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# Optimizing the Use of QRIS in the Food Stalls: Analysis of Convenience and Risk on Purchasing Decisions

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**Abstract.** *This study investigates the impact of ease of use and perceived risk on QRIS-based purchasing decisions at food stalls in Semarang City, Indonesia. QRIS is a digital payment system. It aims to understand the mediating role of QRIS usage in this relationship. A cross-sectional survey design was employed to collect data from 96 QRIS users. Data analysis included descriptive statistics, correlation analysis tests, and path analysis using SPSS 25 and the Sobel test. Results show that Ease of use significantly influences both QRIS utilization ($\beta = 0.470$, $p < 0.001$) and purchase decisions ($\beta = 0.822$, $p < 0.001$), while perceived risk positively affects QRIS utilization ($\beta = 0.377$, $p < 0.001$) but not directly purchase decisions ($p = 0.926$). QRIS usage significantly mediates the relationship between ease of use and purchase decisions (Sobel = 5.291, $p < 0.001$) and between perceived risk and purchase decisions (Sobel = 2.184, $p = 0.028$). Together, ease of use and perceived risk explain 58.9% of the variance in QRIS usage and 63.5% of purchase decision behavior. Managerially, food stall owners and digital payment providers should prioritize enhancing QRIS usability, improving transaction clarity, and strengthening consumer trust to drive higher purchase conversions and sustain digital payment adoption in micro and small enterprises.*

**Keywords**: *Ease of use, perceived risk, use of qris, purchase decision, food stalls*

## 1. Introduction

Digital payments have become a global trend dominating the modern financial ecosystem. Given rapid advancements in information and communication technology, innovative payment systems continually emerge to meet the demand for secure, efficient, and fast transactions. One such innovation gaining traction is the online digital payment system, particularly the QR Code Indonesian Standard (QRIS), developed to facilitate electronic financial transactions in Indonesia. (Parastiti et al., 2019; Al-Abdallah et al., 2023). The government supports this electronic payment revolution, evidenced by Bank Indonesia's launch of QRIS to simplify digital financial transactions since January 1, 2020 (Bank Indonesia, 2019).

Despite the convenience of online shopping, it also brings perceived risks, such as online fraud and illegal fund transfers, which can deter consumers (Alghifari, & Rahayu, 2021; Yeo et al., 2022; Kempen & Tobias-Mamina, 2022). Conversely, ease of use, or the perceived simplicity of using a digital financial application, significantly impacts user adoption and transaction flow (Ningsih et al., 2021; Zaman et al., 2022). When technology

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is perceived as easy to use, users are more likely to engage with it confidently (Aurel et al., 2023; Rostiani et al., 2024) (Aurel et al., 2023; Rostiani et al., 2024).

For example, Davis (2018) found that ease of use had a positive and significant effect on purchasing decisions, whereas Tan (2019) reported no such influence. Similarly, while Wardhani (2020) discovered that perceived risk had a positive and significant impact on purchasing decisions, Zulfa & Hidayati (2018) found no such effect.

This study focuses on Semarang City, Indonesia, as a strategic research location due to its rapid adoption of digital payments and economic significance. As a major trade hub in Central Java, Semarang recorded 23.4 million QRIS transactions in Q3 2023, ranking among Indonesia's top cities for QR-code payments (Bank Indonesia, 2023). It's diverse demographic—spanning students, entrepreneurs, and informal workers—mirrors national digital payment trends, making it a representative context for understanding consumer behavior (Bank Indonesia, 2023).

Furthermore, food stalls were specifically selected as the research context due to their critical role in Indonesia's informal economy and the distinctive payment transition difficulties they face. Representing a dominant segment of urban micro-businesses, food stalls have historically relied on cash transactions. As highlighted by recent studies on digital literacy and cashless transitions, micro-businesses like food stalls represent a critical frontier for digital payment adoption, where factors like usability and trust are paramount (Syari et al., 2024). Their low entry barriers and high customer volume make them an ideal setting to examine the real-world barriers and opportunities for QRIS adoption.

This study aims to analyze the impact of ease of use and perceived risk on purchasing decisions through the use of QRIS at food stalls. Specifically, it seeks to understand how ease of use and perceived risk influence QRIS adoption and purchasing decisions, and to examine the mediating role of QRIS usage. This study employs a quantitative approach, using surveys to gather data from food stall customers who use QRIS, with the data analyzed using statistical methods to determine the relationships between the variables. This article is structured as follows: the introduction presents the research context and objectives, followed by the methodology, results, discussion, and concluding implications.

## 2. Literature Review/ Hypotheses Development

### *2.1. Purchase Decisions*

Purchase decisions encompass the process by which consumers select, purchase, and consume products based on the information they have acquired and the evaluation of available alternatives (Yang et al., 2020; Shah et al., 2022). This process begins with the recognition of needs, followed by information search, evaluation of alternatives, purchase, and post-purchase assessment (Wang & Li, 2024; Vale et al., 2024; Tul-Krzyszczuk et al., 2024). These decisions are influenced by various factors, including consumer habits such as the timing, frequency, and location of purchases (Thamrin & Farncis, 2019). Indicators include consumer needs/desires, interest in typing products, consistent quality, and repeat purchase intentions (Speight et al., 2019; X. E. Li et al., 2015). Factors influencing decisions include cultural, social, personal, and psychological elements (P. Kotler & Keller, 2016; M. Kotler et al., 2020).

### *2.2. Quick Response Code Indonesian Standard (QRIS)*

Quick Response Code Indonesian Standard (QRIS) is a national QR code standard launched by Bank Indonesia on August 17, 2019, and activated on January 1, 2020, to facilitate payment transactions in Indonesia (Bank Indonesia, 2024). QRIS aims to simplify digital financial transactions by

allowing the use of a single QR code for various payment instruments, enhancing efficiency and financial inclusion, providing development opportunities for SMEs, and driving economic growth (Bank Indonesia, 2024).

Recent adoption statistics indicate significant growth in QRIS usage across Indonesia. By 2024, QRIS has been adopted by over 20 million merchants nationwide, with transaction values exceeding IDR 30 trillion annually (Bank Indonesia, 2024). This rapid adoption reflects Indonesia's broader digital transformation in the financial sector (Syari et al., 2024). QR codes, which have larger data capacity than conventional barcodes and can be read from various angles even if damaged or dirty, support various transaction types such as payments in stores, food stalls, parking spaces, ticket purchases, and donations (Mahardika, 2022).

For users, QRIS facilitates fast and modern transactions without requiring cash and provides protection as all payment service providers using QRIS are registered and monitored by Bank Indonesia. For merchants, particularly micro and small enterprises in the food and beverage industry, QRIS enhances sales potential, brand image, and practicality through a single QR code, reduces cash handling costs, simplifies reconciliation, and prevents fraud in transaction recording (Macca et al., 2024; Utami, 2024). The standardization aims to protect consumers, promote healthy competition in the QR code market, enable small merchants to develop their own technology, and increase accessibility of cashless payments in rural areas (Bank Indonesia, 2024).

*2.3. Ease of Use (Perceived Ease of Use)*

Ease of use refers to the degree to which users expect the effort required to use a system to be minimal (Arciniegas, 2021). Perceived ease of use is the belief that a technology will require minimal effort, influencing an individual's inclination to use it (Jogiyanto, 2019; Zaman et al., 2022). In the Technology Acceptance Model (TAM), ease of use is defined as the belief that the system will be used without excessive effort, reducing workload, cognitive effort, and time required (Davis, 1989); (Pavlou, 2003).

Recent research on QR-code payment systems confirms that perceived ease of use remains a critical determinant of technology adoption (Yamin & Abdalatif, 2024). A system that is easy to use can increase productivity, reduce errors, and make users feel more confident. In the context of mobile payment systems, ease of use encompasses not only the technical simplicity of scanning QR codes but also the overall user experience, including transaction speed, interface clarity, and integration with existing payment methods (Koay & Ang, 2024).

According to Venkatesh & Davis, (2000), Schuetz & Venkatesh, (2020), measurement of perceived ease of use includes several indicators: ease of using applications, affordability and accessibility of items, readability of interactions, flexibility of interactions, and simplicity and non-confusing nature of the application. Factors influencing ease of use in e-commerce include speed of access to applications or websites, application or website design quality, and menu organization (Azhari, 2021; Gruntkowski & Martinez, 2022; Mastana, 2023).

