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From Digital Payment Adoption to Customer Advocacy: Examining the Mediating Roles of User Satisfaction and MSME Performance in Indonesian MSMEs

Haryo Wicaksono[1], Heny Ratnaningtya[1], Eduard Rudolf Pangkerego[1], Michael Khrisna Aditya[1], Irfal[1]

[1]Department of Entrepreneurship, Institut Pariwisata Trisakti, Indonesia
Corresponding author: haryowicaksono@iptrisakti.ac.id

ABSTRACT:
This study aims to analyse the effect of QRIS adoption on MSME performance and customer advocacy behaviour in Indonesia's tourism sector, and to examine the mediating roles of user satisfaction and MSME performance. The rapid growth of digital payment technologies has encouraged tourism-related MSMEs to adopt more efficient transaction systems to enhance business competitiveness and strengthen customer relationships. This research employed a quantitative approach using an online survey of 380 tourism MSME owners and managers who had used QRIS for at least six months. Data were analysed using SmartPLS to test the proposed relationships among the variables. The findings reveal that QRIS adoption has a positive and significant effect on user satisfaction, MSME performance, and customer advocacy behaviour. User satisfaction also positively influences MSME performance and customer advocacy behaviour, while MSME performance, in turn, significantly enhances customer advocacy behaviour. Furthermore, user satisfaction significantly mediates the relationship between QRIS adoption and MSME performance, and MSME performance, in turn, significantly mediates the relationship between QRIS adoption and customer advocacy behaviour. These findings indicate that QRIS implementation not only improves transaction efficiency and business management but also contributes to a better customer experience and stronger customer advocacy through distinct mediating mechanisms. The study suggests that policymakers, financial institutions, and MSME stakeholders should strengthen digital payment infrastructure, improve digital literacy, and optimise QRIS-based services to enhance MSME performance and foster sustainable customer advocacy in Indonesia's tourism sector.

Keywords:
QRIS Adoption, User Satisfaction, MSME Performance, Customer Advocacy Behaviour

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1. INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) play a pivotal role in Indonesia's economy by generating employment, supporting income growth, promoting a more equitable distribution of economic activity, and strengthening national competitiveness. MSMEs constitute the largest segment of business enterprises in Indonesia and make a substantial contribution to national Gross Domestic Product (GDP) (Kementerian Koperasi dan UKM Republik Indonesia, 2023). Micro and small enterprises are also particularly important at the local level, where they provide employment opportunities and stimulate economic activity within communities (Badan Pusat Statistik, 2023). Within the tourism sector, culinary MSMEs contribute to the tourism value chain by offering locally based products and experiences while supporting the economic sustainability of destinations (Organisation for Economic Co-operation and Development (OECD), 2022). However, changing consumer behaviour and intensifying competition have increased the need for MSMEs to adopt digital technologies to improve operational efficiency, expand market access, and support business sustainability (Tambunan, 2021).

One important form of digital transformation among Indonesian MSMEs is the adoption of digital payment technology, particularly the Quick Response Code Indonesian Standard (QRIS). Developed by Bank Indonesia, QRIS is a standardised, QR code-based payment system designed to facilitate convenient, fast, secure, and efficient transactions (Bank Indonesia, 2019). The rapid expansion of QRIS demonstrates its growing relevance to the MSME sector. By the first quarter of 2025, QRIS had reached 56.3 million users, including 38.1 million MSME merchants. During the first semester of 2025, the number of QRIS merchants increased to 39.3 million, of whom approximately 93.16% were MSMEs (Antara News, 2025; BRI LinkUMKM, 2025). This substantial level of adoption indicates that QRIS has become an important component of the digitalisation of MSME transactions. However, widespread adoption alone does not demonstrate whether digital payment technology generates meaningful business outcomes. Therefore, it is important to examine how QRIS adoption contributes to transaction efficiency, service convenience, user satisfaction, and, ultimately, MSME performance (Infobanknews, 2025).

The potential benefits of QRIS extend beyond payment convenience. Digital payment systems can simplify business transactions, reduce reliance on cash, facilitate transaction recording, and improve the accuracy and accessibility of financial information (Balde & Rahadjeng, 2026). Digital transaction records can also provide useful information for business management and potentially facilitate MSMEs' access to formal financial services. From a technology adoption perspective, the Unified Theory of Acceptance and Use of Technology (UTAUT) developed by Venkatesh et al. (2003) explained technology acceptance through factors such as performance expectancy, effort expectancy, social influence, and facilitating conditions. Previous studies have identified perceived ease of use and performance expectancy as important factors influencing the acceptance of digital payment technologies (Wang et al., 2022; Nandru et al., 2024). In the MSME context, Gunawan et al. (2023) found that QRIS characteristics facilitate its implementation and support business transactions. Other studies have likewise indicated that digital payment technologies can contribute to

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operational efficiency and MSME performance (Kilay et al., 2020; Rajala & Hautala-Kankaanpää, 2022; Pamungkas & Noviaristanti, 2024).

However, adopting a digital payment system does not necessarily guarantee positive outcomes for users or businesses. The effectiveness of technology implementation also depends on how users evaluate their experiences with the system. Expectancy Disconfirmation Theory (EDT) (Oliver, 1980) explains that satisfaction arises from the comparison between users' expectations and their actual experiences with a product, service, or technology. In the context of digital payments, users are more likely to experience satisfaction when the technology delivers the expected levels of convenience, ease of use, reliability, and security. Consistent with this perspective, Wicaksono et al. (2024) found that perceived and actual ease of use, together with transaction security, are relevant to satisfaction with QRIS. Trust and optimism toward digital technology may also influence users' comfort and willingness to engage with digital payment systems (Nurqamarani et al., 2024). These findings suggest that user satisfaction may be an important mechanism by which digital payment adoption translates into business outcomes.

The consequences of digital payment adoption can also be assessed through MSME performance. This study adopts Non-Financial Performance Measures (NFPM) based on the Balanced Scorecard framework developed by Kaplan & Norton (1992). The use of non-financial measures is relevant because the effects of digital technology adoption may initially manifest in operational and customer-related outcomes rather than in financial indicators. Improvements in service quality, internal business processes, innovation capability, and customer-related outcomes can provide important evidence of whether digital technology generates value for MSMEs. Accordingly, assessing MSME performance from a non-financial perspective provides a broader understanding of the organisational effects of QRIS adoption.

For tourism-related MSMEs, business performance is also closely connected with customers' behavioural responses. One such response is Customer Advocacy Behaviour (CAB), which refers to customers' voluntary willingness to support a business through positive recommendations, referrals, and other forms of advocacy. In tourism and culinary businesses, such behaviour is particularly relevant because customers' experiences can influence their willingness to recommend businesses to others. Brodie et al. (2011) argue that positive customer experiences can strengthen customer engagement and encourage advocacy behaviour. This perspective suggests that the benefits of digital payment adoption may extend beyond immediate transaction outcomes when improved user experiences and business performance subsequently encourage customers to advocate for the business.

Although previous studies have examined several relationships within this research domain, the existing literature remains fragmented. Studies have investigated the relationship between digital payments and MSME performance (Alfawareh et al., 2025; Nadinta & Kusumawati, 2023; Zhong & Chen, 2023), digital technology and user satisfaction (Ly & Ly, 2022; Sharabati et al., 2024; Talom & Tengeh, 2020; Ledi et al., 2023), and user satisfaction and business performance (Irianto & Chanvarasuth, 2025; Kilay et al., 2022; Nurqamarani et al., 2024). Other studies have examined the role of satisfaction in the relationship between digital payment or technology adoption and subsequent outcomes (Oliveira et al., 2016; Alalwan et al., 2018; Raza et al., 2020). Nevertheless, limited attention has been paid to an integrated model examining QRIS adoption in relation to user satisfaction,

MSME performance, and subsequent Customer Advocacy Behaviour, particularly among culinary tourism MSMEs in Indonesia. This gap indicates the need to examine not only whether digital payment adoption is associated with business and customer-related outcomes but also the mechanisms through which these relationships occur.

