Perceived Usefulness Mediates Perceived Ease of Use and Intention

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Abstract. This study investigates the mechanism through which Perceived Ease of Use (PEOU) influences Intention to Use QRIS among culinary MSMEs in Kota Kediri, East Java, by testing Perceived Usefulness (PU) as an intervening variable. Employing a quantitative, data were collected via a structured Likert questionnaire from a purposive sample of MSME merchants. Data analysis included validity and reliability checks, descriptive statistics, and structural equation/path analysis with a Sobel test for mediation. Results show a strong and significant effect of PEOU on PU, a moderate and significant effect of PU on Intention to Use, and a smaller but still significant direct effect of PEOU on Intention. The indirect effect is significant, yielding a total effect and indicating partial mediation. Findings imply that usability enhancements not only lower adoption barriers directly but—importantly—elevate perceived instrumental value that drives intention; thus, policy and practice should combine user-centered UX improvements with infrastructural and organizational measures to convert registration into repeated, reliable QRIS use. Limitations include sectoral and cross-sectional scope; longitudinal and intervention studies are recommended.

Keywords: Perceived Usefulness, Perceived Ease of Use, Intention to Use, Quick Response Code Indonesian Standard, MSME.

1 Introduction

Quick Response Code Indonesian Standard (QRIS), introduced by Bank Indonesia, represents a disruptive payment innovation designed to simplify and standardize QR-based transactions into a single universal format that is easier, faster, cheaper, more secure, and more reliable. By consolidating multiple QR schemes into one standardized system, QRIS has acted as a catalyst for the digitalization of payment processes—particularly within the micro, small, and medium enterprise (MSME) sector—and has stimulated a growing body of academic inquiry in recent years [1]. Empirical evidence attests to its rapid diffusion, since its 2019 rollout QRIS penetration expanded substantially, reaching some 30.41 million merchant registrations and 45.78 million active users by 2024. Such macro-level growth underscores both the technology's promise and the need for more fine-grained investigations into the determinants of sustained adoption.

M. Nohong et al. (eds.), *Proceedings of the 10th International Conference on Accounting, Management, and Economics (10th ICAME 2025)*, Advances in Economics, Business and Management Research 388,
https://doi.org/10.2991/978-94-6239-709-5_82

Despite impressive national uptake, QRIS adoption exhibits marked spatial and sectoral heterogeneity. East Java—the nation's second largest economic contributor after West Java—recorded a 227% year-on-year increase in QRIS transactions, signaling robust digital payment activity across the province. Yet within this province there are stark contrasts between large urban centers (Surabaya, Malang) and medium cities such as Kediri, where infrastructural limits, digital literacy gaps, and technical capacity constrain effective use. Field studies report recurrent problems—unstable internet connectivity causing failed transactions and reversion to cash, reconciliation difficulties for merchants, perceived high data costs for microenterprises, and slow or non-real-time fund disbursement that aggravates liquidity problems [2, 3]. Although municipal programs have increased merchant registration (86.318 QRIS-enabled merchants in Kediri), there remains a persistent gap between policy rollout and the quality of everyday user experiences.

Research on behavioral determinants of QRIS adoption highlights a constellation of psychological and contextual factors [4-6]. Classical constructs from the Technology Acceptance Model (TAM)—notably perceived usefulness and perceived ease of use—along with trust and perceived risk [7, 8], have been shown to significantly influence intention to use QRIS in various populations [9]. Extensions using the Unified Theory of Acceptance and Use of Technology (UTAUT) further identify social influence and facilitating conditions (infrastructure, after-sales support) as critical enablers of adoption [10, 11]. More recent national-scale work suggests that habit, hedonic motivation, and price value also play substantial roles, with hedonic motivation emerging as a particularly strong predictor in some cohorts [12]. Theoretically, perceived ease of use reduces cognitive and operational frictions—shorter transaction steps, intuitive interfaces, and clear confirmation flows—thereby lowering barriers to initial and repeated use [13].

