

Research Article

Albert Setiadinata Saoiyago^{1*}, Dwi Arini Widyastuti Siswanto Putri², Chrisanty Victoria Layman³**QRIS Adoption, Business Performance, and Continuance Intention to Use among Culinary Sector MSMEs**Corresponding Author: **Albert Setiadinata Saoiyago**: Bina Nusantara University, Indonesia; albert.saoiyago@binus.ac.id**Dwi Arini Widyastuti Siswanto Putri**: Bina Nusantara University, Indonesia; dwi.putri@binus.ac.id**Chrisanty Victoria Layman**: Bina Nusantara University, Indonesia; chirsanty.Layman@binus.edu**Received:** Sept 13, 2026; **Accepted:** Sept 21, 2026; **Online:** Sept 30, 2026 | DOI: <https://doi.org/10.47353/ijema.v3i11.420>

Abstract: *This study examines the factors influencing the continuance intention to use the Quick Response Code Indonesian Standard (QRIS) among culinary Micro, Small, and Medium Enterprises (MSMEs) in the Greater Jakarta area. The study integrates the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2), the Expectation-Confirmation Model (ECM), and Network Externalities to explain post-adoption behavior toward digital payment technology. A quantitative research design was employed using a questionnaire with a five-point Likert scale. Data were collected from 334 culinary MSME owners or managers, of which 287 valid responses were analyzed using Structural Equation Modeling–Partial Least Squares (SEM-PLS). The results indicate that Performance Expectancy, Effort Expectancy, Facilitating Conditions, and Network Externalities have positive and significant effects on Satisfaction, with path coefficients of 0.3098, 0.1983, 0.1472, and 0.2257, respectively. Satisfaction has a positive and significant effect on Continuance Intention ($\beta = 0.3693$), while Habit ($\beta = 0.1930$) and Business Performance ($\beta = 0.2728$) also significantly influence Continuance Intention. These findings demonstrate that continued QRIS usage among culinary MSMEs is shaped by technological benefits, ease of use, supporting infrastructure, network effects, user satisfaction, habitual behavior, and perceived business performance. The study contributes to the literature by integrating UTAUT2 and ECM with Network Externalities and Business Performance to explain QRIS continuance behavior in the MSME context.*

Keywords: Continuance Intention; QRIS; Culinary MSMEs; UTAUT2; Expectation-Confirmation Model; Business Performance; Network Externalities.

Introduction

Along with the development of digital technology today, of course, it has provided many changes and innovations for life globally. It is no secret that developing countries with an increase in human population will have more changes that will have a real impact both in terms of finance, transportation, and others (Guntur Syahputra, 2021). Many developing countries have much more sophisticated innovations that have developed digital payment innovations, followed by other countries, one of which is Indonesia. Where this transformation is driven by advances in financial technology, such as cashless payments. Cashless payment itself is not a new thing, around the 1950s an entrepreneur named Frank McNamara has found another method of payment because the cash he has is left behind, it builds ideas or innovations so that payments can still be made without cash but using credit cards, this method was invented by Diners Club or in other words "The first Supper" (Indodax, 2024).

Departing from the progress of cash payments to non-cash, researchers realize that currently the world has made many changes in digital payment methods, one of which is the payment method through smartphones. In Indonesia itself, non-cash payments can be made through ATMs, mobile banking, internet banking, and then digital payments followed by QR Codes. The state financial management order in the industrial era 4.0 encourages business actors and consumers to be able to adapt to technological advances to meet added value in transactions to achieve economic growth and community welfare (Directorate

General of Treasury, 2022). Bank Indonesia has created the Quick Response Code Indonesian Standard (QRIS) as a payment QR code standard in Indonesia in order to make it easier for people to make non-cash transactions, both domestic and foreign, "QRIS Antar Negara" in accordance with the regulation of the board of governors number 24/1/PADG/2022 the change in the nominal value of QRIS transactions is limited to the most by 5,000,000 to 10,000,000 per transaction (Bank Indonesia, 2022). Bank Indonesia's policy is carried out to expand the implementation of QRIS and increase the adoption of digital wallets among the public (Rahmawati & Santoso, 2022). Bank Indonesia data (2024) shows that the value of digital transactions in Indonesia has increased by more than 25% annually in the last five years, signalling a significant shift towards a cashless society. The ease of digital transactions is also considered to be able to increase the number of purchases because customers are no longer limited by the cash they bring (Ghofur & Rachmawati, 2022).

Based on the researcher's experience, this has a great impact on business actors, especially MSMEs, because it requires direct contact with consumers in the payment process. Therefore, since the existence of Covid-19, non-cash payments have increased very rapidly, especially in the MSME sector. The general average of 44% of micro businesses is the food industry, where only 46.83% adopt the internet to help manage and innovate business, this is supported by an official report from the Coordinating Ministry for Economic Affairs of the Republic of Indonesia (2025) which states that MSMEs have a very important role in economic progress in Indonesia, almost 97% of the workforce and 64 million business units. The Indonesian Payment System Association, (2025) said that the report results of the statistics on the number of QRIS merchants (NMID) has currently reached 36 million by the end of 2024 with the most QRIS contributors, namely 87 from fintech and 52 from agencies that use cashless payments in Indonesia.

Technology dependence examines the dangers of technology dependency and vulnerability to technical disruptions that can undermine business continuity. The presence of QRIS increases the risk of technology dependency. Businesses that rely heavily on QRIS may become vulnerable to technical disruptions, system failures, or cyberattacks. This dependency may negatively impact business operations and corporate image. Business Model Changes Explains how the presence of QRIS can force companies to revise their business models, including adjusting pricing and marketing strategies and adapting to changing consumer payment preferences. This can be challenging for companies with established business models.

The background of this research includes the rapid development of non-cash payment technology in developing countries such as Indonesia which includes adaptation by business actors and consumers. Since the issuance of the new normal of the covid-19 cashless society, it has grown from year to year due to physical restrictions by MSME actors with merchants who have adopted around 46.83% for their business innovation. Director of the Consumer Protection Group of the Department of MSME Development and Consumer Protection of Bank Indonesia, Diana Yumanita said that the large number of customers who often do not buy because MSME actors do not use non-cash payments has become a phenomenon in Indonesia. This is what motivates MSME actors to adopt non-cash payments. The existence of psychological pressure for MSME actors in the decision to continue using non-cash payments by considering security, benefits, convenience, and support from external parties, including consumers who are used to making payments using non-cash is one of the steps that every MSME actor must have to adopt QRIS for the sustainability of their business.