To address this gap, this study develops an integrative model that examines the relationships among QRIS adoption, user satisfaction, MSME performance, and Customer Advocacy Behaviour among culinary tourism MSMEs in Indonesia. The model conceptualises QRIS adoption as the digital technology input, user satisfaction as users' evaluation of their technology experience, MSME performance as an organisational outcome, and Customer Advocacy Behaviour as a customer-related outcome. In particular, the study examines two distinct mediating roles: user satisfaction in the relationship between QRIS adoption and MSME performance, and MSME performance in the relationship between QRIS adoption and Customer Advocacy Behaviour. This approach provides a more comprehensive explanation of how digital payment adoption may extend beyond facilitating transactions to generate broader business and customer outcomes.

Accordingly, this study contributes to the literature by integrating technology adoption, user satisfaction, MSME performance, and customer advocacy within a single research model in the context of culinary tourism MSMEs in Indonesia. The study extends existing research by moving beyond the examination of direct relationships between digital payment adoption and business outcomes and by investigating two distinct mediation mechanisms through which QRIS adoption may contribute to MSME performance and Customer Advocacy Behaviour.

2. LITERATURE REVIEW

2.1. Theoretical Foundation: Technology Acceptance and Post-Adoption Perspective

The adoption and use of digital payment technology among MSMEs can be understood through complementary perspectives: technology acceptance and post-adoption evaluation. This study integrates the Unified Theory of Acceptance and Use of Technology (UTAUT), proposed by Venkatesh et al. (2003), and Expectancy Disconfirmation Theory (EDT), proposed by Oliver (1980), to explain how QRIS adoption may generate user satisfaction and subsequent business- and customer-related outcomes. The integration of these perspectives is important because technology acceptance explains the initial adoption and use of a digital system. In contrast, post-adoption evaluation explains how users assess their actual experiences after using the technology.

UTAUT proposes that technology acceptance is shaped by four key factors: performance expectancy, effort expectancy, social influence, and facilitating conditions (Venkatesh et al., 2003). Performance expectancy refers to the extent to which users believe that using a technology will improve their performance, whereas effort expectancy refers to the perceived ease of using the technology. Social influence reflects the extent to which users perceive that important individuals or groups support the use of the technology, while facilitating conditions refer to the availability of organisational and technological resources that support its use. Previous empirical studies have supported the relevance of these mechanisms in the adoption of digital payment technologies. Oliveira et al. (2016), for example, found that

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performance expectancy, effort expectancy, and facilitating conditions significantly influence mobile payment adoption, while Slade et al. (2015) identified social influence and perceived usefulness as important determinants of mobile payment intention. Similarly, Singh (2020) found that perceived ease of use and facilitating conditions contribute to users' continued intention to use mobile wallets.

These theoretical mechanisms are relevant to QRIS adoption among MSMEs because QRIS represents a digital payment technology whose value depends on whether businesses perceive it as useful, easy to implement, and supported by an appropriate technological environment. When MSME owners perceive that QRIS can simplify transactions, improve payment efficiency, and facilitate customer interactions, they are more likely to integrate the technology into their routine business activities. Thus, UTAUT provides a theoretical basis for understanding the factors that support the adoption and use of QRIS among MSMEs.

However, technology acceptance and continued use do not, by themselves, explain whether users develop favourable evaluations of their experiences with the technology. Therefore, this study complements UTAUT with EDT. According to Oliver (1980), satisfaction results from a comparison between users' prior expectations and their experience or perceived performance. When actual performance meets or exceeds expectations, positive confirmation occurs, and satisfaction is likely to increase; conversely, when performance falls below expectations, dissatisfaction may arise. In the context of digital payments, this mechanism suggests that users are more likely to experience satisfaction when a payment system provides the convenience, security, reliability, and efficiency they expect.

Empirical research supports this post-adoption mechanism. Susanto et al. (2023) found that expectation confirmation, perceived benefits, and user experience significantly influence satisfaction with electronic payment systems. Other studies have shown that security, convenience, trust, and expectation confirmation are important factors in users' evaluations of digital payment services (Aprilia & Amalia, 2023; Herviana & Abidin, 2024; Rahardja et al., 2023). Accordingly, UTAUT explains the factors underlying the adoption and use of QRIS, whereas EDT explains how users' actual experiences with QRIS may translate into satisfaction. Together, these theories provide a theoretical foundation for examining the effects of QRIS adoption on MSME performance and Customer Advocacy Behaviour.

2.2. QRIS Adoption and User Satisfaction

QRIS adoption refers to the implementation and use of the Quick Response Code Indonesian Standard for digital payment in MSME transactions. Its standardised system enables customers to make payments via participating digital payment applications and allows businesses to receive payments through a common QR-based mechanism. Consequently, QRIS can reduce transaction complexity and enhance payment convenience for both businesses and customers.

The relationship between QRIS adoption and user satisfaction can be explained through the combined perspectives of UTAUT and EDT. From the UTAUT perspective, users are more likely to evaluate a technology positively when it provides useful outcomes and can be used with relatively little effort (Venkatesh et al., 2003). In the context of QRIS, faster transaction processing, broader payment accessibility, and greater convenience may provide functional benefits that positively influence users' evaluations. From the EDT perspective, these benefits

are likely to contribute to satisfaction when users' actual experiences with QRIS meet or exceed their initial expectations (Oliver, 1980). Thus, satisfaction is not expected to arise merely from the availability of the technology; rather, it is expected to develop when QRIS performs in accordance with users' expectations regarding convenience, ease of use, and transaction effectiveness.

Empirical evidence supports this reasoning. Perceived usefulness and perceived ease of use are associated with satisfaction with digital payment services (Nadinta & Kusumawati, 2023; Zhong & Chen, 2023). Liébana-Cabanillas (2020) further indicated that satisfaction increases when digital payment services deliver experiences consistent with users' expectations. These findings suggest that when QRIS delivers the functional and experiential benefits users expect, they are more likely to evaluate the payment experience positively. Therefore, QRIS adoption is expected to be positively associated with user satisfaction.

H_1: QRIS adoption has a significant effect on user satisfaction.

2.3. QRIS Adoption and MSME Performance

MSME performance refers to the extent to which businesses improve operational and customer-related outcomes through effective business practices. In this study, performance is assessed from a non-financial perspective, including service quality, business process efficiency, innovation capability, and customer-related outcomes. This perspective is particularly relevant to digital transformation because the effects of technology adoption may initially manifest as improvements in business processes and customer interactions rather than immediate changes in financial performance.

The relationship between QRIS adoption and MSME performance can be explained through the capability-enhancing role of digital technology. Digital payment systems can enable businesses to process transactions more efficiently, reduce reliance on cash-based transactions, facilitate transaction recording, and improve the convenience of customer interactions. These capabilities can reduce operational inefficiencies and allow MSMEs to allocate resources more effectively to other business activities. Consequently, the use of QRIS may contribute to improvements in business processes and service delivery, both of which are important dimensions of MSME performance.

This reasoning is consistent with the broader literature on digital technology and business performance. Digital payment technologies have been associated with improvements in operational efficiency, productivity, and competitiveness (Ly & Ly, 2022; Sharabati et al., 2024). Positive relationships have been found between digital payment adoption and business-related outcomes, including revenue performance, service quality, and operational effectiveness (Talom & Tengeh, 2020; Ledi et al., 2023). These findings suggest that the value of digital payment technology extends beyond facilitating individual transactions to strengthening organisational capabilities.

