises a smartphone application based on Bank Indonesia's QR Code (Indonesia Payment Systems Blueprint, 2019). Bank Indonesia and the Indonesian Payment System Association created QRIS following the international

standard Europe MasterCard Visa Co. (Indonesia Payment Systems Blueprint, 2019). Interconnection and interoperability across providers, instruments, and countries are the goals of this standard. The QR Code transaction becomes more accessible, faster, secure, and efficient because of QRIS technology (QRIS Socialization Material, 2019). MSMEs will benefit from QRIS adoption in the following ways: (1) faster transaction process, (2) lower fees, (3) recorded transactions, (4) construct credit histories, (5) clean and safe transactions, and (6) reduction in risk of fraud (QRIS Socialization Material, 2019; Indonesia Payment Systems Blueprint, 2019).

2.3. Organisational and Environmental Factors

Organisational factors include the company's internal characteristics, including company size, organisational structure, organisational culture, management level, resources, and other related features. There are other characteristics in organisational factors, namely entrepreneurial orientation, competence or knowledge of technology. Attitude towards entrepreneurship is a valuable asset for an organization (Colton et al., 2010). The techniques, procedures, and decision-making that managers employ to perform entrepreneurially are referred to as entrepreneurial orientation. Environmental factors relate to the organisational environment related to stakeholders, namely customers, government, rivals and suppliers. These factors include industry structure and size, regulations, rivals as well as the macroeconomic environment (Tornatzky et al., 1990). According to Yoon (2009), there is connection between the market pressures that companies need to consider with technology adoption.

## 2.4. Theoretical Background and Framework

The expanded TAM (Technologies Acceptance Model) method is used in this study to build on existing theories that describe human behaviour in accepting and utilising a new technology. TAM theory is an extension of Reasoned Action Theory/TRA (Davis, 1989). This approach is frequently applied to identify individual attitudes toward technology utilization. The TOE (Technology, Organization and Environment) framework is an extension of the TAM model that incorporates technological elements and organisational and environmental factors to identify the influencing aspects on the acceptance of various technologies (Tornatzky et al., 1990). The TOE framework has also been utilized in number of studies on technology acceptance and invention. Adoption of web 2.0, electronic data interchange (EDI), e-markets, and enterprise resource planning (ERP) are only a few examples (Saldanha and Krishnan, 2012; Kuan and Chau, 2001; Duan et al., 2012; Ramdani et al., 2013). The TOE framework, according to Ali and Khan (2018), Zumanu (2019), has a strong enough theoretical foundation and empirical investigations to be applied in determining new technology adoption by MSME. Kwabena et al. (2021), Erusalkina et al. (2019), and Cao et al. (2018) examined the aspect that influence the digital payment technology utilization by MSME.

There are three TOE framework's components: technology, organisation, and environment. Technologies that are critical to the company, both external and internal are referred to as technological considerations. The perceived attributes of the implemented technology are referred to as technological factors. The internal features of a company, such as business size, management structure, organisation culture, top management, resources and other relevant features, are included in the organisational factors. Meanwhile, customers, the government, rivals and suppliers are some of the stakeholders who are exposed to environmental aspects in the business. The structure and scale of the industry, regulations, rivals and the macroeconomic condition are all aspects to consider (Tornatzky et al., 1990).

Several prior research looked at the factors that impact MSME's technology adoption. Kwabena et al. (2021) performed an analysis in Ghana to identify the impact of technological, organisational and environmental aspects on mobile payment usage and the performance of MSME. Technological, organisational and environmental elements have a substantial impact on the adoption of mobile payments, according to the research of 145 MSMEs. The utilization of mobile payments has a substantial impact on MSME performance. Meanwhile, a similar study was also conducted by Cao (2021) and Erusalkina et al. (2019), who identified that the TOE factor influences the intention of MSME to use mobile payment. Research that identifies the driving factors for the use of technology using the TOE framework was also conducted by Qalati et al., (2021). A study conducted on 423 MSMEs in Pakistan showed that TOE factors positively and significantly affected social media adoption and MSME performance. Technological aspects (relative advantage, cost-effectiveness, compatibility, interactive, visibility), organisational aspects (top management support, entrepreneurial orientation) and environmental aspects (competition).