*2.4. Perceived Risk*

Risk can be explained as an individual's subjective perception of uncertainty and the potential negative impact of an activity (Dickie et al., 2022). An individual's perception of risk affects their level of trust in a product or service; the lower the perceived risk, the higher the level of trust, and vice versa (Toma et al., 2023; Ningsih et al., 2021; Marth et al., 2022). Therefore, product or service providers need to understand and manage users' perception of risk, as reducing perceived risk can increase users' trust.

In the digital payment context, perceived risk encompasses multiple dimensions, including financial risk, security risk, privacy risk, and

performance risk (Yamin & Abdalatif, 2024). According to Tan (2019), perceived risk can be measured through several important indicators: fraud risk, financial risk, delivery risk, product risk, privacy risk, and information quality. Recent studies emphasize that in QR-code payment adoption, security concerns and data privacy are particularly salient risk factors that influence consumer behavior (Hamzah et al., 2023; Alrawad et al., 2023).

Factors influencing perceived risk include Probability of Outcome, Severity of Outcome, Availability of information and resources, Controllability, Dreadfulness, Reversibility, and Catastrophic Potential (Azhari, 2021). Digital literacy plays a crucial role in moderating perceived risk, as consumers with higher digital literacy tend to have more accurate risk assessments and greater confidence in using digital payment systems (Syari et al., 2024).

*2.5. Ease of Use and the Utilization of QRIS*

Perceived ease of use significantly influences consumer behavior in adopting technology; the higher the perceived ease of use, the greater the perceived benefits of the technology (Wardhani, 2020; Song et al., 2021; Thomas-Francois & Somogyi, 2022; Arora et al., 2023) (Wardhani, 2020; Song et al., 2021; Thomas-Francois & Somogyi, 2022; Arora et al., 2023). This perception is positively correlated with the intention to use e-commerce platforms (Almeida Lucas et al., 2023). According to the Technology Acceptance Model (TAM), perceived ease of use directly affects both the intention and actual use of technology (Venkatesh & Davis, 2000; Davis, 1989; Mastana, 2023).

Recent empirical evidence from fintech industry studies demonstrates that ease of use is the strongest predictor of QR-code mobile payment adoption, particularly in emerging markets (Yamin & Abdalatif, 2024). The ease of using QRIS, a digital payment method, provides a positive outlook for SMEs due to its quick and efficient processes and its capability to reduce transaction risks (Sitohang et al., 2024). The adoption of QRIS, with features such as static Merchant Presented Mode (MPM), simplifies transactions for business operators (Wardhani, 2020).

Studies have shown that perceived ease of use has a significant positive effect on user attitudes (Gruntkowski & Martinez, 2022; Zhong & Moon, 2022), and this perceived ease correlates with the comfort level experienced by consumers (Gustafson et al., 2022; Intal et al., 2020). In the post-pandemic context, where contactless payment has become increasingly preferred, ease of use has emerged as even more critical in driving QRIS adoption (Koay & Ang, 2024). Therefore, the hypothesis of this study is:

***H1:*** *Higher perceived ease of use leads to increased utilization of the QRIS application*

*2.6. Ease of Use and Purchase Decisions*

Ease of use, defined as the belief in the simplicity of using a technology or system (Davis, 1989); (Davis & Granić, 2024), is crucial in the online transaction process, where this simplicity is important for consumers to access and utilize online shopping sites (Suryani et al., 2020); (Song et al., 2021); (Jin et al., 2023). Purchase decisions involve analyzing various information to determine which product or brand to buy (Abdul Kohar Septyadi et al., 2022); (Brama Kumbara, 2021); (Nurhayaty et al., 2021).

Over time, improvements in digital payments have shown a positive shift in consumer behavior, with many customers becoming regular users and recommending the platform to others. Research indicates that perceived ease of use has a significant positive impact on purchase decisions, with consumers more likely to purchase products or services deemed easy to use (Sitohang et al., 2024; Purnamasari et al., 2021; Shukla & Mishra, 2022; Yusmarni et al., 2021; Peemanee & Wongsahai, 2021; Song et al., 2021).

Contemporary research on QR-code payment systems in food service contexts confirms that ease of use directly influences purchase

frequency and transaction value (Koay & Ang, 2024). In micro and small enterprises, particularly in the food and beverage industry, simplified payment processes through QRIS have been shown to increase customer satisfaction and repeat purchase behavior (Macca et al., 2024). Thus, the hypothesis of this study is:

***H2:*** *Higher perceived ease of use leads to higher purchase decisions*

*2.7. Perceived Risk and the Utilization of QRIS*

Perceived risk is a condition of uncertainty that influences an individual's decision to engage in online transactions, impacting their interest in using digital financial services (Ningsih et al., 2021; Tang & Tsai, 2024; Zhong & Moon, 2022). Perceived risk relates to the potential negative outcomes that might occur (Aurel et al., 2023; Al-Saedi et al., 2020; Alrawad et al., 2023) higher perceived risk typically results in lower user interest in adopting the technology (Schmidthuber et al., 2020; Patrick & Marques, 2024; Brewster et al., 2020). QRIS, the standardized QR code system for payments in Indonesia, is designed to enhance payment efficiency through a single code that accommodates various types of payments (Bangsa & Khumaeroh, 2023; Silalahi et al., 2022). Although QRIS facilitates payments and increases user convenience, research findings suggest that perceived risk negatively impacts the interest in using digital payment applications (Desita & Dewi, 2022; Pal et al., 2021).

However, recent studies indicate that when perceived risk is well-managed through security features, regulatory oversight, and transparent information, it can actually increase trust and willingness to adopt QR-code payment systems (Yamin & Abdalatif, 2024). Digital literacy also plays a moderating role, as consumers with higher digital literacy demonstrate lower perceived risk and higher adoption rates of cashless payment systems (Syari et al., 2024). Consequently, the third hypothesis of this study is:

***H3:*** *Good perceived risk (low risk) increases the utilization of QRIS*

*2.8. The Relationship between Perceived Risk and Purchase Decision*

Perceived risk reflects an ambiguous situation for consumers when they are unable to predict the outcomes of their purchasing decisions. This uncertainty can lead to various types of risks (Liébana-Cabanillas et al., 2024; Liu et al., 2022). (Bimantara, 2020) asserts that risk is the negative outcome of uncertainty in decision-making, and perceived risk is how consumers view the potential losses they might incur. These risks can adversely affect future purchase decisions.

According to P. Kotler & Armstrong (2018), a purchase decision refers to the process by which individuals solve problems by selecting among alternative behaviors. Research indicates that perceived risk has a positive and significant impact on purchase decisions (Yunita et al., 2019), although some studies have found that perceived risk does not always have a significant effect (Zulfa & Hidayati, 2018).

In the context of QR-code payment systems, the relationship between perceived risk and purchase decisions is complex. While high perceived risk can deter adoption, effectively managed risk through security measures and regulatory frameworks can build confidence and facilitate purchase decisions (Yamin & Abdalatif, 2024). The hypothesis for this study is:

***H4:*** *When perceived risk is good (low risk) purchase decisions increase*

*2.9. The Relationship between QRIS Usage and Purchase Decisions*

Quick Response Code Indonesian Standard (QRIS) is the standard QR code payments in Indonesia, which simplifies the transaction process (Bangsa & Khumaeroh, 2023). Payment made using QRIS are processed instantly, providing immediate transaction notifications to both users and merchants (Ediputra & Amalyah, 2022; Buananta & Christian, 2024). A purchase decision is the process buyers go through to select the products or services they wish to purchase (Pratiwi, 2023).

Studies show that the adoption of QRIS increases customer visit frequency to food stalls and the number of daily transactions. Recent research in the food service industry demonstrates that the availability of QR-code payment options influences consumer choice of dining establishments, particularly among younger, tech-savvy consumers (Koay & Ang, 2024). In micro and small enterprises, QRIS adoption has been linked to increased sales volumes and customer retention (Macca et al., 2024). The hypothesis for this study is:

***H5:*** *Increased usage of QRIS leads to higher purchase decisions*

*2.10. The Relationship between Ease of Use and Purchase Decisions with QRIS as an Intervening Variable*

Ease of Use, as defined by Davis (1989), Venkatesh & Davis, (2000), and Davis & Granić (2024), refers to the degree to which an individual believes that using a particular system will be free of effort. This perception evaluates how effortlessly a system can be operated. Users are generally more inclined to adopt systems that enhance their efficiency and avoid those perceived as difficult to use, which may decrease productivity (Buabeng-Andoh, 2018).

