

Scan, Pay, and Loyal: The Influence of QRIS on Customer Loyalty with the Mediation of Satisfaction and Moderation of Service Quality

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Abstract

This study explores the impact of the Quick Response Code Indonesian Standard (QRIS) on customer loyalty by examining the mediating role of customer satisfaction and the moderating role of service quality. Using a quantitative approach, data were collected from 76 QRIS users at PT. Bank Pembangunan Daerah Banten (Perseroda) Tbk, Surabaya Branch. The analysis was conducted using Partial Least Squares-Structural Equation Modeling (PLS-SEM) with SmartPLS 4.0 software. The findings reveal that the implementation of QRIS significantly enhances customer satisfaction and customer loyalty. Customer satisfaction partially mediates the relationship between QRIS and loyalty, indicating that QRIS contributes to loyalty by improving the customer experience. Moreover, service quality strengthens the influence of QRIS on loyalty, serving as a pure moderator in the model. These results suggest that digital payment innovation alone is not sufficient to build loyalty; it must be supported by consistent and high-quality service delivery. The study provides practical insights for regional banks seeking to optimize QR-based services as part of their digital transformation and customer retention strategies.

Article Info

Keywords:

QRIS, Customer Loyalty, Customer Satisfaction, Service Quality, Digital Payment, PLS-SEM

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1. Introduction

Digital transformation in the financial sector has significantly reshaped how consumers interact with banking services. The implementation of cashless payment systems, particularly through QR code-based applications, represents a major shift in transactional behavior in Indonesia (Prasetyo et al., 2021). One of the key initiatives driving this shift is the Quick Response Code Indonesian Standard (QRIS), introduced by Bank Indonesia in 2019, with the aim to unify diverse payment platforms and promote interoperability across providers [(Bank Indonesia, 2020)]. QRIS is more than just a payment standard—it is a central pillar of Indonesia’s financial inclusion strategy. By simplifying transactions for both consumers and merchants, especially in the MSME sector, QRIS lowers the entry barriers to digital finance and extends banking access to underserved populations (Handayani, 2023). Studies also confirm that QRIS supports greater transparency and efficiency in retail transactions, while enabling Bank Indonesia to monitor digital payment flows effectively (Leiwakabessy et al., 2023). In addition, QRIS contributes to behavioral shifts in digital adoption by encouraging mobile-first transactions among both urban and rural users (Saputri, 2023). As of 2024, the continued expansion of QRIS has not only facilitated small-scale merchant digitization, but also enhanced Indonesia’s resilience during economic disruptions such as the COVID-19 pandemic, where contactless payments became essential (Farrell et al., 2022).

In the highly competitive banking sector of Surabaya, Indonesia, cultivating loyalty is not merely an outcome but a strategic imperative. At PT. Bank Pembangunan Daerah Banten (Perseroda) Tbk, Surabaya Branch (hereafter referred to as Bank Banten), efforts to align with national digital payment standards via QRIS are seen as pivotal to enhancing customer engagement and sustaining long-term relationships. Despite being a regional bank, Bank Banten faces pressures to compete with major national banks that offer seamless and tech-driven financial services. The adoption of QRIS represents not only a regulatory compliance measure but also a strategic move to elevate the perceived service value and retain a loyal customer base in a digitally saturated environment.

While numerous studies have examined the adoption of digital payment systems, particularly QR code payment methods, research focusing on their impact on customer loyalty remains limited. Existing literature often concentrates on technological acceptance (Davis, 1989; Venkatesh & Davis, 2000), leaving a gap in understanding how perceived value and service interactions translate into sustained customer relationships in the context of regional banks. Recent studies have begun to explore QRIS adoption beyond technical usability, linking it more explicitly to customer behavior outcomes such as loyalty. For example, Nadinta and Kusumawati (2023) found that customer satisfaction, influenced by perceived usefulness and user experience with QRIS, significantly drives both loyalty and continued usage. Similarly, empirical research in the retail sector has shown that ease of use and brand integration with QRIS positively affect loyalty outcomes, especially among digital-native consumers (Nadinta & Kusumawati, 2023); (Handayani, 2024). This suggests a shift from merely intention-based adoption models to outcome-oriented frameworks focusing on customer retention, trust, and relational value in digital ecosystems. Despite this progress, studies emphasizing QRIS as a *strategic loyalty lever* in formal banking institutions remain sparse, especially within the regional banking context. As such, further exploration is needed to assess how QRIS-enabled systems interact with

satisfaction and service quality to influence loyalty within digital banking environments.