This study fills the gap from previous research where most of the research examined the adoption of non-cash payments to consumers while for merchants or MSMEs, culinary in street vendors is still limited by combining the UTAUT2 and ECM theories as well as external factors on their impact on the business

performance of business owners. In addition, this study adds variables for the benefits of business performance and habits in adopting non-cash payments for the context of sustainability, adopting the use of non-cash for culinary MSMEs, especially street vendors.

The purpose of the study is to analyse the influence of PE and EE on the satisfaction of merchants in using non-cash payments with QRIS. Identifying the influence of organizational factors i.e. FC and NE on satisfaction using QRIS and knowing the extent of satisfaction, habits, and business performance can drive merchant sustainability intentions in adopting cashless payments with QRIS. The benefits of this study contribute to the information system literature by proving the power of the UTAUT2 and ECM integrated models in explaining the phenomenon of post-technology adoption behaviour in the informal business sector. Providing an understanding for business actors on how the use of QRIS can improve operational efficiency, cash flow transparency, and overall business performance. Provide input for regulators (such as Bank Indonesia) and payment service providers in developing strategies to expand QRIS implementation by considering the factors of convenience, infrastructure support, and network value for merchants.

Literature Review

Indonesian Food MSMEs and Their Roles

Micro, Small, and Medium Enterprises (MSMEs) in Indonesia and their role are the first topics discussed in this section. In general, MSMEs are believed to have the capacity to increase domestic output, create jobs, facilitate company integration, generate exports, and support the production process of medium and large companies (Fadzil, S.M. & Rashid, M.F. 2022). The MSME sector in Indonesia includes trade, manufacturing, plantations, agriculture, livestock, fisheries, and services. Most MSMEs in Indonesia are household businesses that require many workers. In 2019, Indonesia had around 65.4 million MSMEs. This sector can absorb a workforce of up to 123.3 million people spread across around 65.4 million business units. This shows that MSMEs have a very significant impact and contribution in reducing the unemployment rate in Indonesia. Increasing labour participation in the MSME sector will contribute to reducing the national unemployment rate. Currently, MSMEs continue to experience growth with an increase in number every year. This positive trend provides benefits for the Indonesian economy. MSMEs contribute around 60.5% to the national gross domestic product (GDP). This shows the great potential of MSMEs in Indonesia to continue to grow and make a greater economic contribution (Ministry of Finance of the Republic of Indonesia, 2023).

Cashless Payment & Digitalization

Financial digitalization is a transformation in the financial sector that applies the digital ecosystem and technology. With financial digitalization, payment transactions can be carried out faster, more practically, and more securely. In the financial sector, some of the efforts in digital transformation include database management so that more optimal security is obtained, data access that can be obtained quickly, and the use of technology systems that can facilitate the payment service process. Financial digitalization can also increase the potential for inclusive and sustainable finance (Saputri, 2023). This system utilizes electronic means that are registered directly with the user's balance account such as debit cards, credit cards, QRIS, and e-wallets, so that transactions become much faster, more efficient, and safer from the risk of losing money and counterfeiting (Slade, Dwivedi, Piercy, & Williams, 2015).

The adoption of a cashless payment system makes a double contribution to MSMEs. Operationally, this system improves daily efficiency by providing accurate digital data (real-time data), which reduces

cash handling costs and minimizes recording errors, thereby improving the quality of internal accounting data (Lestari et al., 2020). Strategically, *cashless* is a driving factor for growth and sustainability because it facilitates financial inclusion. Electronic transactions generate reliable evidence, which is crucial for credit risk evaluation and provides MSMEs with easier access to official funding sources (Yang et al., 2021). According to Al Okaily et al. (2022), cashless payments are seen as a Digital Financial Services (DFS) instrument whose success is determined by the user's behavioural intention to adopt the technology. This concept is defined through the predictive factors of adoption, namely performance expectations, security/privacy perceptions, subjective norms, and the price value of the platform. Globally, the collective shift towards a cashless society has become an inevitable trend, due to the value offered by cashless payment systems and the various benefits, including the convenience of transactions without the need to carry physical money, the efficiency of business processes, and strong support for the growth of the digital economy ecosystem as a whole (Rinaldi, 2025). Digital payments, especially among MSMEs, are driven by significant advantages in economic and operational efficiency. Digital payments drastically reduce the transaction time and costs associated with handling cash, such as counting, storing, and depositing. It is this convenience and cost-effectiveness that makes conventional payment methods less desirable, thus encouraging greater efficiency (Prayoga, et al., 2025).

The adoption of cashless payments by MSMEs is a phenomenon driven by psychological and functional factors. The decision to adopt this system is primarily based on the user's positive perception of system security, perceived ease of use, and tangible functional benefits in business operations. In the context of MSMEs, *cashless* is comprehensively defined as the integration of digital systems, which is measured not only from the proportion of non-cash transactions but also from the sustainable intentions of users and the internal capabilities of MSMEs in managing accounting records digitally. Empirically, the use of *cashless* has been proven to have a positive impact on improving internal operational efficiency and more transparent cash flow management. This combined impact creates more accurate and up-to-date revenue reports, which are crucial for supporting strategic decisions and maintaining the long-term sustainability of MSME businesses (Slade et al., 2015; Liébana-Cabanillas et al.; 2017, Liébana-Cabanillas et al.; 2018, Lestari et al.; 2020, Yang et al.; 2021).

Cashless payments to MSMEs have consistently shown a positive influence on increasing turnover and business sustainability. The implementation of digital payments accelerates transactions, increases revenue and operational efficiency (Aulia & Nurabiah, 2025), and is significantly correlated with increasing sales volume and expanding customer base (Fatmawati & Azis, 2024). Specifically, the growth of transactions through instruments such as QRIS is directly correlated with an increase in MSME income (Alifia et al., 2024). Meanwhile, Lestari (2020) stated that the non-cash system supports more transparent and controlled cash flow management, reduces the risk of *human error*, and collectively improves the financial performance of MSMEs. All these positive impacts act as fundamental strategic factors in accumulating increased turnover and ensuring long-term business sustainability (Kusumaningtyas & Budiantara, 2023).

Quick Response Code Indonesian Standard (QRIS)

As one of the efforts to digitize payment system services, Bank Indonesia launched the Quick Response Code Indonesian Standard (QRIS) which is a standardization in the payment transaction system using QR Codes. The use of QRIS aims to make the payment service process easier, faster, and safer to use. The implementation is effective on January 1, 2020. Transactions using QRIS can be done in three ways, namely Static Merchant Presented Mode (MPM), Dynamic Merchant Presented Mode (MPM), and

Customer Presented Mode (CPM). In static MPM, the merchant displays the QRIS and the customer scans and then enters the payment amount manually, while in dynamic MPM, the merchant enters the payment amount through the EDC machine to be scanned by the customer. In CPM, customers show the QRIS from the payment application and then be scanned by the merchant (Saputri, 2023).