The research framework was made based on previous studies. Several previous studies have stated that technological, organisational and environmental aspects significantly influence the desire of MSMEs to use digital payment technology (Kwabena et al., 2021; Cao, 2021; Erusalkina et al., 2019; Igudia, 2016). Furthermore, this research framework is combined with several other studies that examine the effect of using non-card digital payment technology on the performance of MSMEs. Talom and Tengeh (2019), Erusalkina et al. (2019), and Masocha and Dzomonda (2018) found that the utilization of digital payment technology has a beneficial impact on the performance of MSMEs. The theoretical foundation of the study focuses on knowledge, top management support, and organisational readiness as an organisational context. Likewise, competitive pressure, and third-party support (vendor and regulator) as environmental context are also important (Figure 1).

Figure 1. Theoretical Framework
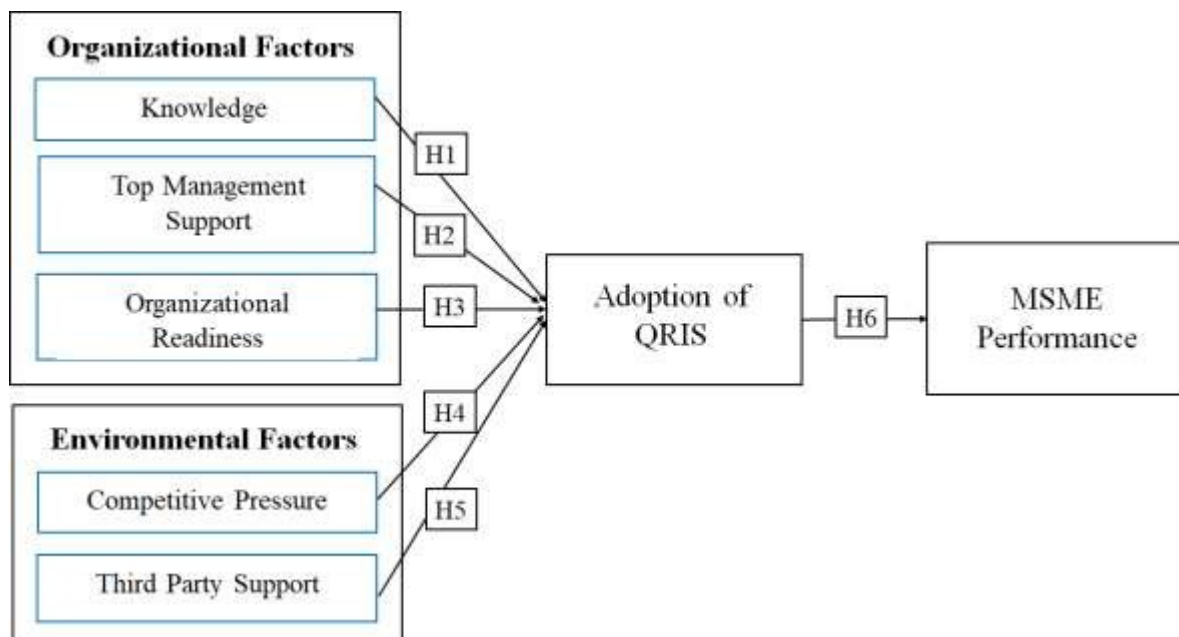
3. Hypothesis Development

3.1. Knowledge and Adoption of QRIS

According to research by Masocha and Dzomonda (2018), the level of adoption of a technology depends on the knowledge possessed by users. Lack of knowledge and education is a severe obstacle in adopting mobile money (Iliasov, 2014). According to Cao (2021), business factors, one of which is knowledge, impact the intention of MSMEs to make payments through mobile payments. The following hypothesis can be developed:

H1: Knowledge has a positive and significant effect on the adoption of QRIS

3.2. Top Management Support and Adoption of QRIS

Several studies have emphasis on the top management (Ahmad et al., 2019; Ali and Khan, 2018; Tajudeen et al., 2018) as agents who can change an organisation's standards, values , and culture of an organisation. Top management can provide a favourable environment that allows technology utilization to be carried out and benefits the company (Olanrewaju et al., 2020). Research conducted by Kwabena et al. (2021), Erusalkina et al. (2019), Taheer et al. (2018), Otieno and Kahonge (2014) sees that top management support influence the use of digital payment technology by MSMEs. The discussion formulates the below hypotheses:

H2: Top management support has a positive and significant effect on the adoption of QRIS