Recent research has extended the Technology Acceptance Model (TAM) by incorporating variables such as trust, perceived enjoyment, and service quality to better capture the complexity of digital payment adoption in Indonesia. For instance, Persadha et al. (2024) found that perceived usefulness, ease of use, and enjoyment significantly affect QRIS adoption intentions, suggesting a more holistic view of consumer behavior beyond initial usage (Persadha et al., 2024). In similar fashion, Wijayanto et al. (2024) demonstrated that TAM variables—augmented by financial literacy—significantly influence QRIS usage decisions among students, highlighting the importance of psychological readiness and contextual literacy (Wijayanto et al., 2024). Additionally, Wicaksono et al. (2024) confirmed that user satisfaction mediates the effect of ease of use, usefulness, and service security on continuous QRIS usage, offering empirical support for integrating TAM with customer satisfaction frameworks (Wicaksono et al., 2024). However, the exploration of these dynamics in institutional banking—particularly regional banks undergoing digital transformation—remains limited, warranting targeted studies such as the present research on Bank Banten.

By adopting this integrated model, the study contributes theoretically by extending the TAM framework into loyalty-oriented outcomes and practically by providing strategic insight into service management for regional banks. This aligns with the growing call for more nuanced, behavior-oriented fintech research in emerging economies (Zavolokina et al., 2020; Mhlanga, 2020). To address this gap, the following research hypotheses are developed:

H1: The QRIS system has a positive and significant effect on customer loyalty.

H2: The QRIS system has a positive and significant effect on customer satisfaction.

H3: Customer satisfaction has a positive and significant effect on customer loyalty.

H4: Service quality has a positive and significant effect on customer loyalty.

H5: Customer satisfaction mediates the effect of the QRIS system on customer loyalty.

H6: Service quality moderates the effect of the QRIS system on customer loyalty.

By integrating QRIS adoption, satisfaction, and service quality into a unified analytical framework, this study contributes to both the theoretical refinement of loyalty models in digital banking and practical insights for service innovation in regional financial institutions.

2. Methods

This study adopted a quantitative explanatory approach to examine the influence of the QRIS system on customer loyalty, with customer satisfaction as a mediating variable and service quality as a moderating variable. This design is appropriate for evaluating causal relationships between latent constructs in a structural model (Hair et al., 2019). The research was conducted at PT. Bank Pembangunan Daerah Banten (Perseroda) Tbk, Surabaya Branch, targeting customers who had actively used QRIS for financial transactions. A total sampling technique was employed, as the population was relatively small and accessible. A total of 76 customers met the inclusion criteria and completed the structured survey, representing the full sample used for analysis.

Data collection was conducted using a structured questionnaire distributed digitally. Each item was measured using a 5-point Likert scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The research instrument comprised four main constructs: (1) QRIS System: Measured through six indicators derived from the DeLone and McLean Information Systems Success Model (2003), including system

quality, information quality, service quality, use/intention to use, user satisfaction, and net benefits. These indicators have been validated in previous studies on digital financial service adoption (Setiawan, 2020; Wijaya & Susanto, 2021). (2) Customer Satisfaction: Operationalized based on the disconfirmation paradigm by Oliver (1997) and Kotler and Keller (2016), which assesses satisfaction as the emotional and cognitive evaluation of the gap between expectations and perceived performance. Indicators include complaint handling, service evaluation, and likelihood of reuse (Irawan, 2015). (3) Service Quality: Assessed using the SERVQUAL model by Parasuraman et al. (1988), which includes five dimensions: reliability, responsiveness, assurance, empathy, and tangibility. These dimensions have been widely applied in studies related to customer perception of service in banking (Zeithaml et al., 2018; Tjiptono, 2015). (4) Customer Loyalty: Defined as a long-term commitment to maintain the relationship with a service provider (Oliver, 1999; Reichheld, 1996), and measured using indicators of repeat purchase intention, resistance to switching, and positive word-of-mouth (Dick & Basu, 1994).