Unified Theory of Acceptance and Use of Technology 2 (UTAUT2)

UTAUT2 is an evolution of the UTAUT model developed by Venkatesh et al. (2012) to explain the acceptance of technology in a consumer context. The model identifies seven main constructs: Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Facilitating Conditions (FC), Hedonic Motivation, Price Value (PV), and Habit. For the context of this study that focuses on micro business actors, the Hedonic Motivation construct is less relevant and not included. In contrast, PE, EE, SI, FC, PV, and Habit are very relevant to explain why a trader chooses to continue using QRIS.

Expectation-Confirmation Model (ECM)

ECM, popularized by Bhattacherjee (2001), is the main theoretical model for explaining post-adoption behaviour and sustainability intentions. This theory states that a person's intention to continue using an information system is determined by his level of satisfaction with the system. Several studies have explored the adoption of digital payments in Indonesia and other developing countries. Muchtar et al. (2024) found that Social Influence and Facilitating Conditions are the main drivers of QRIS adoption from the consumer side in Indonesia. From the perspective of merchants, Irianto & Chanvarasuth (2025) in their study of MSMEs in Indonesia highlight the importance of Perceived Risk, Convenience, and Word-of-Mouth Learning as significant factors that affect use intention. On the other hand, Ramayanti et al. (2025) found that Habit and Price Value are strong predictors for QRIS usage intention. In the context of continuance intention, studies combining ECM and UTAUT2 show promising results. Franque et al. (2021), in their study in Africa, managed to integrate ECM with information systems success models to explain the sustainability intentions of mobile payments. Meanwhile, Kilani et al. (2023) extended UTAUT2 with the Trust construct and found its significant influence on the sustainability intentions of e-wallet use.

Based on this literature review, the combination of UTAUT2 and ECM is well suited for this research model, as it allows for a comprehensive analysis from initial expectations to impacts on business performance, a flow that has not been widely explored in an integrated manner in the context of street vendors in Indonesia. The primary motivation of this study is to explore how technological elements (such as performance and effort expectations), organizational elements (such as enabling conditions), and environmental elements (such as external networks) interrelate in shaping satisfaction that can drive QRIS usage intentions to achieve sustainability. Unlike previous studies that tend to be separate, this study emphasizes that the sustainability of QRIS use in the culinary MSME sector depends not only on meeting technical expectations but is also influenced by direct economic benefits and established habits within the digital ecosystem in Indonesia. The use of this integrated model aligns with Venkatesh et al.'s (2013) methodological suggestion to gain a deeper understanding of complex information system phenomena.

Hypothesis Development

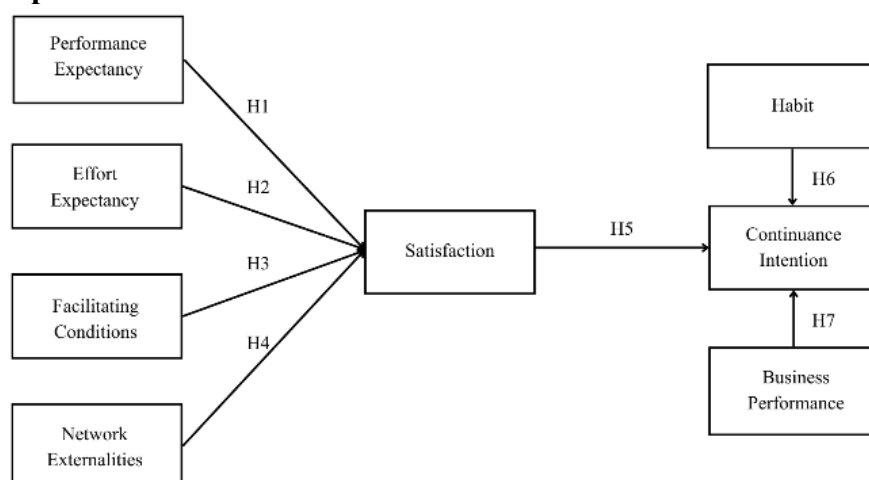


Figure 1. Conceptual Framework

Referring to the theoretical basis and previous studies, seven main hypotheses are proposed:

Performance expectancy is defined as a person's belief that using a system can help them achieve improved performance (Venkatesh, 2012). In the case of digital payments such as QRIS, this expectation manifests itself in the form of speed, efficiency, and ease of transactions. When users perceive that QRIS routinely meets or even exceeds their expectations regarding benefits, this will lead to positive confirmation of initial expectations. Based on the Expectancy-Confirmation Model (ECM), this is a key driver of satisfaction (Bhattacharjee, 2001). In the context of MSMEs implementing QRIS, performance expectancy refers to merchants' perceptions that using QRIS will improve their business performance, such as speeding up transaction processes, increasing productivity, and completing key tasks more efficiently. Previous research consistently shows that when users perceive concrete benefits and performance improvements from using technology, their satisfaction levels increase significantly (Alalwan, 2020). Findings from Rahman et al. (2022) demonstrate a significant impact of performance expectancy on adoption intention in Malaysia. These findings are supported by recent research by Paramita and Cahyadi (2024), which specifically examined QRIS users in Indonesia and found that performance expectations had a positive and significant influence on behavioral intentions. Furthermore, a study by Reza et al. (2024) found that performance expectations had a positive and significant impact on satisfaction among e-wallet users, indicating that perceived performance benefits are important not only for consumers but also for businesses. Therefore, when MSME users in the culinary sector perceive that QRIS speeds up transactions, reduces queues, and facilitates financial management, their level of satisfaction with the service will significantly increase, benefiting and improving their business performance, resulting in business owners being satisfied with the service provided.

H1: Performance Expectancy has a positive effect on Satisfaction in the use of QRIS.

Effort expectancy refers to the extent to which ease of use relates to system utilization (Venkatesh, 2012). This variable reflects users' perceptions that the system does not require excessive cognitive or technical effort to use. In the context of payment technology adoption, ease of use is a crucial element, especially for individuals who may have limited digital skills. If a QRIS system is easier to understand and use, for example with a simple interface and a fast scanning process, it will create fewer psychological barriers for users, ultimately enhancing their positive experience. The research by Kiran and Sailaja (2024) mentioned in your paper shows that effort expectancy has a significant impact on the continued use of

cashless payments in India. This is in line with the findings from Paramita and Cahyadi (2024) which also confirm the significant positive influence of effort expectancy on the intention to use QRIS in Indonesia. Specifically, research by Reza et al. (2024) shows that effort expectancy has a positive effect on the continuance intention of e-wallet use, which is mediated by satisfaction. Previous research has mainly focused on the pre-adoption stage, where EE has been shown to be positively correlated with the intention to adopt mobile and electronic payment systems (Sultana et al., 2025). This implies that the perception of ease of use directly shapes the intention to continue using the service, in which satisfaction plays a central role. Therefore, it can be hypothesized that the perception of ease of using QRIS will contribute positively to user satisfaction.