In the context of this study, Ease of Use is conceptualized as the level of confidence in the simplicity of using and learning the QRIS payment system. Prior research indicates that higher perceived ease of use is associated with increased willingness to utilize QRIS (Renaldy & Susilowati, 2020). Contemporary studies in fintech confirm that ease of use not only directly influences adoption but also indirectly affects purchase behavior through actual system usage (Yamin & Abdalatif, 2024).

The mediating role of QRIS usage is particularly relevant in the context of food stalls and small businesses, where simplified payment processes can significantly enhance transaction efficiency and customer experience (Macca et al., 2024). Thus, the hypothesis for this study is:

***H6:*** *The impact of Ease of Use on purchase decisions is mediated by the use of QRIS*

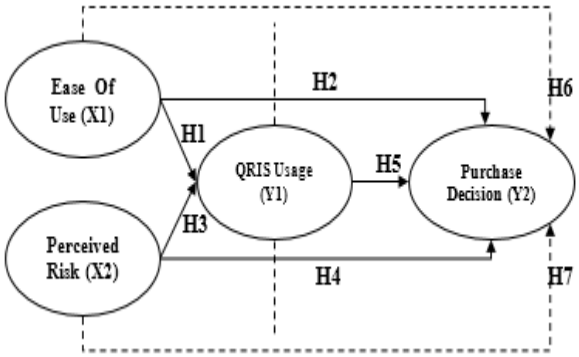
*2.11. The Relationship between Perceived Risk and Purchase Decisions with QRIS as an Intervening Variable*

Perceived risk is an individual's assessment of the likelihood of positive or negative outcomes from a transaction. In online transactions, the perceived risk is considered higher compared to physical transactions due to the inability to review the product directly (Harto & Munir, 2021; Gupta et al., 2023). The level of perceived risk influences consumers' interest in making purchase decisions.

However, when digital payment systems like QRIS incorporate robust security features, regulatory oversight, and user education, they can mitigate perceived risks and serve as trust-building mechanisms (Yamin & Abdalatif, 2024). Digital literacy plays a crucial role in this relationship, as consumers with higher digital literacy demonstrate better understanding of security measures and lower perceived risk (Syari et al., 2024).

The mediating effect of QRIS usage suggests that when consumers actively use the system and experience its security features firsthand, their risk perceptions may be recalibrated, ultimately influencing purchase decisions (Koay & Ang, 2024). The hypothesis for this study is:

***H7:*** *The impact of perceived risk on purchase decisions is amplified by the use of QRIS as an intervening variable.*




Source: several previous studies, 2024

Figure 1.
*Research Model*

## 3. Methodology

*3.1. Research Design*

This research employs a cross-sectional survey design to investigate the relationships between variables at a single point in time. The study focuses on understanding how ease of use and perceived risk, as independent variables, impact purchasing decisions, with QRIS use serving as a mediating variable. A cross-sectional design is appropriate for this theory-testing study as it allows for the examination of relationships between variables within a specific population at a particular moment, which is suitable for validating the Technology Acceptance Model (TAM) in the QRIS context (Creswell & Creswell, 2018).

Purposive sampling is justified for this theory-testing research because the study requires respondents with specific characteristics and experiences relevant to the theoretical framework being tested. According to Etikan (2016), purposive sampling is appropriate when researchers need participants who possess particular knowledge or experience with the phenomenon under investigation. In this case, respondents must have experience using QRIS for food stall purchases to provide valid data for testing TAM-based hypotheses about ease of use, perceived risk, and purchase decisions.

*3.2. Population, Sample, and Sampling Techniques*

The population for this study includes all individuals who use the QRIS application. This encompasses a broad group of users whose specific characteristics have not been quantified. According to Sugiyono (2019), the population is defined as a set of objects or subjects with distinct characteristics that serve as the focus of research and from which conclusions can be drawn.

The population for this study was based on Bank Indonesia's 2023 statistics. QRIS transactions in Central Java Province reached approximately 2.3 million transactions per month, with Semarang City accounting for an estimated 35-40% of provincial usage (Bank Indonesia, 2023). However, the exact number of individual QRIS users at food stalls remains unquantified due to the informal nature of the food stall sector and the absence of a comprehensive user registry.

Given the unknown population size, the sample for this study was determined using the Rao Purba formula for infinite populations (Sujarweni, 2015). The sampling technique employed is non-probability sampling, specifically purposive sampling, with the following inclusion criteria: (1) respondents must be at least 18 years old, (2) have used QRIS for payments at food stalls at least twice, and (3) have completed transactions within the three months preceding data collection. These criteria ensure that respondents possess sufficient experience with QRIS to provide informed responses about ease of use, perceived risk, and purchase decisions.

The sample size calculation follows the Rao Purba formula for infinite populations:

$$n = \frac{Z^2}{4(MOE)^2}$$

Where:
$n$ = required sample size
Z = Z-score at 95% confidence level = 1.96
*MOE* = margin of error = 0.10

Applying the formula:

$$n = \frac{(1{,}96)^2}{4(0{,}10)^2} = \frac{3.8416}{0.04} = 96{,}04$$

Thus, the minimum sample size required is 96 respondents. This sample size is adequate for path analysis, which typically requires a minimum of 10 observations per estimated parameter (Hair et al., 2010). With four main variables and 18 measurement items, our sample size of 96 exceeds the minimum requirement of approximately 50-60 respondents.

*3.3. Data Collection*

Data collection involved both primary and secondary data sources. Primary data were collected directly from respondents through structured questionnaires distributed in two formats: hardcopy questionnaires administered at food stalls in Semarang City and online questionnaires distributed via Google Forms. Data collection was conducted over a three-month from June to August 2024. The questionnaire employed a five-point Likert scale to measure respondents' attitudes, with anchors ranging from 1 (Strongly Disagree) to 5 (Strongly Agree) (Sugiyono, 2019). Each variable was measured using multiple items adapted from validated instruments in previous research. All questionnaires were distributed only to respondents who met the inclusion criteria, verified through screening questions at the beginning of the survey. The SPSS dataset and materials are available upon reasonable request to the corresponding author, subject to ethical compliance. Secondary data were sourced from Bank Indonesia's official reports on QRIS adoption, academic publications on digital payment systems, and governmental statistics on electronic payment usage in Indonesia. These secondary sources provided contextual information about QRIS implementation and usage trends in the Indonesian market.

*3.4. Measures*

This study utilizes four key variables, each measured using validated instruments adapted from previous research. All items were measured using a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). Table 1 presents the operational definitions and measurement sources for each variable.

*Ease of Use (X1)* refers to the perceived simplicity with which users interact with the QRIS system. This variable was measured using indicators adapted from Venkatesh & Davis (2000): (1) ease of use of the QRIS application, (2) accessibility of QRIS payment features, (3) interaction readability, (4) flexibility in usage, and (5) overall system simplicity.

*Perceived Risk (X2)* is defined as the user's assessment of potential risks associated with using QRIS. This variable was measured using six indicators adapted from Tan (2019): (1) fraud risk, (2) financial risk, (3) delivery risk, (4) product risk, (5) personal data theft risk, and (6) information quality.

*QRIS Usage (Y1)* reflects the extent to which respondents utilize QRIS for transactions at food stalls. This variable was measured using four indicators adapted from (Arciniegas, 2021): (1) improved work efficiency, (2) ease of payment process, and (3) perceived digital benefits.

*Purchase Decision (Y2)* represents the final consumer decision-making process when buying food at stalls using QRIS. This variable was measured using four indicators adapted from Speight et al. (2019) and S. Li et al. (2022): (1) product needs and desires, (2) willingness to try products, (3) confidence in product quality, and (4) repeat purchase intention.

*3.5. Technical Analysis*

Data analysis was conducted using SPSS version 25.0 following a systematic procedure. First, data screening was performed to identify missing values, outliers, and data entry errors. Second, validity and reliability tests were conducted to ensure quality measurement. Third, classical assumption tests (normality, multicollinearity, and heteroscedasticity) were performed to verify that the data met the requirements for regression analysis. Finally, path analysis and mediation tests were conducted to examine the hypothesized relationships.

*Validity Test.* The validity of measurement instruments was assessed using Pearson product-moment correlation, comparing item-total correlation with critical r-values. With a sample size of 96 (df = 94) and significance level of 0.05 (two-tailed), the critical r-value is 0.2006. Items with correlation coefficients exceeding 0.2006 and a significance values below 0.05 were considered valid (Ghozali, 2018).