Building on these theoretical and empirical strands, this study investigates the mediating role of perceived usefulness in the relationship between perceived ease of use and intention to use QRIS. While prior work has established direct links among these TAM constructs, less is known about the cognitive mechanism through which usability perceptions translate into behavioral intentions within contexts characterized by infrastructural constraints and uneven digital readiness (medium-sized cities such as Kediri). By empirically testing perceived usefulness as an intervening variable, the present research aims to clarify the pathway from ease to intention and to offer evidence-based recommendations for policymakers and practitioners seeking to convert registration and exposure into consistent, reliable usage among MSMEs.

2 Literature Review

Perceived ease of use (PEOU) has been consistently conceptualized in the Technology Acceptance Model (TAM) as an individual's belief that using a particular system will be free of effort, and it functions as a primary cognitive foundation when users encounter new technologies [14, 15]. Empirical and theoretical work shows that PEOU not only shapes positive attitudes toward a system but also reduces cognitive and operational frictions—shorter transaction steps, intuitive interfaces, and clear confirmation flows—which facilitate initial adoption and repeated use [16]. PEOU

itself is determined by a triad of influences: system characteristics (UI design, responsiveness, help features), individual attributes (prior experience, digital literacy, self-efficacy), and environmental supports (training quality, technical assistance, social influence) [17, 18]. Research across contexts, including hedonic consumer settings, further indicates that ease of use can directly enhance perceived value and behavioral intentions, especially where usability is a competitive differentiator [19]. Nonetheless, organizational and contextual mediators matter: without active organizational strategies to demonstrate and legitimize the benefits of a technology, the full potential of PEOU to drive meaningful outcomes may be constrained [20].

Perceived usefulness (PU)—the extent to which users believe a system will improve their performance or productivity—occupies a central, often decisive, role within TAM as a direct determinant of behavioral intention and actual use [9]. PU is multidimensional, encompassing performance enhancement, productivity gains, cost-effectiveness, accessibility, and improved decision quality; these dimensions explain why users may persist in or abandon a technology regardless of ease [21]. Empirical studies indicate an asymmetric but complementary relationship between PEOU and PU.

3 Research Method

This study employs a quantitative, cross-sectional survey design to examine the effect of Perceived Ease of Use on Intention to Use QRIS with Perceived Usefulness as an intervening variable. Data were collected in Kota Kediri, East Java, using a structured questionnaire (Likert scale 1–5). A purposive sampling strategy was used to target culinary businesses that already register or interact with QRIS. The questionnaire includes respondent profile items and construct items; data analysis using path analysis to test direct and mediating relationships, with appropriate diagnostic checks and robustness assessments applied to ensure the integrity of the findings.

4 Results

The path analysis produced statistically significant paths consistent with the hypothesized relationships. Table 1 summarizes the standardized estimates, standard errors, critical ratios, and p-values.

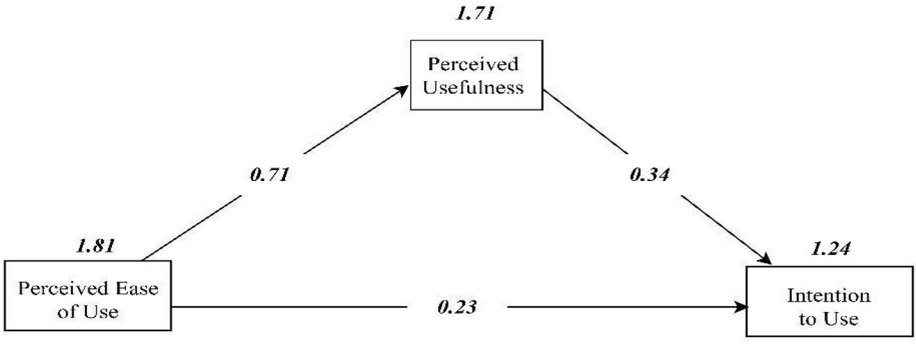

Fig. 1. Path Analysis outcomes

Table 1. Hypothesis Tests

Path	Estimate (β)	S.E	C.R	p-value
Perceived Ease of Use → Perceived Usefulness	0.710	0.097	7.347	0.000
Perceived Usefulness → Intention to Use	0.342	0.085	4.040	0.000
Perceived Ease of Use → Intention to Use	0.235	0.102	2.300	0.021
Perceived Ease of Use → Perceived Usefulness → Intention to Use	0.243	0.068	3.525	0.000