The validity and reliability of the instrument were assessed through pilot testing and statistical evaluation. Internal consistency reliability was evaluated using Composite Reliability (CR) and Cronbach's Alpha, while convergent validity was assessed through Average Variance Extracted (AVE), with all values exceeding the recommended thresholds of 0.70 for CR and 0.50 for AVE (Hair et al., 2019). Discriminant validity was confirmed using the Fornell-Larcker criterion. Data analysis was performed using Partial Least Squares-Structural Equation Modeling (PLS-SEM) with SmartPLS version 4.0, which is suitable for models with complex relationships and predictive purposes (Hair et al., 2019). The analysis followed a two-step approach:

1. Measurement Model Evaluation: Indicator loadings (>0.70), composite reliability (>0.70), AVE (>0.50), and discriminant validity were evaluated to confirm the construct validity of the model (Hair et al., 2021).
2. Structural Model Evaluation: The path coefficients were analyzed through bootstrapping (5,000 resamples) to assess the significance of direct, indirect, and interaction effects. Coefficient of determination (R^2) was used to evaluate the model's explanatory power, while effect size (f^2) and predictive relevance (Q^2) were assessed to measure the contribution of each exogenous variable (Chin, 1998).

Mediation analysis was performed to test the indirect effect of the QRIS system on customer loyalty through customer satisfaction, following the procedures outlined by Preacher and Hayes (2008). Moderation analysis was conducted by creating an interaction term between the QRIS system and service quality to determine whether service quality strengthened or weakened the relationship between QRIS and loyalty (Aiken & West, 1991). Ethical considerations were upheld by including informed consent in the survey instrument and ensuring the anonymity and confidentiality of all participants, in accordance with ethical research guidelines (Bryman & Bell, 2015)

3. Result and Discussion

Result

This section presents the findings of the study and their theoretical and practical implications. The results are derived from Partial Least Squares Structural Equation Modeling (PLS-SEM) analysis using SmartPLS 4.0, which includes evaluation of the measurement model, structural model, mediation, and moderation testing.

Measurement Model Evaluation

The outer model was evaluated for reliability and validity. All items demonstrated outer loading values above 0.70, confirming indicator reliability. Composite Reliability (CR) values ranged from 0.849 to 0.903, exceeding the threshold of 0.70, while Average Variance Extracted (AVE) values were above 0.50, indicating convergent validity (Hair et al., 2019).

Table 1. Outer Model Loadings and AVE

Construct	Composite Reliability	AVE	Decision
QRIS System	0.887	0.661	Valid
Customer Satisfaction	0.849	0.653	Valid
Service Quality	0.903	0.651	Valid
Customer Loyalty	0.872	0.631	Valid

In addition, discriminant validity was confirmed using the Fornell-Larcker criterion. Each construct showed a square root of AVE greater than its correlation with other constructs, confirming adequate discriminant separation.

Structural Model Evaluation

Path coefficient analysis revealed significant relationships among key variables. Bootstrapping with 5,000 subsamples was performed to assess path significance.

Table 2. Direct Path Coefficients

Hypothesis	Path Coefficient (β)	t-value	p-value	Decision
H1: QRIS \rightarrow Satisfaction	0.732	12.469	0.000	Supported
H2: Satisfaction \rightarrow Loyalty	0.697	9.356	0.000	Supported
H3: QRIS \rightarrow Loyalty	0.462	5.023	0.000	Supported

These results indicate that QRIS adoption positively influences both customer satisfaction and loyalty, supporting prior findings by Hafizh et al. (2023) and Setiawan (2020) who argued that fintech-based payment systems enhance user experience and trust. The significant path from satisfaction to loyalty is aligned with Oliver's (1997) model of post-purchase behavior, reinforcing the role of emotional evaluation in consumer retention.