For MSMEs, these effects are particularly relevant because limited resources make operational efficiency and effective customer service important for sustaining business activities. By simplifying payment processes and generating digital transaction records, QRIS can support more efficient business operations and improve the quality of customer

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interactions. Therefore, QRIS adoption is expected to contribute positively to MSME performance.

H_2: QRIS adoption has a significant effect on MSME performance.

2.4. User Satisfaction and MSME Performance

User satisfaction reflects users' positive evaluations of their experiences with a product, service, or technology. In the context of digital payments, satisfaction reflects the extent to which the payment experience meets users' expectations regarding convenience, speed, security, reliability, and ease of use (Yi et al., 2024). However, satisfaction may have implications beyond individual transactions because positive customer experiences can influence subsequent behavioural and business outcomes.

The relationship between user satisfaction and MSME performance can be explained through a customer-value mechanism. When customers are satisfied with their interactions with a business, they are more likely to continue purchasing, maintain their relationships with the business, and evaluate its services favourably. These behaviours can contribute to customer retention, transaction frequency, and the stability of customer relationships, thereby supporting business performance. In this sense, satisfaction can serve as a mechanism by which improvements in customer experience translate into organisational outcomes.

Empirical evidence supports this relationship. Customer satisfaction is associated with positive business outcomes (Kilay et al., 2022; Nurqamarani et al., 2024). Satisfaction contributes to business performance through stronger customer relationships and favourable behavioural responses (Irianto & Chanvarasuth, 2025). This mechanism is particularly relevant to MSMEs because their performance often depends on repeated customer interactions and on their ability to maintain positive customer relationships.

Therefore, when QRIS provides a convenient, reliable, and satisfactory payment experience, the resulting satisfaction may encourage favourable customer responses that support business operations and performance. Based on this theoretical reasoning and empirical evidence, user satisfaction is expected to affect MSME performance positively.

H_3: User satisfaction has a significant effect on MSME performance.

2.5. MSME Performance and Customer Advocacy Behaviour

Customer Advocacy Behaviour (CAB) refers to customers' voluntary willingness to support a business by recommending it to others, sharing positive experiences, or engaging in other supportive behaviours. In the context of culinary tourism MSMEs, advocacy can be particularly valuable because customer recommendations and positive communication can increase business awareness and attract potential customers.

The relationship between MSME performance and customer advocacy can be understood through the lens of Customer Engagement Theory. Brodie et al. (2011) explain that positive customer experiences and value-creating interactions can strengthen customer engagement and encourage behavioural manifestations such as recommendations and

advocacy. From this perspective, business performance is relevant to customer advocacy when it is reflected in customer-visible outcomes, such as improved service quality, more efficient transactions, greater innovation, and enhanced customer experiences. When these outcomes increase the value perceived by customers, customers may become more willing to support and recommend the business.

Previous research provides empirical support for this mechanism. Customer engagement is associated with word-of-mouth intentions and recommendation behaviour (Acharya, 2021; Chen et al., 2021). Further, they emphasised the importance of superior customer value and positive experiences in strengthening favourable customer responses (Palmatier et al., 2018; Fornell et al., 2020). These findings suggest that improvements in MSME performance can create customer experiences that provide a basis for advocacy.

In culinary tourism MSMEs, this relationship is particularly relevant because service quality and customer experience are directly observable during customer interactions. Therefore, improved MSME performance is expected to enhance customer value and, consequently, increase their willingness to recommend and support the business.

H_4: MSME performance has a significant effect on Customer Advocacy Behaviour.

2.6. Mediating Roles of User Satisfaction and MSME Performance

The preceding relationships suggest that QRIS adoption may influence MSME performance not only through a direct technological effect but also through user satisfaction. QRIS can provide functional benefits such as convenience, efficiency, reliability, and ease of transaction. When these benefits meet or exceed users' expectations, they may lead to positive evaluations and greater satisfaction. Satisfaction may subsequently contribute to business-related outcomes by strengthening customer relationships and supporting favourable customer responses.

Previous research supports the role of satisfaction as a mediating mechanism in technology-related relationships. Technology-related experiences can influence subsequent outcomes through users' evaluations and behavioural responses (Oliveira et al., 2016). Satisfied customers are more likely to continue transactions, maintain relationships with businesses, and provide favourable responses, thereby contributing to business competitiveness (Alalwan et al., 2018; Raza et al., 2020). Therefore, the effect of QRIS adoption on MSME performance may be partly explained by user satisfaction.

This mediation mechanism suggests that QRIS adoption may improve MSME performance not only because the technology directly enhances transaction processes but also because a satisfactory payment experience strengthens customer-related outcomes. Accordingly, user satisfaction is expected to transmit part of the effect of QRIS adoption on MSME performance.

H_5: QRIS adoption has a significant effect on MSME performance through user satisfaction.

A separate mediation mechanism concerns the relationship between QRIS adoption and Customer Advocacy Behaviour. QRIS adoption may directly improve business operations and

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customer interactions, as reflected in MSME performance. When businesses achieve better performance in areas visible to customers, such as service quality, transaction efficiency, innovation, and customer experience, these outcomes may increase the value customers perceive. Greater perceived value and more positive experiences may, in turn, encourage customers to recommend and support the business.

This mechanism is consistent with the view that customers respond favourably when businesses deliver superior value and positive experiences. The importance of positive customer experiences and perceived value in encouraging supportive customer behaviours is highlighted (Lowenstein, 2011; Fuggetta, 2012; Thomas, 2016). When MSMEs provide better service, more convenient transactions, and improved customer experiences, customers may have stronger reasons to recommend the business to others. Therefore, MSME performance may function as an intermediary mechanism linking QRIS adoption to Customer Advocacy Behaviour.

H_6: QRIS adoption has a significant effect on Customer Advocacy Behaviour through MSME performance.

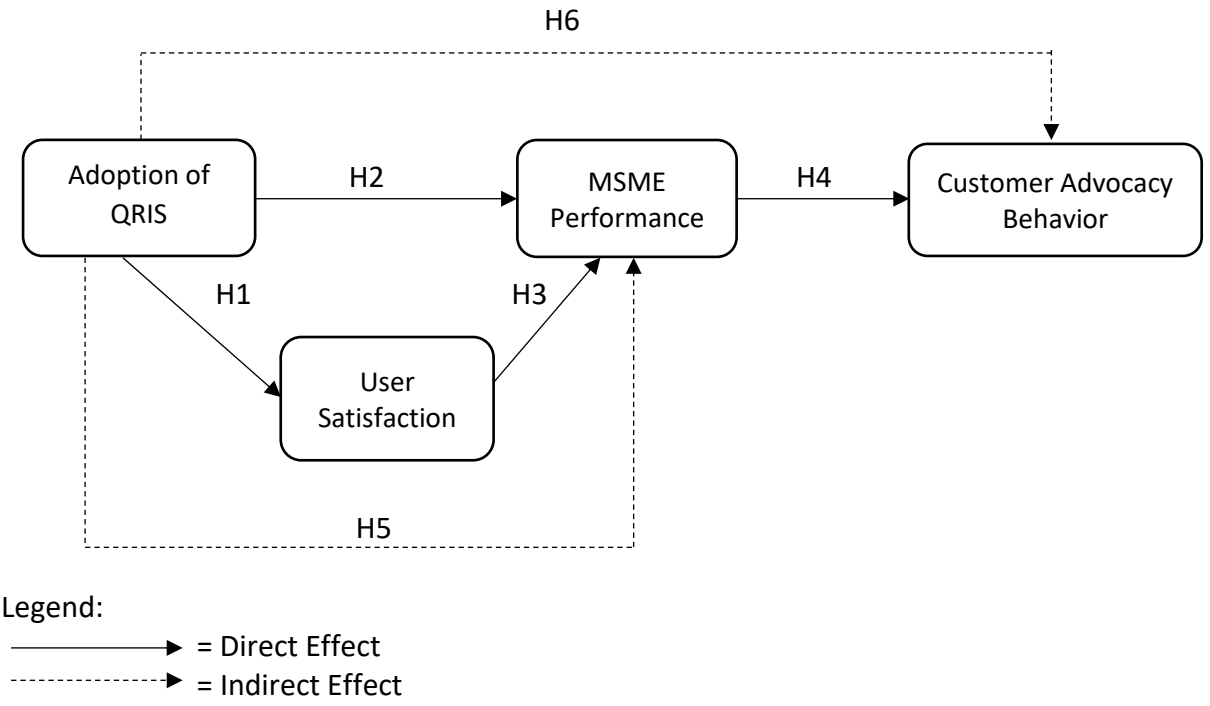

Figure 1. Research Framework
Source: Researcher (2025)