3.3. Organisational Readiness and Adoption of QRIS

Organisational readiness will have an impact on the intention of MSMEs to use mobile payments (Cao, 2021; Otieno and Kahonge, 2014). Work culture regarding digital technology (Taheer et al., 2018) and technical readiness in using a technology affect the desire to adopt digital technology (Otieno and Kahonge, 2014; Yoon, 2009). The previous study generates the following hypotheses:

H3: Organisational readiness has a positive and significant effect on the adoption of QRIS

3.4. Competitive Pressure and Adoption of QRIS

Competitive pressure refers to the pressure faced by competitors in the same business (Zhu and Kraemer, 2005). Competitive pressure refers to how competitors influence a company in the market (Chau et al., 2020). Previous study has demonstrated that when a company recognizes that technology adoption leads to a competitive advantage and, ultimately, firm performance, competitive pressure drives technology adoption (Soto-Acosta et al., 2016; Grandon, 2004). This feature is regarded as one of the most important aspects affecting MSMEs' technology adoption (Olanrewaju et al., 2020). According to Kwabena et al. (2021) and Erusalkina et al. (2019), competition and social influence affect the use of digital payment technology by MSMEs. Igudia (2016) states that pressure from trading partners, suppliers, and rivals affects the adoption and usage of digital payment technologies by MSME. The following hypotheses were proposed as a result of the preceding discussion:

H4: Competitive pressure has a positive and significant effect on the adoption of QRIS

3.5. Third-Party Support and Adoption of QRIS

Third-party support in this study consists of the regulator (Bank Indonesia) and Payment System Provider (PSP). According to the literature, government policies and a lack of innovation implementation have the most significant impact on SMEs (Lee et al., 2019; Humphreys et al., 2005). Users of digital payment technology like mobile payment have been able to register and conduct transactions with confidence because of authorities' protection. Related parties like technology vendors also played an essential role in reinforcing the trust of technology (Talom and Tengeh, 2020). According to Cao (2021) and Igudia (2016), the support of related parties and regulators or the government in using mobile money affects MSMEs utilising this technology. As a consequence, the following hypotheses have been proposed based on the above reasoning:

H5: Third-party support has a positive and significant effect on the adoption of QRIS

3.6. Adoption of QRIS and MSME Performance

A company's value can be increased through technological innovation (Yun et al., 2020). QRIS is projected to increase MSMEs' performance as a non-card digital payment technology innovation to shorten the payment transaction procedure. According to research conducted by Kwabena et al. (2021); Talom and Tengeh (2020), MSMEs' performance is significantly impacted by mobile payment technologies. This research focuses on MSMEs' financial performance, which is measured by growth in transaction volume, sales, and profits, and also a decrease in costs such as technology expenses and cash management expenses (Cao et al., 2018; Erusalkina et al., 2019; Tajudeen et al., 2018; Talom and Tengeh, 2019). Based on several previous research results and considering that QRIS is one of the digital payment technologies, the following hypotheses can be proposed:

H6: Adoption of QRIS have a positive and significant effect on the MSME performance

4. Methods

4.1. Measurement Items

The current study employed a two-part closed-ended questionnaire providing demographic information about respondents and their enterprises in section one and questions regarding constructs considered in the present study in section two. Exogenous variables (knowledge, top management support, organizational readiness) and intervening variables (adoption of QRIS) were assessed using a 5-point Likert scale with response options of 1 ("strongly disagree"), 2 ("disagree"), 3 ("neutral"), 4 ("agree"), and 5 ("strongly agree") ("strongly agree").

Instead of using objective measures, the endogenous variable measurement scale (MSMEs performance) proposed in this study employs statements to assess perceptions. Respondents' judgments of MSMEs' performance improvement (sales, number of transactions, profits, and expenses) after using QRIS technology are defined by the study's question items. Due to the difficulties in evaluating MSMEs' financial information, the perception evaluation technique is used (Taheer et al., 2018). As indicated in Table 2, the statement items were adapted from numerous research on technology adoption and tailored to the features of QRIS technology adoption.