H2: Effort Expectancy has a positive effect on Satisfaction in the use of QRIS.

Facilitating Conditions refers to the user's perception of the availability of resources and technical support to use a system (Venkatesh, 2003). This includes the necessary infrastructure, appropriate knowledge, and accessible support when facing difficulties. If micro, small, and medium enterprises (MSMEs) feel they have sufficient resources, good insight, and easy access to assistance regarding QRIS usage, they will feel more reassured and supported. This supportive environment will reduce the likelihood of frustration and improve the overall user experience, ultimately contributing to higher satisfaction (Alalwan, 2020). Research conducted by Kusuma and Rachmawati (2024) in their paper emphasized that supportive conditions can predict the intention to continue using cashless payment methods. Recent findings by Paramita and Cahyadi (2024) indicate that supportive conditions have a positive impact on QRIS usage behavior. While the effect may be more direct on behaviour than satisfaction, a logically supportive environment will reduce frustration and technical difficulties, thereby indirectly increasing satisfaction. In addition, research in the field of information systems (IS) also highlights that FC can increase user satisfaction directly or indirectly by increasing usability and decreasing perceived effort (Sultana et al., 2025). Users who have never experienced transaction failures due to network or device issues will tend to have a more positive perception and a higher level of satisfaction with QRIS services.

H3: Facilitating Conditions has a positive effect on Satisfaction in the use of QRIS.

Network Externalities is defined as the benefits that users perceive as the number of people using the same technology increases (Zhao & Lu, 2012). In the context of QRIS, if merchants see that many customers, competitors, and even their friends or family are already using QRIS, then the value of the service will increase in their eyes. An extensive network provides ease of transaction and the perception that their business is not left behind. Previous research has confirmed that network externalities positively affect user satisfaction with technology-based services (Kim et al., 2017). The study by Reza et al. (2024) that you explicitly cited found that network externalities have a positive and significant effect on the continuance intention of e-wallet use among merchants. With encouragement from external parties, business owners must adopt non-cash payments to improve business performance and so that most young people make transactions using QRIS is one of the reasons business owners adopt non-cash payments with QRIS.

H4: Network Externalities have a positive effect on Satisfaction in the use of QRIS.

Satisfaction is an affective state or feeling of pleasure that arises after an individual evaluates the experience of using a system based on their expectations (Bhattacharjee, 2001). In the post-adoption behaviour model, satisfaction is a major predictor of continuance intention. Satisfied users typically develop a positive outlook on the service and are more likely to use it again in the future. Satisfaction serves as a link between a user's initial experience and their long-term decision to continue using the technology. The

ECM theory, introduced by Bhattacherjee in 2001, serves as a key foundation for this hypothesis, suggesting that satisfaction is a key factor driving continuance intention. This finding has been repeatedly demonstrated across various technological contexts, including digital payment systems. Research by Reza and colleagues in 2024 confirmed that satisfaction positively impacts business owners' intentions to continue using e-wallets. Similarly, broader research on mobile payment applications indicates that satisfaction is crucial for fostering loyalty and long-term usage (Al Amin et al., 2024). Therefore, the high level of satisfaction with using QRIS by business actors is a determining factor that will encourage users' intention to adopt or use non-cash payments.

H5: Satisfaction has a positive effect on Continuance Intention in the use of QRIS.

Habit is defined as the extent to which a person tends to behave automatically due to learning (Shin & Lee, 2021). When the use of QRIS becomes a routine or habit in daily business transactions, traders will tend to continue using it without going through a deep consideration process. These habitual behaviours will directly encourage the intention to continue using them in the future, as they are already embedded in their workflow. Research from Wicaksono (2025) and Kusuma & Rachmawati (2024) has identified habits as a crucial factor in the sustainability of cashless payment use. This finding is strongly supported by recent research by Ramayanti and colleagues (2025), who identified habit as one of the main indicators influencing QRIS usage intention in Indonesia. In their study, habit demonstrated a direct and strong influence on intention to continue using, even more significant than several utilitarian variables such as outcome expectancy and effort. This suggests that once a behavior becomes habitual and automatic, the intention to continue performing it becomes very strong, independent of ongoing cognitive evaluation. Research shows that habits are a powerful driver of sustainable intentions, sometimes even surpassing the satisfaction factor. Sharmila Devi et al (2025) stated that satisfaction is the most dominant mediation for sustainability in adopting cashless payments.

H6: Habit has a positive effect on Continuance Intention in the use of QRIS.

Business Performance refers to the achievement of organizational goals, which in the context of MSMEs can be measured through increased sales revenue, ability to acquire new customers, increased market share, and profitability (Ledi et al., 2023). If merchants visibly feel that the use of QRIS has a positive impact on their business performance, such as increased sales or efficiency, then they will have a very strong motivation to continue using the service. The direct economic benefits are the main incentive to continue using technology, as it is in line with their main business goals.

H7: Business Performance has a positive effect on Continuance Intention in the use of QRIS.

Method

This study uses a quantitative approach to examine various factors that affect the continuance intention of non-cash payment systems. The conceptual framework used integrates three main models, namely the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2), the Expectation-Confirmation Model (ECM), and Network Externalities. The use of this integrated model aims to gain a firmer understanding of the complex information system phenomenon in the informal sector, especially culinary MSMEs in Indonesia, in line with methodological recommendations to understand post-technology adoption behaviour (Venkatesh et al., 2013).