3. METHODS

The impact of QRIS implementation on the performance of tourism-sector MSMEs was examined using a quantitative research approach, with user satisfaction serving as a mediating variable. A quantitative research design was employed because it enables the collection of objective empirical evidence and facilitates the examination of relationships among the variables specified in the research hypotheses. The MSMEs included in this study

comprised tourism-related businesses in Indonesia, such as homestays, restaurants in tourist destinations, souvenir shops, and travel agencies that had adopted QRIS as a digital payment method.

A purposive sampling technique was employed because the study required respondents with relevant knowledge and direct experience in implementing QRIS in tourism-sector MSMEs. This sampling approach was considered appropriate because not all MSME owners or managers had adopted QRIS or possessed sufficient experience to evaluate its influence on business performance. Accordingly, respondents were selected based on the following criteria: (1) businesses that had used QRIS as a payment method for at least six months; (2) businesses operating in the tourism sector with regular transaction experience using QRIS; and (3) businesses located in the Greater Jakarta metropolitan area, including Jakarta, Bogor, Depok, Tangerang, and Bekasi.

The study was conducted over three months, from July to October 2025. The sample size was determined based on Hair et al.'s (2019) recommendation for the application of Partial Least Squares Structural Equation Modelling (PLS-SEM). According to the 10-times rule, the minimum sample size should be at least ten times the maximum number of structural paths directed toward any endogenous construct in the proposed research model. In this study, MSME Performance was the endogenous construct with the highest number of incoming structural paths, with three antecedent variables predicting it. Therefore, the minimum required sample size was 30 respondents. To enhance statistical power, improve the accuracy of parameter estimates, and strengthen the robustness of the structural model, data were collected from 380 MSME owners and/or managers.

Primary data were collected through an online questionnaire distributed to MSMEs operating in the tourism sector. The questionnaire employed a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Although the quantitative survey served as the primary data collection method, brief interviews were also conducted to obtain additional insights into QRIS adoption and usage practices among tourism-sector MSMEs.

The Unified Theory of Acceptance and Use of Technology (UTAUT), proposed by Venkatesh et al. (2003), was adopted as the theoretical foundation for measuring the QRIS-related independent variables. These variables comprised performance expectancy, effort expectancy, social influence, and facilitating conditions. In addition, based on Expectation Disconfirmation Theory (EDT), introduced by Oliver (1980), user satisfaction was conceptualised as a mediating variable encompassing expectation–experience congruence, perceived convenience, perceived security, and satisfaction with QRIS usage in business transactions.

MSME Performance (Y) was measured using non-financial performance indicators adapted from the Balanced Scorecard framework developed by Kaplan & Norton (1992). The indicators included human resource development, customer satisfaction, internal operational efficiency, service innovation, and overall business performance.

The Customer Advocacy Behaviour (CAB) construct was grounded in Customer Engagement Theory, which posits that customers who experience positive engagement and satisfactory interactions with a business are more likely to recommend, support, and promote the business to others (Brodie et al., 2011). As this study involved MSME owners and

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managers as respondents, CAB was operationalised as perceived customer advocacy behaviour, referring to owners' perceptions of customers' willingness to recommend, support, and promote their businesses following QRIS-based transaction experiences.

Table 1. Variable Measurement

Variable	Dimension	Indicator
Adoption of QRIS Source: Venkatesh et al. (2003)	Performance Expectancy	QRIS improves the effectiveness of my business transaction processes.
		QRIS enhances the efficiency of payment transactions in my business.
		Using QRIS improves the overall operational performance of my business.
	Effort Expectancy	The interaction with QRIS is clear and easy for me to understand.
		QRIS is easy to operate and requires minimal effort in my daily business activities.
		I can quickly become proficient in using QRIS for business transactions.
	Social Influence	People who influence my business decisions encourage me to use QRIS.
		My business partners and customers support my decision to adopt QRIS.
	Facilitating Conditions	Adequate technical support is available when I encounter problems while using QRIS.
		The necessary facilities and infrastructure are available to support the implementation of QRIS in my business.
User Satisfaction Source: Oliver (1980)	Expectation–Experience Fit	I have access to sufficient resources required to use QRIS in my business activities.
		The performance of QRIS meets my expectations as a business owner/manager.
	Convenience	My experience with QRIS is consistent with my expectations prior to adoption.
		QRIS makes payment management easier in my business operations.
		QRIS simplifies transaction processes between my business and customers.
	Security	QRIS enables me to manage payments more practically and efficiently.
		QRIS provides secure payment transactions for my business.
		I believe that QRIS protects my business transaction information from security risks.
	Reliability	I feel confident using QRIS to manage business payments.
		QRIS is reliable in supporting my daily business transactions.

Variable	Dimension	Indicator
MSME Performance Source: Kaplan & Norton (1992)	Customer Satisfaction	QRIS consistently functions effectively when used in my business operations.
		Using QRIS helps my business improve customer satisfaction.
		Customers experience greater convenience when making payments through QRIS in my business.
	Internal Efficiency	QRIS helps my business improve customer retention and encourage repeat purchases.
		QRIS improves the efficiency of transaction management in my business.
	Service Innovation	QRIS reduces payment processing errors in my business operations.
		QRIS encourages my business to develop new approaches to serving customers.
		QRIS supports my efforts to improve digital-based services.
	Human Resource Development	The adoption of QRIS motivates my business to implement service improvements.
		QRIS improves my employees' ability to manage digital transactions.
Customer Advocacy Behaviour Source: (Brodie et al., 2011)	Positive Word-of-Mouth	Employees in my business become more competent in using digital payment systems.
		Customers share positive experiences about my business with others after using QRIS payment services.
	Recommendation Intention	Customers leave positive feedback about my business after using QRIS-based transactions.
		Customers recommend my business to their friends and relatives.
	Business Support	Customers encourage people around them to visit or purchase products/services from my business.
		Customers actively recommend my business to others who need similar products or services.
	Defensive Advocacy	Customers help strengthen my business reputation through positive interactions and feedback.
		Customers defend my business when they hear unfair negative opinions from others.
		Customers continue to support my business even when comparing it to competitors.

The data were analysed using the Partial Least Squares Structural Equation Modelling (PLS-SEM) approach, following the methodological guidelines recommended by Hair et al. (2019). The evaluation of the research model consisted of two main stages: assessment of the measurement model and evaluation of the structural model. The measurement model was assessed for validity and reliability, whereas the structural model was evaluated for explanatory power and hypothesis-testing results.

First, convergent validity was assessed by examining the outer loadings and the Average Variance Extracted (AVE). An indicator was considered acceptable when its outer loading exceeded 0.70, and an AVE greater than 0.50 indicated that the construct explained more than 50% of the variance in its indicators (Hair et al., 2019; Fornell & Larcker, 1981).