Table 2. Measurement Items

Constructs	Measurement Items	Reference
Knowledge	OF1, OF2, OF3, OF4	Anggadwita and Mustafid, 2014; Hanggraeni and Sinamo, 2021; Herlinawati et al., 2019; Kwabena et al., 2021
Top Management Support	OF5, OF6, OF7	Anggadwita and Mustafid, 2014; Taheer et al., 2018; Qalati et al., 2021
Organizational Readiness	OF8, OF9	Najib and Fahma, 2020; Otieno and Kahonge, 2014
Competitive Pressure	EF1, EF2, EF3, EF4, EF5, EF6, EF7, EF8	Cao et al., 2018; Igudia, 2016; Hanggraeni, 2010; Taheer et al., 2018
Third-Party Support	EF10, EF11, EF12, EF13	Cao, 2021; Hadi Putra and Santoso, 2020; Talom and Tengeh, 2020, Hussain et al., 2020; Igudia, 2016; Tambunan, 2019
Adoption of QRIS (QRIS)	QRIS1, QRIS2, QRIS3, QRIS4, QRIS5	QRIS Socialization Material, 2019; Putra and Santoso et al., 2020
MSMEs Performance (PER)	PER1, PER2, PER3, PER4	Ainin et al., 2015; Cao et al., 2018; Putra and Santoso, 2020; Hussain et al., 2020; Kiyabo and Isaga, 2020; Kwabena et al., 2021; Odoom et al., 2017; Tajudeen et al., 2018

4.2. Data Collection

Quantitative data were collected using a study of 178 MSME in Indonesia. The following criteria were used to choose the respondents: (1) MSME in food and beverages business, (2) MSMEs in the Provinces of West Java, East Java, Central Java, and DKI Jakarta that have QRIS. The four areas chosen in the research sample category relate to the study population, with MSMEs utilising QRIS from the four provinces (West Java, East Java, Central Java, and DKI Jakarta) accounting for 60% of the overall number of MSMEs using QRIS in Indonesia. MSMEs are classified according to the number of employees and sales turnover per year, as shown in Table 1. Furthermore, the sample size was determined using a common rule of thumb for SEM analysis (Hair et al., 2017). As a result, the sample size should be at least 100 people.

4.3. Data Analysis

Structural Equation Modeling-Partial Least Squares (SEM-PLS) will be used to examine the hypotheses of the suggested model in this study. The SEM-PLS is used in this study because it is the most suitable analysis tool for testing hypotheses. This study focuses on examining the determinant factors among the variables (Hair et al., 2017). The PLS model primarily consists of structural and measurement models. The structural model is examined using internal

reliability and validity measures. After analyzing the structural model, the PLS approach employs t-testing and path values to validate hypotheses. (Hair et al., 2017; Sinkovics et al., 2016).

5. Findings

5.1. Respondent and MSME Profile

Table 3 shows the demographic characteristics of the respondents and businesses. The respondents ranged in age from 25 to more than 41 years old. The respondents aged more than 41 years old had the most responses (43.26 per cent), followed by the group of respondents aged 36 – 40 years old (29.21 per cent). Those ages are seen to be the most responsive to technological change (Najib and Fahma, 2020). The majority of respondents are MSME owners (93.82 per cent). The respondents' education level was mainly seen at Diploma4/Bachelor's Degree (42.13 per cent), followed by junior/senior high school (33.71 per cent). In this case, educational attainment is most likely linked to attitudes toward digital technologies.

Table 3. Characteristics of Respondents

Demographic information	Frequency	Percentage
Respondent Profile		
Age		
• 25 – 30 years old	25	14.04%
• 31 – 35 years old	24	13.48%
• 36 – 40 years old	52	29.21%
• More than 41 years old	77	43.26%
Job position		
• MSMEs owner	167	93.82%
• Management level	11	6.18%
Education		
• Junior/senior high school	60	33.71%
• Diploma 1/2/3 (D1/D2/D3)	30	16.85%
• Diploma 4/Bachelor's Degree	75	42.13%
• Master/Doctoral degree	13	7.30%

Table 4. MSME Profile of Respondents

MSME Profile	Frequency	Percentage
Location		
• West Java Province	47	26.40%
• DKI Jakarta Province	45	25.28%
• East Java Province	46	25.84%
• Central Java Province	40	22.47%
Years in business		
• < 3 years	43	24.16%
• 3 – 5 years	69	38.76%
• 5 – 10 years	49	27.53%
• > 10 years	17	9.55%
Number of employees		
• 1 – 4 person	100	56.18%