Mediation Analysis

The mediation role of customer satisfaction was tested using indirect effect analysis.

Table 3. Mediation Result

Path	Indirect Effect	t-value	p-value	Mediation Type
QRIS → Satisfaction → Loyalty	0.510	6.598	0.000	Partial Mediation

The result indicates partial mediation, meaning QRIS directly and indirectly affects loyalty through satisfaction. This supports the disconfirmation-expectation model (Kotler & Keller, 2016; Irawan, 2015), where satisfaction plays a critical role in translating service experience into commitment.

Moderation Analysis

To test moderation, an interaction term between QRIS and service quality was created. The interaction showed significant influence on loyalty.

Table 4. Moderation Test

Interaction Term	β	t-value	p-value	Decision
QRIS × Service Quality → Loyalty	0.251	3.288	0.001	Supported

This indicates that service quality positively moderates the effect of QRIS on loyalty. When service quality is perceived as high, the impact of QRIS on loyalty strengthens. This finding aligns with Parasuraman et al. (1988) and Zeithaml et al. (2018), who emphasize that reliable, responsive, and empathetic service delivery amplifies the effectiveness of technological innovation in building trust.

Discussion

The results confirm that digital payment systems like QRIS are instrumental in enhancing customer satisfaction and loyalty, particularly when supported by high-quality service delivery. The significant mediation effect indicates that customers do not respond to technology alone but evaluate the entire experience. These findings are consistent with previous research on digital transformation in the banking sector (Wijaya & Susanto, 2021; Hafizh et al., 2023), which highlight that seamless integration of financial technology with service touchpoints leads to improved customer perceptions and behavioral loyalty. Additionally, the positive moderation effect of service quality indicates that technological features must be complemented by human-centered services to maximize loyalty outcomes. This supports the *tech-plus-touch* paradigm in service marketing, where customer loyalty is co-produced through both digital efficiency and relational engagement (Zeithaml et al., 2018; Tjiptono, 2015). From a practical standpoint, the findings suggest that regional banks aiming to compete in the digital economy must not only invest in payment systems but also in training frontline staff, enhancing service accessibility, and maintaining a high standard of care.

4. Conclusion

This study has provided empirical evidence that the adoption of the Quick Response Code Indonesian Standard (QRIS) system significantly contributes to enhancing customer loyalty in regional banking, specifically at PT. Bank Pembangunan Daerah Banten (Perseroda) Tbk, Surabaya Branch. The findings reveal that QRIS implementation not only has a direct influence on customer loyalty but also exerts an indirect effect through customer satisfaction, which serves as a partial

mediator. This implies that while the technological benefits of QRIS—such as ease of use, speed, and reliability—are important, customers' emotional evaluations of their experiences play a critical role in shaping loyalty outcomes.

Furthermore, the study confirms that service quality positively moderates the relationship between QRIS and loyalty. In other words, the presence of high-quality service—characterized by responsiveness, empathy, and assurance—can strengthen the positive impact of QRIS adoption on customer loyalty. This result emphasizes the importance of aligning digital innovation with human-centered service excellence. It reinforces the notion that in digital banking, technological features alone are insufficient without the support of relational quality and emotional resonance.

From a theoretical perspective, the research advances the understanding of how digital financial services interact with established service quality constructs to influence post-usage behavior. It integrates the technology acceptance model, disconfirmation theory, and SERVQUAL framework into a cohesive model that is relevant for the evolving landscape of financial technology adoption in regional banking.

Practically, the study suggests that banks aiming to build customer loyalty through digital innovation must not only promote QRIS usage but also invest in strengthening service delivery. Initiatives such as employee training, complaint resolution mechanisms, and personalized support are essential complements to the digital payment experience.

Future research may explore additional moderating or mediating variables, such as perceived trust, digital competence, or user motivation, across broader demographic groups or comparative institutional contexts. Such extensions would help generalize and refine the current model and provide deeper insight into the dynamics of loyalty in the digital finance era.

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