Second, construct reliability was assessed using Composite Reliability (CR) and Cronbach's Alpha coefficients. A construct was considered reliable when its Composite Reliability and Cronbach's Alpha values exceeded 0.70, indicating adequate internal consistency among the measurement items (Hair et al., 2019; Nunnally & Bernstein, 1994).

Third, discriminant validity was assessed to determine whether each construct was empirically distinct from the other constructs in the proposed research model. The Fornell–Larcker criterion was employed, whereby the square root of the AVE for each construct should be greater than its correlations with the other constructs. In addition, the Heterotrait–Monotrait (HTMT) ratio was examined, with values below 0.90 indicating satisfactory discriminant validity (Fornell & Larcker, 1981; Henseler et al., 2015).

Fourth, the structural model was evaluated by examining the coefficient of determination (R^2), which indicates the explanatory power of the endogenous constructs. According to Hair et al. (2019), R^2 values of 0.75, 0.50, and 0.25 indicate substantial, moderate, and weak explanatory power, respectively.

Finally, hypothesis testing was conducted by examining the path coefficients using a bootstrapping procedure with 5,000 resamples. The significance of the direct and indirect relationships was assessed based on the t-statistic and p-value. A hypothesised relationship was considered statistically significant when the t-statistic exceeded 1.96 and the p-value was below 0.05 in a two-tailed test (Hair et al., 2019).

4. RESULTS AND DISCUSSION

4.1 Result

Table 2. Respondents' Characteristics

Characteristic	Category	Frequency	Percentage (%)
Gender	Male	203	53.4%
	Female	177	46.6%
Age	< 25 years	38	10.0%
	25–34 years	114	30.0%
	35–44 years	139	36.6%
	≥ 45 years	89	23.4%
Educational Level	High School/Vocational	108	28.4%
	Diploma	82	21.6%
	Bachelor's Degree (S1)	152	40.0%
	Postgraduate (S2/S3)	38	10.0%
Type of Business	Homestay/Accommodation	63	16.6%
	Culinary/Food & Beverage	165	43.4%
	Souvenir Shop	89	23.4%

Characteristic	Category	Frequency	Percentage (%)
	Tour & Travel	63	16.6%

Source: Data processed by Author (2025)

The study involved 380 respondents, comprising 203 male respondents (53.4%) and 177 female respondents (46.6%). This distribution indicates a relatively balanced representation of male and female respondents. Respondents aged 35–44 years constituted the largest age group, with 139 respondents (36.6%). Furthermore, 152 respondents (40.0%) held a bachelor's degree, indicating a relatively high level of educational attainment. By business type, culinary businesses were the largest category, accounting for 165 respondents (43.4%). This finding reflects the substantial representation of culinary businesses among the tourism-sector MSMEs included in the study.

Table 3. Validity Convergence

Variable	Dimension	Questionnaire Item	Loading Factor	AVE	Cronbach's Alpha	CR
Adoption of QRIS	Performance Expectancy	PE1	0.828	0.652	0.945	0.961
		PE2	0.767			
		PE3	0.758			
	Effort Expectancy	EX1	0.789			
		EX2	0.755			
		EX3	0.754			
	Social Influence	SI1	0.823			
		SI2	0.768			
	Facilitating Conditions	FC1	0.782			
		FC2	0.767			
User Satisfaction	Expectation–Experience Fit	EEF1	0.816	0.611	0.881	0.897
		EEF2	0.776			
	Convenience	Cn1	0.798			
		Cn2	0.805			
		Cn3	0.812			
	Security	Sc1	0.843			
		Sc2	0.798			
		Sc3	0.774			
	Reliability	Rb1	0.774			
		Rb2	0.815			
MSME Performance	Customer Satisfaction	CS1	0.807	0.637	0.903	0.921
		CS2	0.888			
		CS3	0.836			
	Internal Efficiency	IE1	0.782			
		IE2	0.888			
	Service Innovation	Sin1	0.834			
		Sin2	0.800			
		Sin3	0.792			
	Human Resource Development	HRD1	0.768			
		HRD1	0.711			

Variable	Dimension	Questionnaire Item	Loading Factor	AVE	Cronbach's Alpha	CR
Customer Advocacy Behavior	Positive Word-of-Mouth	PWM1	0.704	0.667	0.899	0.706
		PWM2	0.788			
	Recommendation Intention	RI1	0.726			
		RI2	0.705			
	Business Support	BS1	0.800			
		BS2	0.799			
	Defensive Advocacy	DA1	0.734			
		DA2	0.741			

Source: Smart PLS 4.0 data processing (2025)

Table 3 shows that all questionnaire indicators meet the required validity and reliability criteria. All outer loading values exceed 0.70, and the AVE values exceed 0.50, indicating satisfactory convergent validity. In addition, all constructs demonstrate adequate internal consistency, as indicated by Cronbach's alpha and Composite Reliability values exceeding 0.70. These results confirm that the measurement instrument has satisfactory validity and reliability for assessing the constructs examined in this study.

Table 4. R-Square (R^2)

Variable	R^2
User Satisfaction	0.155
MSME Performance	0.411
Customer Advocacy Behavior	0.564

Source: Smart PLS 4.0 data processing (2025)

Table 4 shows that QRIS adoption explains 15.5% of the variance in user satisfaction (R^2 = 0.155). Furthermore, QRIS adoption and user satisfaction jointly explain 41.1% of the variance in MSME performance (R^2 = 0.411). In addition, user satisfaction and MSME performance explain 56.4% of the variance in Customer Advocacy Behaviour (R^2 = 0.564). These findings indicate that the structural model provides moderate explanatory power for MSME performance and Customer Advocacy Behaviour.

Table 5. f-Square (Effect Size)

Relationship	f^2	Effect Size Category
QRIS Adoption → User Satisfaction	0.184	Small to Medium
QRIS Adoption → MSME Performance	0.231	Medium
User Satisfaction → MSME Performance	0.198	Small to Medium
MSME Performance → Customer Advocacy Behavior	0.276	Medium
User Satisfaction → Customer Advocacy Behaviour	0.142	Small

Source: SmartPLS 4.0 data processing (2025)

Table 5 presents the effect size (f^2) results. QRIS adoption demonstrates small-to-medium effects on user satisfaction and MSME performance, with the strongest effect observed on MSME performance, where the effect size falls within the medium range. User satisfaction

also demonstrates a small-to-medium effect on MSME performance and a small effect on Customer Advocacy Behaviour. Meanwhile, MSME performance demonstrates a medium effect on Customer Advocacy Behaviour. These findings indicate that MSME performance plays a relatively important role in influencing Customer Advocacy Behaviour within the context of QRIS adoption.

Table 6. Q-Square (Predictive Relevance)

Variable	Q^2	Predictive Relevance
User Satisfaction	0.102	Small
MSME Performance	0.285	Medium
Customer Advocacy Behavior	0.341	Medium

Source: SmartPLS 4.0 data processing (2025)

Table 6 presents the Q^2 values for predictive relevance. All endogenous constructs in the model demonstrate predictive relevance, as indicated by Q^2 values greater than zero. User satisfaction demonstrates small predictive relevance (Q^2 = 0.102), whereas MSME performance (Q^2 = 0.285) and Customer Advocacy Behaviour (Q^2 = 0.341) demonstrate moderate predictive relevance. These findings indicate that the structural model has predictive relevance for the endogenous constructs, with MSME performance and Customer Advocacy Behaviour demonstrating moderate predictive relevance. In contrast, user satisfaction demonstrates small predictive relevance.