• 5 – 19 person	75	42.13%
• 20 – 99 person	3	1.69%
Total asset		
• IDR < 50 million	100	56.18%
• IDR 50 – 500 million	67	37.64%
• IDR > 500 million	11	6.18%
Sales turnover		
• IDR < 300 million	143	80.34%
• IDR 300 million – 2.5 billion	34	19.10%
• IDR 2.5 – 50 billion	1	0.56%
MSME category		
• Microenterprise	143	80.34%
• Small enterprise	34	19.10%
• Medium enterprise	1	0.56%
MSME and QRIS		
Source of information for QRIS		
• Bank Indonesia	78	43.82%
• Banks	29	16.29%
• Payment Service Providers (e.g. Gopay, OVO)	18	10.11%
• Internet, social media	27	15.17%
• Exhibition	16	8.99%
• MSMEs community	10	5.62%
QRIS adoption		
• < 3 months	23	12.92%
• 3 – 6 months	30	16.85%
• 6 – 12 months	63	35.39%
• > 1 year	62	34.83%

The MSME profile of respondents can be seen in Table 4. The MSMEs are distributed equally throughout four provinces (West Java, DKI Jakarta, East Java, Central Java). According to the statistics, 38.76 per cent of respondents have been in business for 3-5 years, and 27.53 per cent have been in business for 5 – 10 years. It may be concluded that they have considerable business experience and that their activities are sustainable. Furthermore, 56.18 per cent of respondents had between 1 – 4 employees, and 42.13 per cent had 5 – 19 employees. Most respondents said their sales turnover per year was less than IDR 300 million (80.34 per cent). Based on the statistic and under Law No. 20 of 2008, the respondents were dominated by micro category (80.34 per cent), followed by small category (19.10 per cent).

Regarding the adoption of QRIS, most respondents (34.83 per cent) have been using QRIS for more than a year and 6 – 12 months (35.39 per cent). Considering that QRIS was just launched in early 2020, this indicates that respondents had been using it for an extended period. Most respondents (43.82 per cent) admitted that they obtained information about QRIS from regulators (Bank Indonesia), banking (16.29 per cent) and internet/social media (15.11 per cent).

5.2. Measurement Model

We used the Variance Inflation Factor (VIF) to test multicollinearity before analysing the measurement and structural models. In regression analysis, this method is used to find

multicollinearity (Li et al., 2020). As illustrated in Table 5, this study is free of multicollinearity, as shown by an inner VIF value of less than 5 (Basri and Siam, 2019). To test the outer model, the validity and reliability of the instrument were examined. According to the results of the examination, all indicators had a loading factor value of higher than 0.6 (Ghozali and Latan, 2015). The result indicates that no indicators are discarded because all indicators are accounted for precisely representing each of these observed variables. The measurement instrument's reliability was assessed using composite reliability (CR), average variance extracted (AVE), and Cronbach's Alpha (Hair et al., 2017; Sinkovics et al., 2016). The results indicated that all observed variables have AVE's value of more than 0.5, indicating convergent validity. Furthermore, Cronbach's Alpha and CR estimations were greater than 0.7, showing reliability (Table 5).

Table 5. Reliability and Validity Results

Construct	Items	Loadings	CA	CR	AVE	Inner VIF
Knowledge	OR1, OR2, OR3, OR4	0.714 to 0.879	0.827	0.886	0.662	2.315
Top Management Support	OR5, OR6, OR7	0.832 to 0.930	0.859	0.915	0.781	2.095
Organizational Readiness	OR9	1.000	1.000	1.000	1.000	1.559
Competitive Pressure	EF3, EF4, EF5, EF6, EF7, EF8	0.613 to 0.804	0.830	0.876	0.543	2.122
Third Party Support	EF10, EF11, EF12, EF13	0.617 to 0.864	0.761	0.850	0.591	1.818
Adoption of QRIS	QRIS1, QRIS3, QRIS4, QRIS5	0.605 to 0.812	0.729	0.833	0.557	1.001
MSMEs Performance	PER1, PER2, PER3, PER4	0.822 to 0.934	0.918	0.943	0.805	

Furthermore, discriminant validity is defined by the HTMT values using the constructs given by (Kline, 2015; Gold et al., 2001), which include the two typically used parameters with the cutoff points 0.85 and 0.90. Table 6 shows values that are fewer than the threshold values.