Data was collected through a survey through google form with a Likert scale of 1 – 5 (strongly disagree, disagree, neutral, agree, strongly agree) on the target MSME respondents, namely street vendors in the culinary sector. The sample size set in this study ranged from 250 to 300 respondents to ensure

adequate data representation. The research instrument was developed based on key variables that include those related to the sustainable adoption of QRIS influenced by various interrelated factors, starting from Performance Expectancy which convinces business owners of transaction efficiency (Venkatesh et al., 2012) and Effort Expectancy which emphasizes the perception of ease of use without excessive effort (Kiran & Sailaja, 2024). The success of this implementation is supported by Facilitating Conditions in the form of the availability of supporting infrastructure such as smartphones and the internet (Kusuma & Rachmawati, 2024), as well as Network Externalities which provide added value as the user ecosystem network expands (Reza et al., 2024). The positive user experience then forms Satisfaction (Bhattacharjee, 2001) and Habit or automatic behaviour in daily activities (Wicaksono, 2025), which is reinforced by the perceived increase in sales revenue (Ledi et al, 2023). The synergy of all these elements ultimately becomes the main driver of the emergence of Continuance Intention, which is the strong intention of business actors to continue to use the payment system in the future (Bhattacharjee, 2001). Data analysis was carried out using the Structural Equation Modelling - Partial Least Squares (SEM-PLS) method. This technique was chosen for its ability to simultaneously test relationships between complex latent variables and validate research models that incorporate various theories of user behaviour as done in similar studies (Reza et al., 2024 & Sultana et al., 2025). The analysis process includes testing the measurement model (outer model) for validity and reliability, as well as testing the structural model (inner model) to test the significance of the influence hypothesis between the variables that have been formulated (Kiran & Sailaja, 2024).

Respondent Characteristics

Table 1. Respondent Characteristics

Variables	Category
Age	20 – 30 31 – 40 41 – 50 >50
Gender	Male Female
Education	Elementary School Junior High School Senior High School Associate degree / Diploma Bachelor's Degree Master's Degree
Business Tenure	<1 year 2 – 5 years 6 – 10 years > 10 years
Food Category	Meals Snacks Beverages Dessert

Variables	Category
Business Location	Jakarta Bogor Depok Bekasi
Monthly Revenue	< IDR 10 million IDR 11 – 50 million IDR 51 – 100 million > 100 million
QRIS Usage Duration	4 – 6 months 7 – 12 months > 1 year
QRIS Transaction Share (%)	26 – 50% 51 – 75% 76 – 100%

Variable and Measurement objects

Table 2. Variable and Measurement

Variable	Operational Definition	Measurement Indicators (Likert Scale 1 – 5)	References
Performance Expectancy (PE)	Performance expectancy is defined as an individual's belief that using a system will help them achieve gains in their performance (Venkatesh, 2012).	I find QRIS to be useful for my business I find that using the system has improved the speed of transactions between me and my customers I find that using QRIS has improved the productivity of my business I find that using QRIS increases my chance of completing important tasks	Venkatesh et al. (2003), Alalwan (2020), Lu et al. (2017)

Variable	Operational Definition	Measurement Indicators (Likert Scale 1 – 5)	References
Effort Expectancy (EE)	Effort expectancy is defined as the extent to which merchants perceive the ease of utilizing QRIS (Venkatesh et al., 2003).	I find the process of learning how to use QRIS to be easy I find that it is easy to become skilful at using QRIS I find the method to use QRIS to be clear and understandable	Venkatesh et al. (2003), Alalwan (2020)
Facilitating Condition (FC)	Facilitating Condition is construed as the extent to which merchants believe there is organisational and technical infrastructure available to support QRIS usage (Venkatesh et al., 2003).	I have the resources necessary to use the system I have the knowledge necessary to use the system QRIS is compatible for my business I can get help from others when I have difficulties using the e-wallet	Venkatesh et al. (2003), Alalwan (2020)
Network Externalities (NE)	Network externalities as the extent to which merchants perceive that the utility they derive from the e-wallet will increase as more people utilize the same e-wallet (Zhao & Lu, 2012)	I find that many of my friends and family members are using QRIS I find that many of my competitors are using QRIS I find that many of my customers are using QRIS	Kim et al. (2017), Luo et al. (2021), Zhao and Lu (2012)

Variable	Operational Definition	Measurement Indicators (Likert Scale 1 – 5)	References
Satisfaction (SAT)	Satisfaction is a construct from Expectation Confirmation Theory (ECT), which is usually employed in the context of post-purchase behaviour and service continuance. (Bhattacharjee, 2001).	I am generally pleased with QRIS I am happy with QRIS I find that choosing QRIS for my business transaction was a good choice	Alalwan (2020), Kim et al. (2017)
Habit (HB)	Habit is the extent to which a person uses technology automatically because of a learning process that will affect user beliefs and behaviour in the future (Handayanto, E., & Ambarwati, R. 2022)	Must use QRIS to Transact Addicted to using QRIS Using QRIS is something I do without thinking.	Handayanto, E., & Ambarwati, R. (2022), Kilani et al. (2023)
Business Performance (BP)	Business Performance is an important construct in strategic management research. In the past decades, Business Performance was equated to organizational efficiency, which is the degree to which an organization accomplishes its objectives without requiring an excessive amount of effort from its employees (Taouab & Issor, 2019).	Using QRIS has stronger growth in sales revenue I am better able to acquire new customers Using QRIS has a greater market share Using QRIS able to increase sales to existing customers I am more profitable	Ledi et al., Cogent Business & Management (2023)

Variable	Operational Definition	Measurement Indicators (Likert Scale 1 – 5)	References
Continuance Intention (CI)	Continuance intention is a user's decision to continue using a product or service that has been used before Han et al. (2018); Lee & Kwon (2011). The CI in dictators is namely (Indrawati & Putri, 2018)	I intend to encourage my customers to use QRIS for transactions more frequently in the future I intend to take advantage QRIS for my business activities I predict that I would continue using QRIS for my business in the future	Alalwan (2020), Venkatesh et al. (2012)

Result and Discussion

Description of Respondent Characteristics

This study employed a sample of 334 respondents, of which 287 were deemed valid for analysis. The exclusion of certain cases was due to the presence of two culinary MSME actors who had not yet adopted cashless payment methods, specifically QRIS. The final sample consisted of managers or owners of micro, small, and medium enterprises in the culinary sector located in the Greater Jakarta area (Jakarta, Bogor, Depok, and Bekasi), all of whom implemented a QR code-based non-cash payment system in their business operations.

Respondent Profile

The respondent profile was dominated by women, with a total of 161 people, while men numbered 126. The most common age group ranged from 31 to 41 years. Most respondents had completed high school or vocational school (SMA/SMK or equivalent). The highest reported income range was between 51 and 100 million IDR annually. In general, the length of business operation was between 6 and 10 years. Regarding experience using QRIS, the majority of respondents had been using this system for more than a year, with daily usage frequency ranging from 51% to 75%.

Rationale for the Adoption of QRIS

The main reason respondents chose to use QRIS was not only the convenience of transactions, but also the competition between merchants. Customer demand for QR code payment methods is often seen to be increasing. Business owners feel compelled to implement this method, as many customers abandon purchases if they don't have cash. This trend is particularly pronounced among younger consumers, indicating a broader shift towards a cashless world. The convenience of digital transactions has apparently increased the number of purchases, as customers are no longer constrained by the amount of cash they carry (Ghofur & Rachmawati, 2022).