Figure 2 presents the structural model results. QRIS adoption has a significant effect on user satisfaction (t = 4.263) and MSME performance (t = 6.012), while user satisfaction has a significant effect on MSME performance (t = 13.323). Furthermore, MSME performance has a significant effect on Customer Advocacy Behaviour (t = 9.394), indicating that higher MSME performance is associated with stronger customer advocacy behaviour. The model explains 15.5% of the variance in user satisfaction (R^2 = 0.155), 41.1% of the variance in MSME performance (R^2 = 0.411), and 56.4% of the variance in Customer Advocacy Behaviour (R^2 = 0.564). These findings indicate that QRIS adoption contributes to MSME performance both directly and indirectly through user satisfaction, while MSME performance is significantly associated with Customer Advocacy Behaviour.

Table 7. Direct Effect Test

Relationship	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T-Statistic	P Values	Description
Adoption of QRIS → User Satisfaction	0.396	0.402	0.093	4.263	0.000	Significant
Adoption of QRIS → MSME Performance	0.279	0.281	0.046	6.012	0.000	Significant
User Satisfaction → MSME Performance	0.519	0.523	0.039	13.323	0.000	Significant

Relationship	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T-Statistic	P Values	Description
MSME Performance → Customer Advocacy Behaviour	0.447	0.452	0.048	9.394	0.000	Significant

Source: Smart PLS 4.0 data processing (2025)

Table 7 shows that all hypothesised relationships are statistically significant. QRIS adoption has a significant effect on user satisfaction (t = 4.263, p < 0.05) and MSME performance (t = 6.012, p < 0.05), while user satisfaction demonstrates the strongest effect on MSME performance (t = 13.323, p < 0.05). In addition, MSME performance has a significant effect on Customer Advocacy Behaviour (t = 9.394, p < 0.05), indicating that higher MSME performance is associated with stronger customer advocacy behaviour, including customer recommendations and positive word-of-mouth. These findings indicate that QRIS adoption is significantly associated with MSME performance both directly and indirectly through user satisfaction.

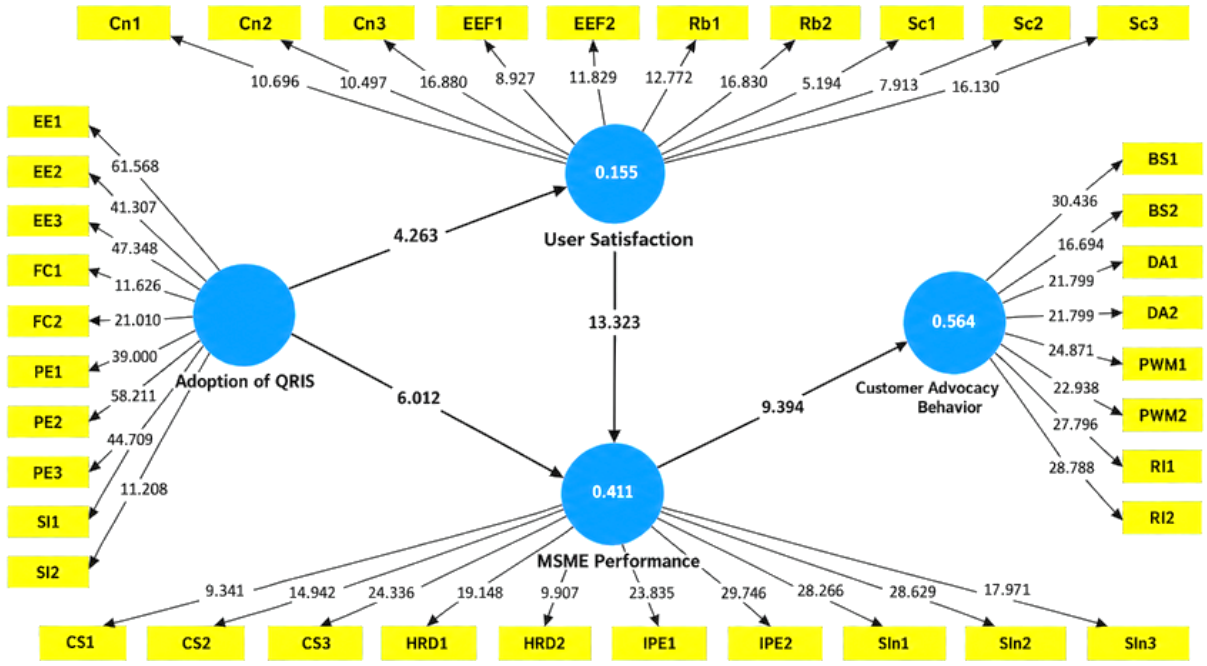

Figure 2. Bootstrapping Result
Source: Smart PLS 4.0 data processing (2025)

Table 8. Indirect Effect

Relationship	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T-Statistic	P Values	Description
Adoption of QRIS → User Satisfaction → MSME Performance	0.296	0.305	0.074	4.018	0.000	Significant

Relationship	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T-Statistic	P Values	Description
Adoption of QRIS → MSME Performance → Customer Advocacy Behavior	0.206	0.214	0.058	3.552	0.000	Significant

Source: Smart PLS 4.0 data processing (2025)

Table 8 presents the specific indirect effects of QRIS adoption through user satisfaction and MSME performance. The first indirect effect indicates that QRIS adoption has a significant impact on MSME performance through user satisfaction (O = 0.296, t = 4.018, p < 0.001). This finding indicates that QRIS adoption contributes to MSME performance, in part, through the positive satisfaction experienced by users of the digital payment system.

The second indirect effect shows that QRIS adoption has a significant indirect effect on Customer Advocacy Behaviour through MSME performance (O = 0.206, t = 3.552, p < 0.001). This result indicates that the adoption of QRIS is associated with Customer Advocacy Behaviour through improvements in MSME performance. Thus, MSME performance functions as a mediator in the relationship between QRIS adoption and Customer Advocacy Behaviour.

Overall, the results provide support for both mediation hypotheses. User satisfaction mediates the relationship between QRIS adoption and MSME performance, while MSME performance mediates the relationship between QRIS adoption and Customer Advocacy Behaviour. These findings represent two distinct mediation mechanisms rather than a single sequential mediation pathway.

4.2 Discussion

4.2.1 The Impact of QRIS Adoption on User Satisfaction

The findings of this study demonstrate that QRIS adoption has a significant effect on user satisfaction among tourism-sector MSMEs, including homestays, culinary businesses located in tourist destinations, souvenir retailers, and tour and travel service providers. QRIS facilitates faster, more convenient, and more efficient transactions that are consistent with users' expectations. In addition, its secure and transparent payment system can enhance users' confidence in conducting digital transactions. Social support and the availability of supporting infrastructure may further contribute to user satisfaction by providing a consistent and reliable digital payment experience. Therefore, QRIS adoption not only fulfils basic transaction requirements but also provides additional value through greater convenience, security, and service reliability, which are particularly relevant in the tourism industry, where fast and dependable services are important.

These findings are consistent with Mualifah & Muharrami (2024), who demonstrated that perceived ease of use of QRIS positively influences user satisfaction among micro-enterprises. Similarly, Nadinta & Kusumawati (2023) found that perceived usefulness significantly contributes to QRIS user satisfaction, particularly among Generation Z users. Zhong & Chen (2023) emphasised the important role of perceived value in shaping user satisfaction with digital payment services in China. Furthermore, Liébana-Cabanillas (2020)

highlighted that performance expectancy and ease of use are key determinants of user satisfaction with mobile payment systems such as Apple Pay. Collectively, these studies support the positive relationship between digital payment adoption and user satisfaction across different business and consumer contexts. In addition, Alfawareh et al. (2025) found that perceived ease of use and perceived benefits of QRIS positively contribute to user satisfaction by addressing users' needs for digital payment services.