Table 6. Heterotrait-monotrait ratio of correlations (HTMT)

	TPS	TMS	PER	OR	QRIS	KW	CP
Third Party Support							
Top Management Support	0.656						
MSME Performance	0.563	0.569					
Organizational Readiness	0.442	0.535	0.408				
Adoption of QRIS	0.796	0.719	0.705	0.657			
Knowledge	0.571	0.795	0.593	0.616	0.822		
Competitive Pressure	0.786	0.647	0.753	0.503	0.834	0.727	

Notes: TPS = Third Party Support, TMS = Top Management Support, PER = MSME Performance, OR = Organizational Readiness, QRIS = Adoption of QRIS, KW = Knowledge, CP = Competitive Pressure

5.3. Structure Model

After assessing the measurement model, the structural model assessment was the next step. The study's structural model is shown in Figure 2 below. By assessing path coefficients and t-values of direct and indirect relationships, the structural model should be used to examine the linear regression impacts of the variables (Hair et al., 2019).
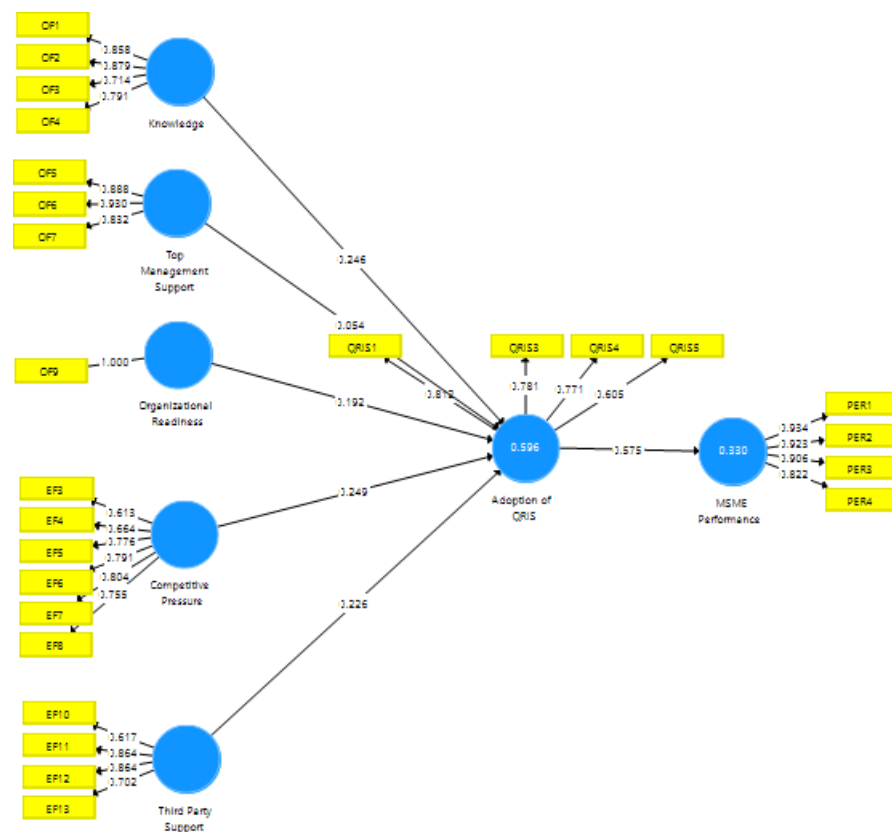

Figure 2. Assessment of Structure Model

Furthermore, to determine if the model's hypotheses is accepted or rejected, the T-statistic significance value was calculated using bootstrapping technique with a re-sample value of 5,000 (Hair et al., 2017). With a one-tailed test and a significance level of 5 percent, the limit to reject and accept the hypotheses is 1.96. The hypotheses is accepted if the T-statistic value is greater than 1.96, indicating that the variables examined had a significant effect. As a result, the current study supported five of the six relationship hypotheses (Table 7). The first hypothesis is supported, i.e. the impact from knowledge (KW) to adoption of QRIS is positively significant (path coefficient = 0.246; T-value = 2.303 > 1.96; P-value = 0.021 < 0.05). Likewise, the results revealed that the second hypothesis, which is top management support (TMS) has not negatively significant (path coefficient = 0.054; T-value = 0.556 < 1.96; P-value = 0.578 > 0.05). Third relationship, i.e. organization readiness (OR) has a significant positive effect on the adoption of QRIS (path coefficient = 0.192; T-value = 2.993 > 1.96; P-value = 0.003 < 0.05). Furthermore, there is a positive significant relationship between competitive pressure and adoption of QRIS (path coefficient = 0.249; T-value = 2,967 > 1.96; P-value = 0.003 < 0.05), and between third party support (TPS) and adoption of QRIS (path coefficient

= 0.226; T-value = 3,216 > 1.96; P-value = 0.001 < 0.05). Thus, hypotheses H4 and H5 are accepted. Finally, the effect of adoption of QRIS in MSME performance (path coefficient = 0.575; T-value = 9,121 > 1.96; P-value = 0.000 < 0.05). As a result, hypotheses H6 has been accepted.