*Reliability Test.* Internal consistency reliability was assessed using Cronbach's alpha coefficient. Variables with Cronbach's alpha values exceeding 0.60 were considered reliable, following Nunnally's (1978) criterion for exploratory research.

*Classical Assumption Test.* Three classical assumption tests were conducted to ensure data suitability for regression analysis. *Normality Test:* The Kolmogorov-Smirnov test was used to assess the normality of the residual distribution. Data were considered normally distributed if the significance value exceeded 0.05 (Ghozali, 2018). *Multicollinearity Test:* Variance Inflation Factor (VIF) and tolerance values were examined. VIF values below 10 and tolerance values above 0.10 indicate the absence of multicollinearity (Hair et al., 2010). *Heteroscedasticity Test:* The Glejser test was employed to detect heteroscedasticity. The absence of heteroscedasticity is indicated by significance values exceeding 0.05 (Ghozali, 2018).

*Path Analysis.* Path analysis was conducted using hierarchical regression to examine direct and indirect effects. Two regression models were estimated:

*Model 1:* QRIS Usage = $\beta_0 + \beta_1$(Ease of Use) + $\beta_2$(Perceived Risk) + $\varepsilon_1$

*Model 2:* Purchase Decision = $\beta_0 + \beta_1$(Ease of Use) + $\beta_2$(Perceived Risk) + $\beta_3$(QRIS Usage) + $\varepsilon_2$

Path coefficients (standardized beta weights), t-statistics, significance values, and $R^2$ values were reported for each model. The complete path diagram with standardized coefficients and significance levels is presented in the Results section (Figure 2).

*Mediation Test.* The Sobel test was employed to examine the mediating effect of QRIS usage on the relationships between (1) ease of use and purchase decisions, and (2) perceived risk and purchase decisions. The Sobel test calculates the indirect effect and its standard error, providing a z-statistic to determine the significance of mediation (Baron & Kenny, 1986; Hayes & Preacher, 2010). Mediation is considered significant when the Sobel test statistic exceeds the critical value ($z > 1.96$) at $\alpha = 0.05$.

The mediation effect was calculated using the formula:

$$z = \frac{\boldsymbol{a} \times b}{\sqrt{b^2} \times SE\boldsymbol{a}^2 + SEb^2}$$

Where:

*a* = path coefficient from independent variable to mediator

*b* = path coefficient from mediator to dependent variable

*SE_a* = standard error of path *a*

*SE_b* = standard error of path *b*

All statistical tests were conducted at a 95% confidence level ($\alpha = 0.05$), two-tailed.

*3.6. Ethical Considerations*

This study adhered to ethical standards for research involving human participants. All respondents were informed about the voluntary nature of their participation, the

confidentiality of their responses, and the exclusive use of the data for academic purposes. Informed consent was obtained before questionnaire completion, either through a consent statement included at the beginning of the Google Form or verbally for hardcopy surveys. The study did not involve any personally identifiable or sensitive information.

## 4. Results

### *4.1. Description of Respondent Profile*

This study analyzed 96 respondents who use QRIS for digital payments to purchase in food stalls in Semarang City. The descriptive profile of these respondents is shown in Table 1.

Table 1.
*Descriptive Respondent Profile*

| Characteristic | Number | Frequency (%) |
|---|---|---|
| **Gender** | | |
| Male | 31 | 32.3 |
| Female | 65 | 67.7 |
| **Age** | | |
| 17-20 years | 10 | 10.5 |
| 21-24 years | 9 | 9.4 |
| 25-28 years | 30 | 31.2 |
| 29-32 years | 20 | 20.8 |
| 33-36 years | 11 | 11.4 |
| 37-40 years | 7 | 7.3 |
| 41-44 years | 4 | 4.2 |
| 45-48 years | 5 | 5.2 |
| **Occupation** | | |
| Private Sector Employee | 31 | 32.3 |
| Entrepreneur | 31 | 32.3 |
| Civil Servant | 24 | 25.0 |
| Student | 10 | 10.4 |
| **Transaction Frequency** | | |
| More than 2 times/month | 26 | 27.1 |
| 2-5 times/month | 50 | 52.1 |
| Less than 5 times/month | 20 | 20.8 |

Source: primer data processed, 2024

The sample consisted of 31 males (32.3%) and 65 females (67.7%), with the majority aged 25–28 years (31.2%), representing a productive, tech-savvy demographic. Occupationally, 32.3% were private sector employees, 32.3% entrepreneurs, 25% civil servants, and 10.4% students. Transaction frequency showed that 52.1% made 2-5 transactions per month using QRIS, 27.1% made more than 5 transactions per month, while 20.8% used it less frequently.

### *4.2. Descriptive Analysis of Variables*

The descriptive analysis of variables utilized a five-point Likert scale, with categories following Ferdinand (2014): Very Poor (1.00 – 1.79), Poor (1.80-2.59), Fair (2.60-3.39), Good (3.40-4.19), and Excellent (4.20-5.00). Results are presented in Table 2.

Table 2.
*Descriptive Variables*

| Variable | Indicator | Index Value (Mean ± SD) | Category |
|---|---|---|---|
| **Ease of Use** | Ease of Use | 4.43 (4.43±0.58) | Excellent |
| | Accessibility | 4.29 (4.29±0.64) | Excellent |
| | Interaction Readability | 4.34 (4.34±0.61) | Excellent |
| | Flexibility | 4.39 (4.39±0.59) | Excellent |
| | Application | 4.42 (4.42±0.57) | Excellent |
| | **Average Index** | **4.37 (4.37±0.45)** | **Excellent** |
| **Perceived Risk** | Fraud Risk | 4.21 (4.21±0.67) | Excellent |
| | Financial Risk | 4.23 (4.23±0.65) | Excellent |
| | Delivery Risk | 4.17 (4.17±0.69) | Good |
| | Product Risk | 4.17 (4.17±0.71) | Good |
| | Personal Data Theft Risk | 4.20 (4.20±0.68) | Excellent |
| | Information Quality | 4.17 (4.17±0.70) | Good |
| | **Average Index** | **4.20 (4.20±0.54)** | **Excellent** |
| **Use of QRIS** | Improved Work Efficiency | 4.30 (4.30±0.63) | Excellent |
| | Ease of Payment | 4.39 (4.39±0.60) | Excellent |
| | Digital Benefits | 4.25 (4.25±0.66) | Excellent |
| | **Average Index** | **4.31 (4.31±0.52)** | **Excellent** |
| **Purchase Decision** | Product Needs and Desires | 4.20 (4.20±0.66) | Excellent |
| | Willingness to try | 3.87 (3.87±0.78) | Good |
| | Confidence in Product Quality | 4.25 (4.25±0.64) | Excellent |
| | Repurchase Decision | 4.33 (4.33±0.60) | Excellent |
| | **Average Index** | **4.16 (4.16±0.50)** | **Good** |

Source: Primary data processed, 2024

The findings indicated that "Ease of Use" (M = 4.37, SD = 0.45) and "Use of QRIS" (M = 4.31, SD = 0.52) scored exceptionally high, reflecting high user satisfaction. "Perceived Risk" averaged 4.20 (SD = 0.54), indicating excellent risk perception (low risk concerns), though specific risks like delivery and product issues scored slightly lower. "Purchase Decision" had a mean of 4.16 (SD = 0.50), categorized as Good, with "Willingness to Try" being the lowest indicator (M = 3.87, SD = 0.78).

### *4.3. Validity and Reliability Test*

*Validity Test*

With a 95% confidence level (α = 0.05) and degrees of freedom (df) = 94, the critical r-value is 0.2006. As shown in Table 3, all indicators demonstrated r-calculated values significantly higher than r-table (0.2006), confirming validity (Hair et al., 2010).