Convergent Validity and Construct Reliability Analysis

Due to limited data sources, the researchers conducted an analysis using SEM-PLS, which resulted in the following findings.

Table 3. Outer Loadings

	BP	CI	EE	FC	HB	NE	PE	SAT
BP1	0.772							
BP2	0.761							
BP3	0.585							
BP4	0.769							
BP5	0.740							
CI1		0.757						
CI2		0.451						
CI3		0.849						
EE1			0.823					
EE2			0.673					
EE3			0.777					
FC1				0.641				
FC2				0.773				
FC3				0.821				
FC4				0.700				
HB1					0.822			
HB2					0.764			
HB3					0.757			
NE1						0.519		
NE2						0.893		
NE3						0.530		
PE1							0.766	
PE2							0.785	
PE3							0.612	
PE4							0.747	
SAT1								0.669
SAT2								0.776
SAT3								0.836

The results of the Outer Loading analysis indicate that almost all indicators related to the variables Business Performance (BP), Continuance Intention (CI), Effort Expectancy (EE), Supporting Conditions (FC), Habits (HB), Network Externalities (NE), Performance Expectancy (PE), and Satisfaction (SAT) have loading values above 0.70. This finding indicates that these indicators can be considered valid in measuring their respective constructs. Although there are several indicators especially BP3, CI2, NE1, NE3, PE3, and SAT1 that have loadings below 0.70 and may need further study, the overall measurement model can still be considered valid.

Construct Reliability Analysis**Table 4.** Construct Reliability and Validity

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
BP	0.775	0.781	0.849	0.531
CI	0.494	0.582	0.738	0.499
EE	0.645	0.669	0.803	0.578
FC	0.719	0.741	0.825	0.544
HB	0.681	0.681	0.825	0.611
NE	0.418	0.565	0.696	0.449
PE	0.712	0.734	0.819	0.534
SAT	0.639	0.659	0.806	0.582

Reliability and construct validity tests showed that the Composite Reliability (rho_c) values for all variables exceeded the threshold of 0.70, indicating that all variables were reliable. Furthermore, the Average Variance Extracted (AVE) values for most variables exceeded 0.50, except for NE (0.449) and CI (0.499), which were slightly below this threshold. Overall, the research instrument was considered valid and reliable.

Table 5. Heterotrait-monotrait ratio (HTMT)

	BP	CI	EE	FC	HB	NE	PE	SAT
BP								
CI	0.961							
EE	0.709	0.914						
FC	0.540	0.719	0.508					
HB	0.952	0.991	0.793	0.570				
NE	0.465	0.844	0.460	0.450	0.594			
PE	0.773	0.808	0.668	0.564	0.766	0.590		
SAT	0.913	1.138	0.671	0.571	0.927	0.702	0.763	

HTMT values were used to evaluate discriminant validity. Most of these values were below the 0.90 threshold, indicating that discriminant validity was generally met. However, certain pairs—such as CI and BP, HB and BP, HB and CI, SAT and BP, SAT and CI, and SAT and HB—showed HTMT values exceeding 0.90, indicating potential issues with discriminant validity between these constructs. Overall, the majority of constructs demonstrated good discriminant validity.

Path Model

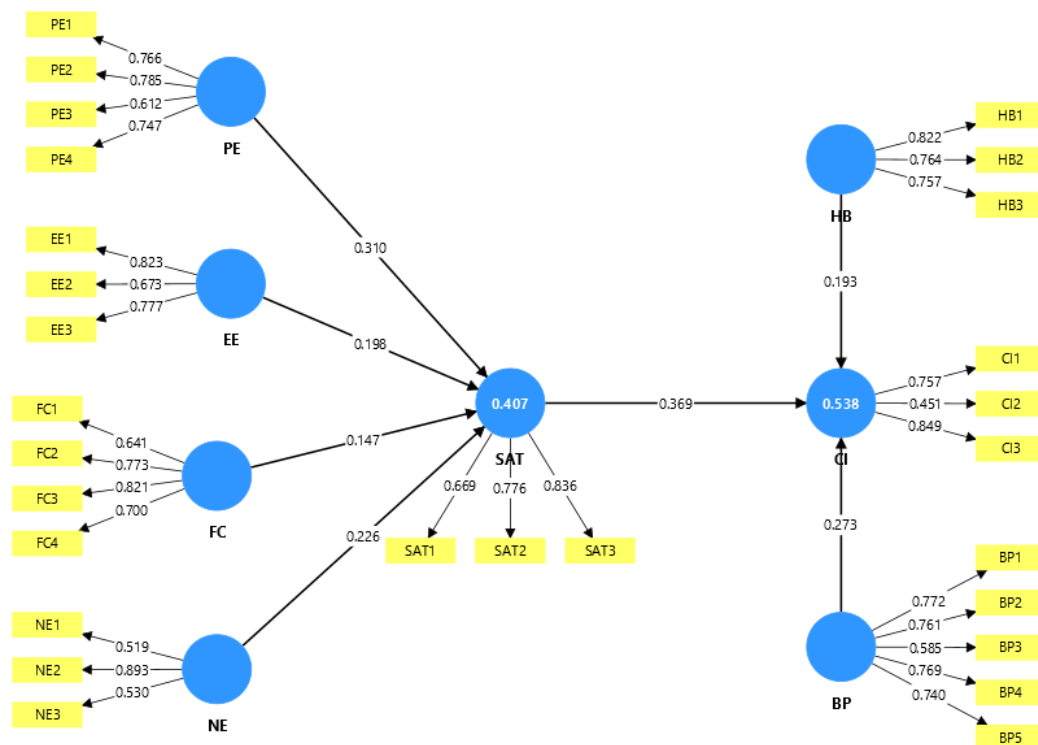


Figure 2. Path Model of the Study

The path model shows the relationship between the various variables in this study. This model combines UTAUT2 theory, the Expectancy-Confirmation Model (ECM), and Network Externalities to explain the intention to continue using QRIS among small and medium enterprises in the culinary sector.

Analysis of the Influence of PE, EE, FC, and NE on SAT

The results of the hypothesis analysis (Path Coefficient) revealed that Performance Expectancy (PE) had a positive and significant impact on Satisfaction (SAT), with a T-statistic of 4.996 ($p = 0.000$). This finding aligns with previous studies showing that increasing performance expectations contribute to user satisfaction (Alalwan, 2020; Paramita and Cahyadi, 2024). Furthermore, Effort Expectancy (EE) also showed a positive and significant impact on SAT, with a T-statistic of 3.364 ($p = 0.001$), further supporting the argument that ease of use increases overall satisfaction (Kiran and Sailaja, 2024). The Supporting Conditions (FC) factor also had a positive and significant impact on SAT, evidenced by a T-statistic of 2.240 ($p = 0.025$), which aligns with research highlighting the importance of infrastructure support (Kusuma and Rachmawati, 2024). In addition, Network Externalities (NE) showed a positive and significant relationship with SAT, as reflected in the T statistic of 4.261 ($p = 0.000$), which underlines that a wide user network increases the level of satisfaction (Kim et al., 2017).