Table 7. Hypotheses Testing Results

Hypotheses	Relationship	Path Coefficient	SD	t-Value	p-Value	f^2	Decision
H1	KW → QRIS	0.246	0.107	2.303	0.021	0.065	Supported
H2	TMS → QRIS	0.054	0.097	0.556	0.578	0.003	Not Supported
H3	OR → QRIS	0.192	0.064	2.993	0.003	0.059	Supported
H4	CP → QRIS	0.249	0.084	2.967	0.003	0.073	Supported
H5	TPS → QRIS	0.226	0.070	3.216	0.001	0.069	Supported
H6	QRIS → PER	0.575	0.063	9.121	0.000	0.493	Supported

Notes: TPS = Third Party Support, TMS = Top Management Support, OR = Organizational Readiness, QRIS = Adoption of QRIS, KW = Knowledge, CP = Competitive Pressure, PER = MSME Performance

Table 8. Structural Model

Variables	Coefficient of Determination (R^2)	
	R^2	Adj. R^2
QRIS Adoption	0.596	0.585
MSMEs Performance	0.330	0.326

The coefficient of determination (R^2) indicates the variability in the endogenous variable driven by all exogenous variables. According to Hair et al. (2017), the R^2 value of 0.25, 0.50, 0.75 indicates a weak, moderate and substantial model. Based on the calculation of the coefficient of determination (R2), it can be seen that the adoption of QRIS has an R^2 value of 0.596 (Table 8). It can be concluded that the adoption of QRIS has a moderate influence on the structural model. R^2 value shows that 59.6 per cent of the variation of the adoption of QRIS variable occurs due to the influence of knowledge, organisational readiness, competitive pressure, and third party support. The second endogenous variable, namely MSME performance, has an R^2 value of 0.330 (Table 8). This value indicates that the MSME performance has a weak influence on the structural model and 33.0 per cent of the variation in this variable occurs due to the influence of the adoption of QRIS. Following R^2, the study examined effect size (f^2) to determine how big the effect is for each path model. The threshold values for measuring the effect size of a certain model range from 0.02, 0.15 and 0.35 for no, medium, and high effect sizes (Cohen, 1988). This study found that the examined model had no, medium and high effect size. Furthermore, exogenous variables have predictive relevance for the model's endogenous variables if the acceptance level of predictive relevance (Q^2) is greater than zero (Hair et al., 2017). As a result, both $Q^2 = 0.313$ and $Q^2 = 0.261$ values in Table 8 are more than zero. Therefore, the current study model is predictive relevance.

6. Discussion and Conclusion

The study examined how the adoption of QRIS influences the performance of MSME. The two factors of the TOE framework were effectively implemented. Two parts of the TOE framework, namely the organizational and environmental context, are crucial to technology adoption, according to the study. The statistical analysis was conducted using PLS-SEM to test the theories. This study revealed that five hypotheses out of six had a significant effect on the adoption of QRIS and MSME performance. According to the results, MSME may benefit from technology adoption by using QRIS.

The findings specify that knowledge (KW) and organisational readiness (OR) as organisational context is playing a crucial role in the utilization of QRIS in food and beverage MSME in Indonesia. These findings are consistent with the previous studies by Cao (2021), Taheer et al. (2018), Masocha and Dzomonda (2018), Otieno and Kahonge (2014). According to Masocha and Dzomonda (2018), a user's knowledge determines the Degree of technology adoption. Business variables, including knowledge, affect MSME's willingness to adopt mobile payments (Cao, 2021). Further, the findings of Cao (2021) and Otieno and Kahonge (2014) also show that MSME's intention to adopt mobile payments is influenced by organisational readiness. Work culture regarding digital technology (Taheer et al., 2018) and technical readiness (Otieno and Kahonge, 2014; Yoon, 2009) affect MSME to adopt digital technology.