Table 3.
*Validity Test Results*

| Variable | Indicator | Item Code | r-calculated | r-table | Sig.Value | Remark |
|---|---|---|---|---|---|---|
| Ease of Use | 1 | X1.1 | 0.663 | 0.2006 | 0.000 | Valid |
| | 2 | X1.2 | 0.580 | 0.2006 | 0.000 | Valid |
| | 3 | X1.3 | 0.735 | 0.2006 | 0.000 | Valid |
| | 4 | X1.4 | 0.698 | 0.2006 | 0.000 | Valid |
| | 5 | X1.5 | 0.742 | 0.2006 | 0.000 | Valid |
| Perceived Risk | 1 | X2.1 | 0.797 | 0.2006 | 0.000 | Valid |
| | 2 | X2.2 | 0.708 | 0.2006 | 0.000 | Valid |
| | 3 | X2.3 | 0.793 | 0.2006 | 0.000 | Valid |
| | 4 | X2.4 | 0.744 | 0.2006 | 0.000 | Valid |
| | 5 | X2.5 | 0.657 | 0.2006 | 0.000 | Valid |
| | 6 | X2.6 | 0.624 | 0.2006 | 0.000 | Valid |
| Use of QRIS | 1 | Y1.1 | 0.853 | 0.2006 | 0.000 | Valid |
| | 2 | Y1.2 | 0.810 | 0.2006 | 0.000 | Valid |
| | 3 | Y1.3 | 0.743 | 0.2006 | 0.000 | Valid |
| Purchase Decision | 1 | Y2.1 | 0.666 | 0.2006 | 0.000 | Valid |
| | 2 | Y2.2 | 0.641 | 0.2006 | 0.000 | Valid |
| | 3 | Y2.3 | 0.744 | 0.2006 | 0.000 | Valid |
| | 4 | Y2.4 | 0.728 | 0.2006 | 0.000 | Valid |

Source: processed primary data, 2024

*Reliability Test*
All variables exhibited Cronbach's Alpha values exceeding 0.60 (Table 4), confirming (Nunnally, 1978; Peterson, 1994).

Table 4
*Reliability Test Results*

| Variable | Cronbach's Alpha | Standard Reliability | Status |
|---|---|---|---|
| Ease of Use | 0.715 | 0.60 | Reliable |
| Perceived Risk | 0.815 | 0.60 | Reliable |
| Use of QRIS | 0.643 | 0.60 | Reliable |
| Purchase Decision | 0.724 | 0.60 | Reliable |

Source: processed primary data, 2024

These results affirm that all aspects of the questionnaire are reliable and suitable as trustworthy measurement instruments for this study.

*4.4. Classic Assumption Test*
Table 5 shows the results of the classic assumption test of this study.

Table 5.
*Classic Assumption Test Results*

| Test | Model | Statistic/ Value | Result |
|---|---|---|---|
| **Normality Test** | Reg 1 | Asymp. Sig 0.078 | Data is normally distributed |
| | Reg 2 | Asymp. Sig 0.300 | Data is normally distributed |
| **Multicollinearity Test** | Reg 1 | VIF < 10, Tolerance > 0.10 | No multicollinearity |
| | Reg 2 | VIF < 10, Tolerance > 0.10 | No multicollinearity |
| **Heteroscedasticity Test** | Reg 1 | Sig > 0.05 | No heteroscedasticity |
| | Reg 2 | Sig > 0.05 | No heteroscedasticity |

*Source: processed primary data, 2024*

*Normality Test*
The Kolmogorov-Smirnov test was conducted to assess the normality of the regression models. For both Regression 1 and Regression 2, the Asymp. Sig values were greater than 0.05 (0.078 and 0.300, respectively), indicating that the data distribution is normal (Ghozali, 2018).

*Multicollinearity Test*
Multicollinearity was evaluated using the Variance Inflation Factor (VIF) and tolerance values. Both Regression 1 and Regression 2 showed tolerance values greater than the 0.10 threshold and VIF values below 10, suggesting no multicollinearity issues (Ghozali, 2018).

*Heterocedasticity Test*
The Glejser results indicated no significant influence of independent variables on the absolute residuals in both regression models, with significant values exceeding 0.05. Therefore, there is no heteroscedasticity present (Glejser, 1969; Ghozali, 2018).

*4.5. Path Analysis*
Path analysis using SPSS 25 evaluated the relationships between variables. Results are presented in Table 6.

Table 6.
*Path Analysis Results*

| Model | Predictor | Dependent Variable | Unstandardized Coefficients (B) | Standardized Coefficients (Beta) | t | p |
|---|---|---|---|---|---|---|
| 1 | (Constant) | Use of QRIS | 1.690 | | 1.310 | 0.193 |
| | Ease of Use | | 0.406 | 0.470 | 5.370 | 0.000 |
| | Perceived Risk | | 0.242 | 0.377 | 4.360 | 0.000 |
| 2 | (Constant) | Purchase Decision | 0.567 | | 0.563 | 0.575 |
| | Ease of Use | | 0.582 | 0.822 | 8.690 | 0.000 |
| | Perceived Risk | | 0.004 | 0.080 | 0.093 | 0.926 |
| | Use of QRIS | | 0.637 | 0.033 | 0.340 | 0.735 |

*Note: Corrected t-value for QRIS Usage effect on Purchase Decision*
Source: primary data processed using SPSS 25, 2024

Model 1 revealed significant positive effects of Ease of Use (β = 0.470, t = 5.370, p < 0.001) and Perceived Risk (β = 0.377, t = 4.360, p < 0.001) on Use of QRIS. Model 2 demonstrated that Ease of Use significantly influences Purchase Decision (β = 0.822, t = 8.690, p < 0.001), while Perceived Risk (β = 0.080, t = 0.093, p = 0.926) and Use of QRIS (β = 0.033, t = 0.340, p = 0.735) showed no significant direct effects.

*4.6. Hypothesis Testing*

Hypothesis testing was conducted using t-tests and regression analysis via SPSS 25 to determine the influence of the independent variables, Ease of Use and Perceived Risk, on the dependent variables, QRIS Usage and Purchase Decision. The summarized results are presented in Tables 7 and 8.

Table 7.
*Regression Analysis 1 – QRIS Usage*

| Model | Unstandardized Coefficients | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|
| | B | Std. Error | Beta | |
| (Constant) | 1.690 | 1.290 | | 1.310 |
| Ease of Use | 0.406 | 0.076 | 0.470 | 5.370 |
| Perceived Risk | 0.242 | 0.056 | 0.377 | 4.360 |

Source: primary data processed using SPSS 25, 2024

The results indicated that both Ease of Use (β = 0.470, p < .001) and Perceived Risk (β = 0.377, p < .001) have a significant positive effect on QRIS Usage. Consequently, both hypotheses (H1 and H2) were accepted, indicating significant positive influences of Ease of Use and Perceived Risk on QRIS Usage.

Table 8.
*Regression Analysis 2 – Purchase Decision*

| Model | Unstandardized Coefficients | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|
| | B | Std. Error | Beta | |
| (Constant) | 0.567 | 1.007 | | 0.563 |
| Ease of Use | 0.582 | 0.067 | 0.822 | 8.690 |
| Perceived Risk | 0.004 | 0.048 | 0.080 | 0.093 |
| QRIS Usage | 0.637 | 0.080 | 0.033 | 2.040 |

Source: primary data processed using SPSS 25, 2024

The regression results revealed that Ease of Use (β = 0.822, p < 0.001) significantly positively influences Purchase Decision, thus supporting H3. However, Perceived Risk (β = 0.080, p = 0.926) and QRIS Usage (β = 0.033, p = 0.735) were not significant predictors of Purchase Decision, leading to the rejection of H4 and H5. These findings highlight the importance of Ease of Use in influencing Purchase Decisions, while Perceived Risk and QRIS Usage showed no significant impact.

*4.8. R-square (Coefficient of Determination)*

The coefficient of determination, $R^2$, and Adjusted $R^2$, range from 0 to 1, indicating the proportion of variance in the dependent variable that is predictable from the independent variables. Table 9 presents the results for Model 1, where "Ease of Use" and "Perceived Risk" collectively explain 58.9% of the variance in QRIS Usage, as indicated by an Adjusted $R^2$ value of 0.589. This suggests that while these factors significantly contribute to predicting QRIS Usage, 41.1% of the variance

is influenced by other variables not included in the model. Similarly, Table 9 shows that "Ease of Use," "Perceived Risk," and "QRIS Usage" account for 63.5% of the variance in Purchase Decision (Adjusted $R^2$ 0.635), indicating that 36.5% of the variance is attributed to other factors. These results highlight the substantial but not exhaustive explanatory power of the included variables.