Analysis of the Influence on Continuance Intention (CI)

The analysis results indicate that Satisfaction (SAT) has a highly significant positive impact on Continuance Intention (CI), with a T-statistic of 6.341 ($p < 0.001$). This finding supports the Expectancy-Confirmation Model (ECM) theory, which highlights satisfaction as a key factor influencing intention to continue using (Bhattacharjee, 2001; Al-Amin et al., 2024). Furthermore, Habit (HB) also has a positive

and significant impact on CI, with a T-value of 3.189 ($p = 0.001$), in line with previous studies showing the importance of habitual behavior in maintaining continued use (Handayanto and Ambarwati, 2022). Furthermore, Business Performance (BP) also displays a positive and significant impact on CI, with a T-value of 4.036 ($p < 0.001$), indicating that improvements in business performance encourage micro, small, and medium enterprises (MSMEs) to continue utilizing QRIS (Ledi et al., 2023).

Path Coefficients Analysis

Table 6. Path Coefficients – Bootstrapping Method

Hypothesis	Variable RelationshipPath	Coefficient (β)	T-Statistic	Status / Description
H1	Performance Expectancy (PE) -> Satisfaction (SAT)	0,3098	4,9955	Significant (Supported)
H2	Effort Expectancy (EE) -> Satisfaction (SAT)	0,1983	3,3635	Significant (Supported)
H3	Facilitating Conditions (FC) -> Satisfaction (SAT)	0,1472	2,2398	Significant (Supported)
H4	Network Externalities (NE) -> Satisfaction (SAT)	0,2257	4,2614	Significant (Supported)
H5	Satisfaction (SAT) -> Continuance Intention (CI)	0,3693	6,3414	Significant (Supported)
H6	Habit (HB) -> Continuance Intention (CI)	0,1930	3,1891	Significant (Supported)
H7	Business Performance (BP) -> Continuance Intention (CI)	0,2728	4,0362	Significant (Supported)

The review presented in Table 2 indicates that all hypotheses proposed in this study have statistical significance and are supported. Below is a complete summary of the evaluation results for each hypothesis:

The Influence of Performance Expectancy on Satisfaction (H1): The analysis indicates that Performance Expectancy has a significant positive impact on Satisfaction ($\beta = 0.3098$; $t = 4.9955$). This indicates that when culinary MSMEs perceive higher performance expectations in using QRIS, their satisfaction levels also increase. This finding highlights that the perceived functional benefits of the QRIS

system, such as transaction speed and operational efficiency, are important elements in shaping user satisfaction.

The Influence of Effort Expectancy on Satisfaction (H2): The analysis shows that Business Expectations have a positive and significant impact on Satisfaction ($\beta = 0.1983$; $t = 3.3635$). These results indicate that ease of access to the QRIS system significantly increases user satisfaction. A system with an easy-to-understand interface and fast scanning process reduces mental barriers, especially for MSMEs who may have varying levels of digital literacy.

The Influence of Facilitating Conditions on Satisfaction (H3): Analysis shows that supportive conditions have a positive and significant impact on satisfaction levels ($\beta = 0.1472$; $t = 2.2398$). The availability of appropriate facilities and technical support has been shown to increase MSME satisfaction in using QRIS. Supporting infrastructure, including access to smartphones, a reliable internet network, and prompt technical assistance, contributes to a sense of security and confidence among business owners when utilizing this payment system.

The Influence of Network Externalities on Satisfaction (H4): The study results show that the impact of external networks creates a significant positive effect on satisfaction levels ($\beta = 0.2257$; $t = 4.2614$). Environments with a wider network of QRIS users are associated with increased satisfaction among business owners. This finding indicates that the recognized value of QRIS services increases among MSMEs as the number of consumers, rivals, and business partners who choose to utilize this system increases, thus increasing the perception that their companies remain relevant with existing developments.

The Influence of Satisfaction on Continuance Intention (H5): The analysis shows that satisfaction levels have a significant positive impact on continuance intentions ($\beta = 0.3693$; $t = 6.3414$). Satisfaction was identified as the most significant driving factor that inspires MSMEs to continue utilizing QRIS in the future. In accordance with the Expectancy-Confirmation Model (ECM), perceived satisfaction from the user experience with the payment system acts as a crucial bridge between initial adoption and the long-term decision to continue using the technology.

The Influence of Habit on Continuance Intention (H6): The study results show that behavior has a positive and significant impact on continuance intention ($\beta = 0.1930$; $t = 3.1891$). Consistent use of QRIS in daily transactions increases the desire to continue using it. When QRIS becomes an integral part of business activities, users will tend to use it automatically, without requiring in-depth thought.

The Influence of Business Performance on Continuance Intention (H7): The analysis shows that Business Performance has a positive and statistically significant impact on Intention to Remain ($\beta = 0.2728$; $t = 4.0362$). Improved business performance, experienced through QRIS implementation, is a strong argument for MSMEs to continue using this payment system. Direct economic benefits, such as improved operational efficiency, greater cash flow transparency, and potential revenue increases, serve as key drivers for continued system adoption.

This study aims to evaluate the elements influencing the intention to continue using the QRIS digital payment system among small and medium-sized businesses in the food sector by combining the UTAUT2 model, the Expectancy-Confirmation Model (ECM), and Network Effects. Hypothesis testing presented in Chapter 4 demonstrates that all proposed hypotheses are statistically significant and supported by empirical data.

The findings of this study confirm that expectations regarding results, business expectations, existing support, and network influence collectively shape user satisfaction levels. This satisfaction, in turn, serves as a key driver for micro and small businesses to continue utilizing QRIS. Furthermore, existing habits and

direct economic benefits also play a significant role in maintaining the intention to continue using the system.

The integration of the UTAUT2 and ECM models in this study proved successful in describing post-adoption behavior of digital payment technologies in the micro, small, and medium enterprise sector. This combined framework not only identifies the elements that determine initial satisfaction but also explains how that satisfaction is transformed into continued usage intentions, taking into account additional factors such as habits and business performance.