The present study's findings imply that competitive pressure (TP) and third-party support (TPS) as environment context has a positive and significant effect on the adoption of QRIS. The results of the study were consistent with the study by Kwabena et al. (2021), Chau et al. (2020), Erusalkina et al. (2019), who proved the effect of competitive pressure on the adoption of mobile payment. The results are also consistent with the study by Ahmad et al. (2019), which states that competitive stress significantly affects social media adoption. Furthermore, third party support, such as from technology providers to support the usage of technology, according to Putra and Santoso (2021), has a significant effect on technology adoption. Cao (2021) also found that support from related parties, including the government, technology providers, and banks, significantly influenced mobile payment adoption.

Moreover, the current study's findings imply no support for the influence of top management support (TMS) on the QRIS adoption. This result contradicts the findings of most prior research, which claim that top management support is a crucial factor in technology adoption (Kwabena et al., 2021; Erusalkina et al., 2019; Ahmad et al., 2019; Otieno and Kahonge, 2014). However, the findings align with Tajudeen et al. (2018) and Wang et al. (2010), who discovered that top management support is not a significant determinant in technology adoption.

Most importantly, this research also discovered that using QRIS has a significant effect on MSME performance in improving transaction volume, sales, profitability, and lowering operational expenses. The result is consistent with a prior study conducted by Kwabena et al. (2021) and Erusalkina et al. (2019) on mobile payment technology adoption. The result is also in line with prior research that has revealed a positive relationship between social media and MSME performance (Qalati et al., 2021; Wenyuan Li et al., 2021; Hussain et al., 2020; Tajudeen et al., 2018). For MSME, QRIS technology provides many advantages, including fast and secure and documented transactions, cost reduction, increased customer base, and sterile transactions.

Theoretical Implications

The results of this study contribute to existing research on the effect of the organisational and environmental factors on the adoption of digital payment technology, especially in the context of QRIS adoption. In addition, this study explicitly explores the adoption of QRIS on the food and beverage MSME's performance. Previous studies focused more on analysing the effect of the QR Code on purchasing power and consumer satisfaction. Previous studies have examined organisational and environmental factors in the context of social media (Hussain et al., 2020). Furthermore, previous research also investigates the TOE framework that influences technology adoption by MSMEs, both digital payments, mobile payments, e-commerce, social media, cloud computing and others (Chau et al., 2020; Tajudeen et al., 2018; Qalati et al., 2021; Kwabena et al., 2021; Cao et al., 2018). Therefore, this study developed the determinants of QRIS adoption in terms of organisational (knowledge, top management support, organisational readiness) and environment context (competitive pressure, third party support). The study also clearly defines the effects of QRIS adoption on MSME performance in terms of sales growth and cost reductions.

Practical and Social Implications

This study provides recommendations for regulators and related parties to enhance the acceptance of digital payment technologies by MSME. Based on the findings, the regulator (Bank Indonesia) should continue developing training activities and providing assistance to food and beverage MSMEs using QRIS technology. Training and assistance are provided based on the cluster, for example, MSME producing snacks, coffee, beverages, and restaurants. Based on the results of the study indicate that the influence of competitors encourages MSME to adopt QRIS. Bank Indonesia must work together with Payment System Provider (PSP) and other institutions to assist. Food and beverage MSME is one of the industries that can continue to grow during the Covid-19. MSMEs that successfully encourage the other MSME to adopt QRIS may be eligible for incentives or rewards from the regulator. The findings of this study will provide information for MSME regarding the importance of QRIS in accelerating transactions and reducing cash handling costs to improve MSME performance. As a result, MSME should be more responsive to digital payment technologies.

Limitations and Suggestions for Future Research

Only a few parameters were included in the study to analyze QRIS adoption and its impact on MSME performance. This research only uses five aspects that constitute two variables (organisation and environment). This study examined five criteria for knowledge, top management support, organisational readiness, competitive pressure, and third party support. Future studies should add other factors, such as technology infrastructure, customer literacy, MSME size and scope. Furthermore, this research focuses on the impact of QRIS adoption on the financial performance of MSME. Further study might look into the impact of QRIS adoption on MSME performance in a broader perspective.

Because of the limited literature from prior research, this study does not show the impact of QRIS adoption as a mediator of the indirect interaction between organisational, environmental factors and MSME performance. Further analysis can be developed research model by examining the function of QRIS adoption as a mediator.

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