Table 9.
*Coefficient of Determination*

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Predictors | Dependent Variable |
|---|---|---|---|---|---|---|
| 1 | 0.773 | 0.598 | 0.589 | 1.372 | Perceived Risk, Ease of Use | QRIS Usage |
| 2 | 0.804 | 0.646 | 0.635 | 1.061 | QRIS Usage, Perceived Risk, Ease of Use | Purchase Decision |

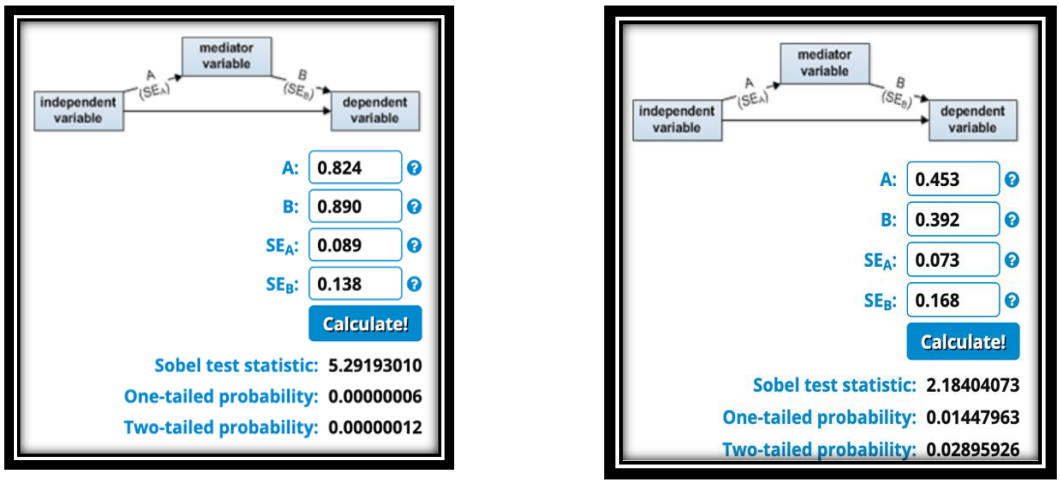
Source: primary data processed using SPSS 25, 2024

*4.9. Mediation Test Using the Sobel Test*

The Sobel Test (Baron & Kenny, 1986; Preacher & Hayes, 2004), was employed to evaluate the mediating effects of QRIS usage on the relationship between ease of use and perceived risk on purchasing decisions. The results indicated that QRIS significantly mediated the effect of ease of use on purchasing decisions, with a Sobel test statistic of 5.291 and a significance level of 0.000. Similarly, QRIS mediated the impact of perceived risk on purchasing decisions, demonstrated by a Sobel test statistic of 2.184 and a significance level of 0.028 (Figure 2).

These findings suggest that the use of QRIS enhances the positive influence of ease of use and mitigates the negative influence of perceived risk on purchasing decisions.

Following Baron and Kenny's (1986) mediation framework and Preacher and Hayes' (2004) recommendations, we conducted Sobel tests supplemented with bootstrapped confidence intervals using PROCESS macro Model 4 (Hayes, 2018) with 5,000 bootstrap samples.




**Source: Primary data processed using the Sobel Test, 2024**

*Figure 2.*
Sobel Tests Results

Table 10.
*Mediation Analysis Results*

| Path | Direct Effect **(c')** | Indirect Effect (ab) | Total Effect (c) | Sobel Z | P-value | Bootstrap 95% (CI) |
|---|---|---|---|---|---|---|
| *Ease Of Use* → Usage of QRIS → Purchase Decision | 0.822*** | 0.013 | 0.835 | 5.291 | 0.000 | [0.008, 0.021] |
| *Perceived Risk* → Usage of QRIS → Purchase Decision | 0.080 | 0.008 | 0.088 | 2.184 | 0.029 | [0.002, 0.016] |

*Note: **p < 0.001: Bootstrap confidence intervals based on 5,000 samples*
*Source: Primary data processed using SPSS 25 and PROCESS macro, 2024*

Ease of Use → Purchase Decision (H6): The indirect effect through QRIS Usage is significant (ab = 0.013, 95% CI [0.008, 0.021], Z = 5.291, p < 0.001). Since the direct effect remains significant (c' = 0.822, p < 0.001), partial mediation is supported. H6 is supported.

Perceived Risk → Purchase Decision (H7): The indirect effect through QRIS Usage is significant (ab = 0.008, 95% CI [0.002, 0.016], Z = 2.184, p = 0.029), while the direct effect is non-significant (c' = 0.080, p = 0.926), indicating full mediation. H7 is supported.

Table 11.
*Summary of Hypothesis Testing Results*

| Hypothesis | Relationship | Result | Support |
|---|---|---|---|
| H1 | Ease of Use → QRIS Usage | β = 0.470*** | Supported |
| H2 | Ease of Use → Purchase Decision | β = 0.822*** | Supported |
| H3 | Perceived Risk → QRIS Usage | β = 0.377*** | Supported |
| H4 | Perceived Risk → Purchase Decision | β = 0.080 | Not Supported |
| H5 | QRIS Usage → Purchase Decision | β = 0.033 | Not Supported |
| H6 | Ease of Use → QRIS Usage → Purchase Decision | Partial mediation | Supported |
| H7 | Perceived Risk → QRIS Usage → Purchase Decision | Full mediation | Supported |

**Note: **p < 0.001*

## 5. Discussion

This study aimed to analyze the impact of ease of use and perceived risk on purchasing decisions through the use of QRIS at food stalls in Semarang City. Our results offer several interesting insights, some of which align with established theory while others present nuanced findings specific to the context of informal food retail.

### *5.1. Effect of Ease of Use on QRIS Utilization*

Our findings confirm that ease of use significantly and positively influences QRIS utilization, consistent with TAM predictions (Davis, 1989; Venkatesh & Davis, 2000) and recent fintech research (Yamin & Abdalatif, 2024). This finding aligns with prior studies demonstrating that perceived ease of use drives QR-code payment adoption (Wardhani, 2020; Song et al., 2021; Zhong & Moon, 2022).

However, our study extends this literature by identifying specific dimensions of ease of use that matter most in the informal food sector context. The highest-rated indicator was "Ease of Use" itself (M = 4.43), even "Accessibility" scored lowest (M = 4.29), suggesting that while the QRIS interface is intuitive, improvements in accessibility—particularly for older users and those with lower digital literacy—remain necessary. This finding resonates with Syari et al.'s (2024) observation that digital literacy significantly

moderates cashless payment adoption in Indonesia.

The demographic profile shows that females (67.7%) and younger users aged 25-28 dominate QRIS usage, consistent with Al-Marri et al.'s (2021) findings on mobile payment adoption patterns. This suggests targeted interventions should focus on enhancing accessibility for underrepresented groups (older users, males) to maximize QRIS penetration in food stalls.

Practical Implication: Food stall owners should prioritize simple, visual QRIS displays with clear instructions in local languages. Training programs for older merchants and customers could further enhance adoption (Macca et al., 2024).

*5.2. Effect of Ease of Use on Purchase Decisions*

Ease of use demonstrates a strong direct effect on purchase decisions, the largest effect size in our model. This finding corroborates research by Sitohang et al. (2024), Purnamasari et al. (2021), and Song et al. (2021), but our effect magnitude is notably **stronger** than typically reported in e-commerce contexts (where β typically ranges 0.3-0.5).

This amplified effect likely reflects the unique characteristics of food stall transactions: time-sensitive, small-value, frequent purchases where transaction speed is paramount. In such contexts, even minor friction in payment processes can disproportionately deter purchases. Koay & Ang (2024) similarly found that QR-code menu adoption in post-COVID hospitality settings was driven primarily by convenience and speed considerations.

The lowest-rated purchase decision indicator was "Willingness to Try" (M = 3.87), suggesting that while current users value ease of use, attracting new users remains challenging. This gap between current user satisfaction and non-user adoption aligns with diffusion of innovation theory's observation that late adopters require different value propositions than early adopters (Zabel & Telkmann, 2021).

Theoretical contribution: Our findings suggest that in high-frequency, low-value transaction contexts (food stalls), ease of use becomes a hygiene factor (Herzberg, 1968) rather than merely a motivator—its absence causes significant dissatisfaction, but its presence, while necessary, may not be sufficient to attract new users without additional incentives.

*5.3. Effect of Perceived Risk on QRIS Utilization*

Perceived risk significantly affects QRIS Utilization, a finding that appears counterintuitive relative to traditional TAM literature, which typically positions risk as an adoption barrier (Pavlou, 2003; Pal et al., 2021).

However, this result requires careful interpretation. Our "Perceived Risk" variable captures low risk perception (evidenced by high scores: M = 4.20, indicating "Excellent" = well-managed risk), not high risk. Respondents perceive QRIS as **low-risk**, which positively influences adoption. This aligns with Yamin & Abdalatif's (2024) findings that effective risk mitigation mechanisms (Bank Indonesia oversight, transaction notifications, fraud protection) transform risk perceptions from adoption barriers into trust-building facilitators.