Practically, the results of this study have significant implications for many parties involved. For micro, small, and medium enterprises (MSMEs), this analysis demonstrates that the decision to invest in QRIS implementation is not merely a trend, but a strategic step that can provide tangible benefits in improving work efficiency and business performance. For regulators and payment service providers, this study emphasizes the need to maintain service quality and continuously improve supporting infrastructure to ensure sustainable user satisfaction.

Theoretical Implications

This study makes a significant contribution to the information systems literature by demonstrating the power of the integrated UTAUT2 and ECM models in explaining post-adoption behavior in the informal business industry. This integration provides more comprehensive insights, tracing the journey from initial expectations to subsequent effects on business performance an analytical path that has rarely been thoroughly studied in the context of street vendors in Indonesia.

The use of Network Externalities and Business Performance variables expands the model by integrating environmental elements as well as direct economic benefits that serve as drivers of sustainability intentions. This methodology aligns with the suggestions made by Venkatesh and colleagues (2013), who aim to gain a deeper understanding of complex information systems phenomena.

Furthermore, this study shows that in the context of small and medium-sized enterprises, elements such as business habits and effectiveness significantly contribute to the continued use of technology. These results provide insights into the acceptance of digital payment technology, emphasizing that these factors are influenced not only by logical aspects but also through the formation of routines and tangible economic benefits.

Practical Implications

For MSMEs: This research shows that implementing QRIS is not just about keeping up with the times; it significantly improves operational efficiency, cash management clarity, and overall business performance. Therefore, MSMEs are encouraged to make QRIS their primary payment method and consistently integrate it into their daily transactions. This way, they can maximize the long-term benefits this technology offers.

For the Regulator (Bank Indonesia): These findings emphasize the importance of maintaining service quality to ensure that Performance Expectations and Effort Expectations are consistently met. The Regulator needs to ensure the continuous development of the QRIS system, by integrating features that provide greater benefits to users. Furthermore, strategies aimed at expanding QRIS adoption should address Network Externalities by actively supporting adoption among consumers, thereby increasing the overall value of the network for merchants.

For Payment Service Providers: Improving the enabling environment by providing a reliable foundation and responsive support services is crucial to maintaining customer satisfaction. Service

providers need to prioritize user training, clear documentation, and prompt customer support. Furthermore, increased investment in robust technology infrastructure is needed to ensure the best user experience.

For Future Researchers: This study offers an opportunity to explore more deeply other elements that may influence the long-term adoption of digital payment technologies, including perceptions of risk, levels of trust, and concerns about information security. Expanding the scope to include a wider range of geographic locations and industry sectors also has the potential to improve the applicability of the findings.

Conclusion

Based on a comprehensive analysis using an integrated model combining UTAUT2, the Expectancy-Confirmation Model (ECM), and Network Externalities, this study explains the important factors influencing the continuance intention to use QRIS among culinary MSMEs in the Greater Jakarta area. The main conclusions obtained from this study are as follows:

Firstly, the acceptance of QRIS in the culinary micro, small, and medium enterprises (MSMEs) sector is not only determined by technological aspects, but also the result of a complex relationship between various technological components, organizational structures, and external factors. The results of this study emphasize the application of the UTAUT2 model, formulated by Venkatesh and colleagues (2012), in the context of informal businesses in Indonesia, especially in describing the behavior that occurs after adoption related to the use of digital payment technology (Alalwan, 2020).

Second, user satisfaction has been shown to be a crucial link linking initial views of technology with the decision to continue using it. Studies show that Performance Expectancy (PE) has the greatest impact on satisfaction, with a path coefficient of 0.310 ($p = 0.000$), followed by Network Externalities (NE) with a coefficient of 0.226 ($p = 0.000$). This suggests that small and medium enterprises in the culinary sector are more likely to continue using QRIS when they perceive concrete benefits in improving transaction efficiency and business performance (Paramita & Cahyadi, 2024). This finding aligns with the Expectancy-Confirmation Model (ECM) proposed by Bhattacharjee (2001), which identifies satisfaction as a key factor influencing intention to continue using an information system (Kiran & Sailaja, 2024).

Third, habits and business performance emerged as very important additional factors that directly influence continuance intention. Habits had a significant influence on continuance intention (CI), with a coefficient value of 0.193 ($p = 0.001$), while business performance showed a more pronounced impact, as seen from the coefficient value of 0.273 ($p = 0.000$). These findings suggest that after micro, small, and medium enterprises (MSMEs) implement QRIS and realize significant economic benefits such as increased sales and improved operational efficiency, they tend to develop automatic usage habits accompanied by a strong motivation to continue using it (Kusuma & Rachmawati, 2024). This conclusion aligns with previous research by Ramayanti et al. (2025) and Wicaksono (2025), which also identified habits as one of the strongest predictors of continuance intention in the context of digital payments in Indonesia.

Fourth, enabling conditions and external network factors play a significant role in shaping user satisfaction. Although enabling conditions have a moderate effect on satisfaction ($\beta = 0.147$, $p = 0.025$), having sufficient resources, technical knowledge, and support from service providers remains crucial in overcoming adoption barriers (Kim et al., 2017). Meanwhile, network externalities show a significant impact ($\beta = 0.226$, $p < 0.001$), indicating that as the number of customers, competitors, and community members using QRIS increases, the perceived value of small and medium enterprises (SMEs) to continue using it also increases (Bhattacharjee, 2001).

Fifth, satisfaction has the biggest impact on the intention to continue using it, with a path coefficient of 0.369 ($p = 0.000$), which shows it has the strongest effect among all the relationships studied in the model. This finding highlights that a positive user experience with QRIS is the most important basis for ensuring ongoing use. As a result, QRIS service providers and regulators need to focus on improving user satisfaction by continuously enhancing the quality of services, ensuring system reliability, and providing technical support (Al-Amin et al., 2024).

Limitations and Directions for Future Research

While this study has provided significant insights, some limitations must be acknowledged.

Research limitations

This study is limited to SMEs in the food sector in the Greater Jakarta area; therefore, caution should be exercised in drawing conclusions for other sectors or locations. The validity and consistency levels for the Continuance Intention and Network Externalities variables are within the narrow limits, although still acceptable based on the Composite Reliability results. This study adopted a cross-sectional design, which hinders the analysis of changes in user behavior over time.

Recommendations for Future Research

Expanding the geographic area and industry types to improve understanding of the research results. Improving measurement tools is crucial, especially for variables with low reliability values. Conducting longitudinal research to see how intentions to persist in using this technology change over time is also important. This research also examines other factors such as people's perceptions of risk, levels of trust, and data security concerns that may influence intentions to continue using digital payment technology. This research compares factors influencing continued QRIS usage across various types of MSMEs to explain the differences in their needs and desires.

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