Sources: Data processing results (2025)

The results show a clear and statistically robust pattern: Perceived Ease of Use strongly predicts Perceived Usefulness, while Perceived Usefulness is a moderate but significant predictor of Intention to Use QRIS. Perceived Ease of Use also retains a substantial direct effect on Intention to Use, indicating that ease influences intention both directly and indirectly. The indirect effect via Perceived Usefulness is significant (Sobel C.R. = 3.525, $p < .001$), producing a total impact of approximately 0.478 and showing that roughly 50.8% of PEOU's total influence on intention is transmitted through PU. In short, making QRIS easy to use not only lowers adoption barriers directly but—significantly—enhances merchants' beliefs about the system's utility, and it is this perceived utility that substantially drives their intention to adopt; therefore, interventions should target both usability and demonstrable usefulness. The Sobel test for the indirect effect yielded a standard error = 0.068, Critical Ratio = 3.525, $p < 0.001$, indicating a statistically significant mediation effect. Calculated indirect and total effects: the estimated indirect effect = 0.710 × 0.342 = 0.243 (rounded), the direct effect = 0.235, and the total effect = 0.478.

5 Discussion

The findings of this study provide a coherent and theoretically meaningful picture of how perceived ease of use (PEOU) influences intention to use QRIS, both directly and indirectly through perceived usefulness (PU). Empirically, the very large path from PEOU to PU ($\beta = 0.710$, $p < .001$) confirms a core TAM proposition: usability perceptions form the cognitive foundation upon which users build value judgments about a system. In the context of culinary MSMEs, when QRIS is perceived as quick to learn, intuitive, and low in operational friction, merchants are far more likely to believe that the system will improve transactional performance, speed, and record-keeping. This strong linkage suggests that PEOU is not merely a convenience but a primary antecedent of perceived instrumental value in this empirical setting.

Perceived usefulness plays a pivotal, proximate role in shaping behavioral intention ($\beta = 0.342$, $p < .001$). That PU is a moderate but significant predictor of intention indicates merchants are motivated by anticipated outcomes—time savings, productivity gains, fewer reconciliation errors, and potential customer reach—when deciding whether to adopt QRIS. At the same time, the retained direct effect of PEOU on intention ($\beta = 0.235$, $p = .021$) demonstrates partial (complementary) mediation: ease of use lowers immediate barriers and concurrently fosters perceptions of utility that together drive adoption intent. The indirect effect through PU is slightly larger than the

direct effect, and the total effect shows that roughly half of PEOU's influence on intention is mediated by PU, underscoring the dual pathways through which usability operates.

Interpreting these findings within the Kediri context clarifies important dynamics. Although macro-level penetration of QRIS has increased, practical constraints—unstable connectivity, reconciliation issues, data costs, and delayed disbursements—can erode perceived usefulness even when interfaces are usable. Thus, while improving UX will raise PU, such improvements must be coupled with infrastructural and operational interventions that preserve the system's functional benefits as experienced in everyday transactions. In locales where facilitating conditions are weak, merchants may perceive the app as easy to use yet still doubt whether QRIS delivers the financial and operational advantages they require, thereby attenuating the indirect effect that translates ease into sustained usage.

From a managerial and policy perspective, the results point to a dual-pronged strategy. First, stakeholders should prioritize user-centered design—streamlining transaction flows, clarifying confirmation feedback, and providing lightweight on-device troubleshooting—to maximize PEOU and thereby increase downstream perceived utility. Second, policymakers and platform providers must make usefulness tangible through measures such as faster settlement mechanisms, reconciliation tools, affordable data packages, and publicized case studies that quantify operational gains.

6 Conclusion

In conclusion, this study confirms that Perceived Ease of Use exerts a strong and significant effect on Perceived Usefulness, which in turn significantly predicts Intention to Use QRIS, while Perceived Ease of Use also retains a smaller but meaningful direct effect on Intention; the significant indirect effect yields a total effect and indicates partial mediation by Perceived Usefulness. These results suggest that making QRIS easy to use both lowers adoption barriers directly and—crucially—enhances merchants' beliefs about the system's practical benefits, and therefore interventions should pair user-centered UX improvements with infrastructural and organisational measures to convert registration into sustained usage.

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