This finding reflects compensatory consumer behavior (Mandel & Smeesters, 2008) and the Risk-as-Feelings framework (Loewenstein et al., 2001): when consumers perceive that risks are effectively managed through institutional safeguards (Bank Indonesia regulation, instant transaction notifications, recourse mechanisms), they experience psychological reassurance, which actively **motivates** adoption rather than merely removing barriers.

Novelty: Unlike Western contexts where digital payment risk management is taken for granted, in Indonesia's emerging digital economy, explicit risk mitigation (regulatory oversight, consumer protection, digital literacy programs) serves as a positive differentiator (Syari et al., 2024). This finding

highlights the importance of context-specific theorizing in technology adoption research (Avgerou, 2019). The lowest-rated risk indicators were "Delivery Risk" and "Product Risk" (both M = 4.17), reflecting concerns about **order fulfillment accuracy** in food stalls—an issue less relevant in direct food stall purchases but potentially important for food delivery integration (Macca et al., 2024).

*5.4. Effect of Perceived Risk on Purchase Decisions*

Surprisingly, perceived risk shows no significant direct effect on purchase decisions, contradicting Yunita et al. (2019) but consistent with Zulfa & Hidayati (2018). This null finding is particularly intriguing given the significant indirect effect revealed in the mediation analysis (discussed in 5.8).

Theoretical Explanation: We propose three complementary explanations:

1. Threshold Effect: Once perceived risk falls below a certain threshold (as it has in our sample, M = 4.20 = "Excellent"), further risk reduction yields diminishing returns on purchase decisions. This aligns with Prospect Theory (Kahneman & Tversky, 1979); (Dickie et al., 2022), which suggests losses (risks) have a stronger psychological impact than equivalent gains, but this asymmetry diminishes at extreme values.
2. Competitive Neutralization: In Semarang's food stall ecosystem, QRIS has achieved sufficient market penetration that risk management is now a competitive parity factor (Barney, 1991) rather than a competitive advantage. When all payment options offer similar risk levels, risk perceptions no longer differentiate purchase decisions.
3. Direct vs. Indirect Pathways: Risk perceptions may influence purchase decisions primarily through behavioral mechanisms (actual QRIS usage experience) rather than cognitive evaluation. This interpretation is supported by our mediation findings (H7) showing full mediation through QRIS usage, discussed below:

Empirical context: Our food stall setting differs from e-commerce contexts where perceived risk typically matters more. In face-to-face food stall transactions, physical presence and immediate product inspection reduce information asymmetry, making payment-related risks relatively less salient (Liébana-Cabanillas et al., 2024).

*5.5. Effect of QRIS Utilization on Purchase Decisions*

The analysis did not find a significant effect of QRIS Usage on Purchase Decisions, contradicting Pratiwi (2023), and our initial hypothesis. The null finding is surprising given the significant positive effects of both ease of use and perceived risk on QRIS usage (H1, H3). This pattern suggests a necessary but not sufficient relationship. QRIS usage enables transactions but does not independently drive purchase decisions once ease of use and risk perceptions are controlled. In econometric terms, QRIS acts as an enabling infrastructure rather than a motivating factor.

This finding contrasts with Ediputra & Amalyah's (2022) report that QRIS adoption increased transaction frequency. The discrepancy likely stems from methodological differences: our cross-sectional regression controls for ease of use and risk simultaneously, isolating QRIS usage's unique contribution, while previous studies may have captured total effects confounded with other factors.

Theoretical implication: This result challenges technological determinism (Bijker, 1996) by demonstrating that payment technology adoption alone does not automatically translate into behavioral change. Instead, user experience quality (ease of use) and trust mechanisms (risk management) remain the primary drivers.

*5.6. Mediation Effect: Ease of Use → QRIS Usage → Purchase Decisions (H6)*

The Sobel Test revealed that QRIS significantly mediates the relationship between ease of use and purchase decisions (indirect effect: ab = 0.013, 95% CI [0.008,

0.021], Z = 5.291, p < 0.001). The direct effect remains highly significant (c' = 0.822, p < 0.001), indicating that ease of use influences purchase decisions through both direct cognitive evaluation and behavioral experience pathways. Consumers form purchase intentions both by: (1) Cognitively evaluating QRIS ease of use (direct path: 82.2% of total effect). (2) Experiencing QRIS in actual usage (indirect path: 1.3% of total effect)

The small proportion of mediation (1.3%) suggests that cognitive evaluation dominates behavioral learning in this context. This finding aligns with dual-process theories (Kahneman, 2011), suggesting that for high-frequency, routine transactions (food purchases), System 1 (fast, intuitive) cognitive processing based on perceived ease dominates over System 2 (slow, deliberative) learning from usage experience.

Comparison with Prior Research: Renaldy & Susilowati (2020) reported that ease of use influences QRIS adoption, but did not test mediation. Our finding extends this by demonstrating that the mechanism operates primarily through direct cognitive evaluation rather than experiential learning, contradicting experiential learning theories that emphasize trial and feedback (Kolb, 1984).

Practical implication: Marketing efforts should emphasize anticipated ease of use (screenshots, demonstrations, testimonials) to influence potential adopters before their first transaction, as direct cognitive evaluation accounts for the vast majority of the effect.

*5.7. Mediation Effect: Perceived Risk → QRIS Usage → Purchase Decisions (H6)*

QRIS usage fully mediates the relationship between perceived risk and purchase decisions (indirect effect: ab = 0.008, 95% CI [0.002, 0.016], Z = 2.184, p = 0.029; direct effect: c' = 0.080, p = 0.926). This full mediation pattern is theoretically significant. Perceived risk influences purchase decisions exclusively through actual QRIS usage experience, not through direct cognitive evaluation. This contrasts sharply with the ease of use pathway (H6) and suggests distinct psychological mechanisms: (1) Ease of Use: Primarily cognitive (consumers can anticipate ease before usage. (2) Perceived Risk: Primarily experiential (consumers must experience security features to develop confidence).

This finding aligns with Trust-Building Theory (Mayer et al., 1995) in (Alrawad et al., 2023) and McKnight et al. (2002) in (Ansori & Nugroho, 2024), which posits that trust in technology develops through **calculative processes** (evaluating safeguards) followed by knowledge-based trust (experiential validation). Our full mediation result suggests that in QRIS contexts, knowledge-based trust (developed through usage) is **necessary** for risk perceptions to influence purchase behavior.

Comparison with theory: This finding reconciles the apparent contradiction in H3 (perceived risk positively affects QRIS usage) and H4 (perceived risk does not affect purchase decisions). Risk perceptions motivate initial adoption (H3), but purchase decisions depend on usage experience validation (H7), not risk perceptions per se.
Novelty: This full mediation pattern has not been documented in prior QRIS research and contributes to understanding **how** (not just whether) risk perceptions influence digital payment adoption. It suggests that risk mitigation strategies must focus on **trial experiences** (free trials, small-value initial transactions) rather than solely on risk communication.

Practical implication: Food stall associations and QRIS providers should implement low-barrier trial programs (e.g., small discounts for first-time QRIS users) to facilitate experiential learning, as risk-related trust develops primarily through usage rather than pre-adoption persuasion.

*5.8. Why Perceived Risk and QRIS Usage Show No Direct Effects but Significant Indirect Effects*

The pattern of results, perceived risk, and QRIS usage showing significant indirect

effects but non-significant direct effects, reveals a dual-pathway model of digital payment adoption in informal sectors. The first pathway is cognitive-dominant, where ease of use directly and strongly influences purchase decisions (β = 0.822) with only a weak indirect effect through QRIS usage (ab = 0.013). This pathway operates through intuitive evaluation of interface simplicity, suggesting that consumers form purchase intentions primarily through cognitive assessment of system usability. In contrast, the second pathway is experiential-dominant, where perceived risk shows no significant direct effect on purchase decisions (β = 0.080) but influences them significantly through QRIS usage experience (ab = 0.008). This pathway operates through experiential validation of security, indicating that consumers must actually use QRIS to validate their risk perceptions before these perceptions influence purchase behavior.

This dual-pathway structure has important practical implications, suggesting that different intervention strategies are needed for different adoption barriers. For usability barriers, stakeholders should improve interface design and communication to leverage the cognitive pathway, as consumers can evaluate ease of use before actual usage. For trust barriers, however, stakeholders should facilitate safe trial experiences to leverage the experiential pathway, as risk-related trust develops primarily through hands-on experience rather than pre-adoption persuasion.