4.2.2 The Impact of QRIS Adoption on the Performance of MSMEs in the Tourism Sector

The findings of this study indicate that QRIS adoption has a significant effect on the performance of MSMEs in the tourism sector, including homestays, restaurants, souvenir shops, and tour and travel businesses. The adoption of QRIS facilitates faster, safer, and more reliable transactions, which may contribute to customer satisfaction and an improved tourism experience. Furthermore, QRIS can support internal business processes by reducing operational costs, minimising transaction errors, and improving the efficiency of financial management.

QRIS adoption may also encourage MSMEs to develop service innovations, such as integrating digital payment systems with promotional platforms, online applications, and tourism packages, thereby supporting their competitiveness. Furthermore, QRIS can facilitate the digital transformation of MSMEs by encouraging the adoption of more advanced financial management practices and technology-based business strategies. Thus, QRIS functions not only as a payment instrument but also as a digital business tool that can support MSME performance, productivity, and competitiveness in the tourism sector.

These findings are consistent with Nita et al. (2024), who found that QRIS implementation provides significant benefits for MSMEs in Indonesia's food and beverage sector. Midsurnight & Kafabih (2025) further demonstrated that QRIS service fees influence technology adoption among MSMEs in Semarang. Talom & Tengeh (2020) found that electronic money services significantly contribute to the financial performance of MSMEs in Douala, Cameroon. Similarly, Ledi et al. (2023) demonstrated that the adoption of QR codes and electronic money positively affects MSME performance, particularly by enhancing digital capabilities. Collectively, these findings suggest that digital payment systems, such as QRIS, can enhance transaction efficiency, business performance, and competitiveness among MSMEs. Furthermore, Ly & Ly (2022) and Sharabati et al. (2024) found that digital payment systems contribute to convenience, productivity, business activities, and operational efficiency.

4.2.3 The Impact of User Satisfaction on MSME Performance

The findings of this study demonstrate that user satisfaction has a significant effect on the performance of MSMEs in the tourism sector, including homestays, culinary businesses located in tourist destinations, souvenir shops, and tour and travel service providers. This relationship may be explained by the role of satisfaction in strengthening customers' confidence, comfort, and trust in MSME services. Satisfied customers are more likely to develop favourable perceptions and behavioural intentions, which may subsequently contribute to business sustainability and growth.

Furthermore, user satisfaction may contribute to operational improvements by encouraging MSMEs to reduce transaction time, minimise operational costs, and mitigate

business risks through more efficient payment systems. Higher levels of customer satisfaction may also encourage MSMEs to develop innovative services, such as digital payment-based promotions and integration with online tourism platforms. In addition, positive user experiences may encourage MSME owners and employees to enhance their digital competencies and adopt more contemporary service strategies to meet evolving customer expectations.

These findings are supported by previous studies examining the relationship between user satisfaction and MSME performance. Kilay et al. (2022) and Nurqamarani et al. (2024) demonstrated that the adoption of electronic payment systems significantly influences MSME supply chain performance in Indonesia, with customer satisfaction emerging as an important contributing factor. Meanwhile, Lou et al. (2017) and Irianto & Chanvarasuth (2025) found that QR-based payment systems in the tourism industry enhance tourist satisfaction and, in turn, influence the performance of tourism service providers. Ledi et al. (2023) also found that QR code and digital currency adoption positively affect MSME performance in developing countries, particularly through improvements in customer experience and satisfaction. Similarly, Yi et al. (2024) demonstrated that the quality of digital payment applications after usage, as reflected in user satisfaction, significantly influences market acceptance and business performance. Collectively, these studies highlight the importance of user satisfaction as a potential mechanism linking digital payment adoption with MSME efficiency, innovation capability, and competitiveness in the tourism sector.

4.2.4 The Impact of MSME Performance on Customer Advocacy Behaviour

The findings of this study demonstrate that MSME performance significantly affects Customer Advocacy Behaviour among tourism-sector MSMEs. This finding indicates that improvements in business performance may be associated with more favourable customer responses, including recommendations, positive word-of-mouth, and support for the business. In the context of tourism, MSME performance is reflected not only in financial outcomes but also in customer satisfaction, service quality, operational efficiency, service innovation, and human resource development. These non-financial performance dimensions can shape customers' overall perceptions of the value and quality of the services provided by tourism-sector MSMEs.

Customer Advocacy Behaviour may emerge when customers perceive that an MSME consistently provides satisfactory products or services and reliable transaction experiences. When customers have positive experiences, they may be more willing to recommend the business to others, share positive word-of-mouth, and continue supporting it. Therefore, MSME performance can serve as an important foundation for developing favourable customer responses and strengthening customer relationships. This relationship is particularly relevant in the tourism sector, where customer experiences and recommendations can influence the visibility and reputation of tourism-related businesses.

These findings are consistent with Acharya (2021), who demonstrated that customer experience and service-related factors can contribute to positive customer responses. Chen et al. (2021) further highlighted the importance of customer-related outcomes in strengthening customer engagement and behavioural intentions. Palmatier et al. (2018) emphasised that strong customer relationships can generate favourable behavioural

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outcomes, including advocacy and continued support. Similarly, Fornell et al. (2020) demonstrated the importance of customer satisfaction and perceived value in shaping customer responses to businesses. Collectively, these findings support the view that MSME performance, particularly performance reflected in customer-oriented and service-related dimensions, is associated with stronger Customer Advocacy Behaviour.

4.2.5 The Mediating Role of User Satisfaction in the Relationship Between QRIS Adoption and MSME Performance in the Tourism Sector

The findings indicate that user satisfaction significantly mediates the relationship between QRIS adoption and MSME performance in the tourism sector. This result suggests that the relationship between QRIS adoption and MSME performance is not limited to the direct benefits associated with digital payment adoption but may also operate through users' satisfaction with the payment experience. When QRIS provides a convenient, reliable, secure, and efficient transaction experience, users may perceive greater value in the payment system, which can contribute to more favourable evaluations of MSME services.

From a theoretical perspective, this finding is consistent with the integration of the Unified Theory of Acceptance and Use of Technology (UTAUT) and Expectancy Disconfirmation Theory (EDT). UTAUT explains how users' perceptions of the usefulness, ease of use, social influence, and facilitating conditions associated with a technology may encourage its adoption. EDT complements this perspective by explaining how users evaluate their experience against their prior expectations. When the experience associated with QRIS meets or exceeds users' expectations, satisfaction may increase, thereby providing an important mechanism by which digital payment adoption is linked to business outcomes.

The findings are consistent with Oliveira et al. (2016), who demonstrated that technology acceptance can contribute to positive post-adoption outcomes. Alalwan (2018) similarly emphasised the importance of perceived usefulness, ease of use, and user-related factors in determining the outcomes of digital payment adoption. Raza et al. (2020) further demonstrated that customer satisfaction can play an important role in explaining the relationship between technology-related factors and behavioural or business outcomes. Taken together, these studies provide empirical support for the mediating role of user satisfaction in the relationship between digital payment adoption and MSME performance.

The present findings therefore indicate that user satisfaction serves as an important mediating mechanism linking QRIS adoption to MSME performance. This result reinforces the importance of evaluating digital payment adoption not only on whether the technology is implemented, but also on whether users perceive the resulting transaction experience as satisfactory and valuable. Importantly, this mediation represents a distinct indirect relationship between QRIS adoption and MSME performance and should be interpreted separately from the mediation of MSME performance in the relationship between QRIS adoption and Customer Advocacy Behaviour.

4.2.6 The Mediating Role of MSME Performance in the Relationship Between QRIS Adoption and Customer Advocacy Behaviour in the Tourism Sector

The findings further demonstrate that MSME performance significantly mediates the relationship between QRIS adoption and Customer Advocacy Behaviour. This finding indicates that QRIS adoption may be associated with customer advocacy through its relationship with

MSME performance. In other words, the adoption of QRIS may contribute to business-related outcomes. At the same time, favourable MSME performance may subsequently be associated with customers' willingness to recommend, support, and promote the business.

This relationship can be explained through the role of digital payment systems in supporting business operations and customer experiences. QRIS can facilitate faster and more convenient transactions, reduce the complexity of payment processes, and provide a more structured digital transaction environment. These characteristics may help MSMEs improve operational efficiency and service delivery. When such improvements are reflected in the business's overall performance, customers may perceive greater value in their interactions, which can contribute to positive behavioural responses such as recommendations and positive word-of-mouth.

The findings are consistent with Lowenstein (2011), who highlighted the importance of positive customer experiences and value creation in generating favourable customer responses. Fuggetta (2012) further emphasised the role of customer engagement in encouraging customers to support and advocate for businesses actively. Thomas (2016) similarly indicated that customer advocacy can develop when customers perceive sufficient value from their interactions with a business. These studies provide a basis for understanding MSME performance as a potential mechanism linking technology adoption with Customer Advocacy Behaviour.

The mediation finding therefore suggests that the relationship between QRIS adoption and Customer Advocacy Behaviour may operate through improvements in business-related outcomes. However, the result should be interpreted as an indirect statistical relationship within the proposed structural model rather than as evidence that QRIS adoption alone directly determines customer advocacy. The finding highlights the role of MSME performance as an intermediary mechanism in translating digital payment adoption into favourable customer behavioural outcomes.

Taken together, the findings from the two mediation analyses indicate two distinct indirect relationships within the proposed model. First, user satisfaction mediates the relationship between QRIS adoption and MSME performance. Second, MSME performance mediates the relationship between QRIS adoption and Customer Advocacy Behaviour. These findings should therefore be understood as separate mediation mechanisms rather than as evidence of a single sequential mediation pathway.

4.3 Theoretical and Practical Implications

The findings of this study provide several theoretical and practical implications. From a theoretical perspective, the study extends the application of UTAUT and EDT to the context of QRIS adoption among tourism-sector MSMEs in Indonesia. UTAUT provides a framework for understanding technology adoption based on users' perceptions of performance expectancy, effort expectancy, social influence, and facilitating conditions. In contrast, EDT explains how users evaluate their experiences after adopting the technology. The integration of these perspectives provides a broader explanation of how technology adoption may be associated with user satisfaction and subsequent business outcomes.

The findings also contribute to the literature by positioning user satisfaction as an important mediating mechanism between QRIS adoption and MSME performance. Rather

than viewing digital payment adoption solely as a technological or transactional decision, the findings highlight the importance of users' post-adoption experiences in understanding the relationship between digital payment technology and business performance. In addition, the inclusion of Customer Advocacy Behaviour extends the analysis beyond internal business outcomes to consider potential customer-related consequences of MSME performance.

From a practical perspective, the findings suggest that tourism-sector MSMEs should consider QRIS not merely as a payment instrument but also as part of their broader digital business strategy. MSME owners and managers can focus on ensuring that QRIS is implemented effectively, supported by reliable digital infrastructure, and integrated into daily business operations. Attention should also be given to transaction convenience, security, reliability, and service quality because these factors may influence users' satisfaction with digital payment experiences.

For tourism-sector MSMEs, maintaining satisfactory digital transaction experiences may also support broader efforts to improve customer relationships. Businesses can leverage digital payment adoption as part of a broader strategy encompassing service innovation, operational efficiency, and customer-oriented practices. Consistent service delivery and satisfactory transaction experiences may create conditions that encourage customers to recommend and support the business.

The findings also have implications for policymakers and other stakeholders involved in MSME digitalisation. Support programmes should not focus exclusively on increasing QRIS adoption rates; they should also consider digital literacy, infrastructure availability, transaction security, and MSMEs' capacity to integrate digital payment systems into their business processes. Such support may help MSMEs derive greater value from digital payment technologies and strengthen their ability to use digital tools as part of their broader business development strategies.

5. CONCLUSION

This study aims to examine the effects of QRIS adoption on user satisfaction, MSME performance, and Customer Advocacy Behaviour among tourism-sector MSMEs in Indonesia, and to investigate the mediating role of user satisfaction in the relationship between QRIS adoption and MSME performance. The findings demonstrate that QRIS adoption has a positive and statistically significant effect on both user satisfaction and MSME performance. Furthermore, user satisfaction has a significant effect on MSME performance. In contrast, MSME performance is significantly associated with Customer Advocacy Behaviour, as reflected in customer recommendations, business support, and the sharing of favourable experiences with potential customers. These findings indicate that QRIS may function not only as a digital payment instrument but also as a technology that supports service delivery, operational efficiency, and the development of customer relationships within tourism-sector MSMEs.

The theoretical contribution of this study lies in the development of an integrated framework linking digital payment adoption, user satisfaction, MSME performance, and Customer Advocacy Behaviour. The framework incorporates the perspectives of the Unified Theory of Acceptance and Use of Technology (UTAUT), Expectation Disconfirmation Theory

(EDT), Theory of Customer Engagement (TCE), and Non-Financial Performance Measures (NFPM). By integrating these perspectives, the study provides a broader theoretical basis for understanding the relationships between digital technology adoption, post-adoption user experiences, business performance, and customer-related behavioural outcomes among tourism-sector MSMEs.

From a practical perspective, the findings suggest that tourism-sector MSMEs should consider QRIS not only as a digital payment mechanism but also as part of their broader customer experience management and business development strategies. Enhancing digital literacy, strengthening technological capabilities, and integrating QRIS into service management and digital marketing practices may help MSMEs improve their operational capabilities and competitiveness. For policymakers, financial institutions, and other relevant stakeholders, the findings highlight the importance of strengthening digital infrastructure, developing programmes that support technology adoption, and expanding digital financial literacy initiatives to support the sustainable development of tourism-sector MSMEs.

Despite its theoretical and practical contributions, this study has several limitations. First, the research was conducted exclusively among tourism-sector MSMEs in the Greater Jakarta area, which may limit the generalisability of the findings to MSMEs operating in other regions with different economic conditions and levels of digital technology adoption. Second, the study employed a quantitative survey approach based primarily on respondents' perceptions; therefore, the findings may not fully capture the underlying experiences, implementation challenges, and managerial perspectives associated with QRIS adoption among MSME owners and managers. Third, the research model does not incorporate other potentially relevant external factors, such as digital capability, technology trust, business innovation, and environmental support, which may also influence the outcomes of digital transformation among MSMEs.

Future research could expand the study's geographical scope and include MSMEs across different sectors to provide broader insights into the implications of digital payment adoption. Future studies could also extend the proposed framework by incorporating additional variables, such as digital capability, technology readiness, trust, innovation capability, and competitive advantage. The inclusion of these variables may provide a more comprehensive understanding of the mechanisms underlying digital transformation and sustainable performance among MSMEs within the tourism ecosystem.

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All authors contributed to the research and preparation of the manuscript. All authors reviewed and approved the final version and accept responsibility for the integrity of the published work.

ETHICS STATEMENT

The research was conducted in accordance with applicable ethical standards. Participation in the study was voluntary, and informed consent was obtained from all respondents. The confidentiality and anonymity of respondents and their data were maintained throughout the research process.

THE USE OF AI

During the preparation of this manuscript, the authors used ChatGPT (OpenAI) for language editing and grammar improvement. The authors reviewed and edited the output and take full responsibility for the accuracy, originality, and integrity of the published work.

CONFLICT OF INTERERST

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this article.

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