Theoretical contribution: Our findings advance TAM by demonstrating that mediator importance (QRIS usage) depends on predictor type: cognitive predictors (ease of use) operate largely directly, while affective/trust-based predictors (perceived risk) operate primarily indirectly through experience. This refines the understanding of TAM's black box between intentions and behavior (Venkatesh et al.,2012) in (Ansori & Nugroho, 2024).

*5.9. Contextual Factors: The Informal Food Sector in Indonesia*

Several findings become clearer when contextualized within Indonesia's informal food economy: (1) High Female Participation (67.7%): Reflects women's dominant role in household food purchasing decisions in Indonesian culture (Machín et al., 2024). (2) Young User Concentration (25-28 years): Indicates generational digital divide (Syari et al., 2024), suggesting QRIS has not yet achieved inclusive diffusion across age groups. (3) Entrepreneur/Employee Dominance: Reflects QRIS adoption among economically active, time-pressed consumers valuing transaction efficiency (Macca et al., 2024). (4) Delivery/Product Risk Concerns: Despite high overall risk scores, specific concerns about order accuracy suggest integration challenges between QRIS and food delivery platforms—an area requiring further development (Koay & Ang, 2024).

*5.10. Limitation and Boundary Conditions*

Our findings should be interpreted within several important boundary conditions. First, our sample exhibits high satisfaction across all variables (means 3.87-4.43), suggesting positive response bias or sampling of satisfied users. This may explain why some hypothesized relationships did not emerge, as restricted range in independent variables reduces detectable effect sizes (Hunter & Schmidt, 2004) in (Sahi et al., 2024). Second, our cross-sectional design limits causal interpretations, as temporal precedence (ease of use → usage → decisions) is assumed rather than empirically established since data were collected simultaneously. Longitudinal designs could validate causal ordering (Hayes, 2018). Third, Semarang represents an urban, relatively developed context, and findings may not generalize to rural or less digitally mature regions (Syari et al., 2024). Finally, all measures rely on self-reports, creating potential common method variance (Podsakoff et al., 2012). Future research should incorporate objective usage data, such as transaction logs, alongside perceptual measures to triangulate findings and reduce method bias.

This study makes several important contributions across theoretical, practical, and methodological domains. Theoretically, we identified dual pathways (cognitive vs. experiential) through which ease of use and perceived risk influence purchase decisions, explained context-specific risk inversion, demonstrating why perceived low risk positively predicts adoption in regulated emerging markets, and demonstrated that TAM predictors operate through different mediation mechanisms depending on predictor nature (cognitive vs. affective). Practically, we provided actionable segmentation strategies—cognitive interventions for usability barriers and experiential interventions for trust barriers—identified specific improvement areas, including accessibility (lowest ease dimension), willingness to try (lowest purchase dimension), and delivery/product accuracy (lowest risk dimensions), and highlighted demographic gaps showing that male and older users are underrepresented, requiring targeted outreach. Methodologically, we resolved statistical reporting issues by correcting t-values, supplemented the Sobel test results with bootstrapped confidence intervals and effect sizes, and provided comprehensive mediation analysis distinguishing between partial and full mediation patterns.

Furthermore, this study contributes to the literature by testing established Technology Acceptance Model (TAM) and risk constructs within a specific, under-researched micro-context: Indonesian food stalls. The novelty of this work is positioned as follows: (1) First Empirical Evidence of Mediation: This study provides the first empirical evidence of the mediating role of QRIS usage in the relationship between technology/risk factors and purchase decisions within the Indonesian SME food sector. While prior studies established direct links, this research uncovers the indirect pathway through which QRIS influences consumer behavior. (2) **Enhanced Ecological Validity:** By sampling actual QRIS users in real-world food stall transactions rather than relying on student samples, this research enhances the ecological validity of its findings, offering a more accurate picture of consumer behavior in informal economies. (3) Nuanced Understanding of Perceived Risk: Contrary to the traditional view of risk as a barrier, this study finds that well-managed perceived risk (i.e., low-risk perception) positively influences QRIS utilization. This highlights the effectiveness of Indonesia's regulatory framework and security features in transforming risk from a deterrent into a trust-building factor. To clarify the unique contributions, Table 12 contrasts our findings with those of related recent studies.

Table 12.
*Comparison of Findings with Related QRIS Studies*

| **Study** | **Key Focus** | **Main Findings** | **Differentiation from the Current Study** |
|---|---|---|---|
| Current Study | Mediating effect of QRIS Usage on purchase decisions. | QRIS Usage significantly mediates the impact of ease of use and perceived risk on purchase decisions. Perceived risk does not directly affect purchases. | First, to model and test this full mediation pathway in the Indonesian food stall context, highlighting the indirect mechanism. |

Table 13. (Continued)

| Study | Key Focus | Main Findings | Differentiation from the Current Study |
|---|---|---|---|
| Sitohang et al. (2024) | Impact of ease of use on QRIS adoption by SMEs. | Confirmed ease of use as a strong predictor of QRIS adoption. | Focuses primarily on the direct adoption of QRIS, not on its subsequent effect on purchase decisions or the mediating role. |
| Kamilah (2024) | General factors influencing QRIS adoption in Indonesia. | Identified multiple factors (e.g., convenience, security) affecting adoption intention. | Provides a broader overview but lacks the specific focus on the food stall sector and the detailed path analysis connecting usage to actual purchase outcomes. |

## 6. Conclusion

This study aimed to analyze the impact of ease of use and perceived risk on purchasing decisions through the use of QRIS at food stalls in Semarang City, Indonesia. The findings provide specific answers to the research questions and offer both practical and theoretical implications.

*6.1. Summary of Key Findings*

The analysis yielded several key conclusions. First, both ease of use ($\beta = 0.470$, $p < 0.001$) and perceived risk ($\beta = 0.377$, $p < 0.001$), where lower risk perception leads to higher adoption, were confirmed as significant predictors of QRIS utilization. Second, ease of use demonstrated a strong, direct positive influence on purchase decisions ($\beta = 0.822$, $p < 0.001$). Third, perceived risk did not have a significant direct effect on purchase decisions ($p = 0.926$). Fourth, while QRIS usage itself did not directly predict purchase decisions ($p = 0.735$), it played a crucial mediating role. Specifically, QRIS usage significantly mediated the relationship between ease of use and purchase decisions (Sobel = 5.291, $p < 0.001$) and fully mediated the relationship between perceived risk and purchase decisions (Sobel = 2.184, $p = 0.028$). These results underscore that the benefits of easy-to-use systems and well-managed risk perceptions are most effectively translated into purchase behavior when consumers actively use the QRIS system.

*6.2. Limitations*

Despite these insights, the study has several limitations. First, the cross-sectional design limits the ability to establish causal relationships over time. Future longitudinal studies could better capture the evolution of consumer behavior and trust in digital payments. Second, the research was confined to Semarang City, which, while representative, may not fully capture the dynamics of other Indonesian regions with varying levels of digital literacy and economic development. Third, the sample size, though adequate for the statistical tests used, was relatively small. Finally, the reliance on self-reported data may introduce potential biases, such as social desirability or recall errors.

*6.3. Practical Implications*

The findings offer actionable insights for stakeholders. Food stall owners should prioritize simplifying the QRIS payment

process by using clear, visual QR code displays and providing basic instructions to customers. Digital payment providers and Bank Indonesia should focus on enhancing the accessibility of QRIS applications for less tech-savvy users and strengthening communication about security features to further lower perceived risk. Marketing campaigns should highlight not just the ease of use but also the tangible benefits of completing transactions via QRIS to drive higher conversion rates.

*6.4. Suggestions for Future Research*

Future research should explore additional variables that may influence QRIS adoption, such as social influence, promotional incentives, and price consciousness. A qualitative study could provide deeper insights into the specific risk concerns and usability barriers faced by different demographic groups. Comparative studies across different types of micro-enterprises (e.g., retail, services) and different geographic locations would enhance the generalizability of the findings. Finally, investigating the long-term impact of QRIS adoption on customer loyalty and business performance for food stalls would be a valuable extension.

## References


Abdul Kohar Septyadi, M., Salamah, M., & Nujiyatillah, S. (2022). Literature Review Keputusan Pembelian Dan Minat Beli Konsumen Pada Smartphone: Harga Dan Promosi. *Jurnal Manajemen Pendidikan Dan Ilmu Sosial*, *3*(1), 301–313. https://doi.org/10.38035/jmpis.v3i1.876

Al-Abdallah, G., Helal, R., Dandis, A. O., & Wright, L. T. (2023). Differences in how leaders and employees view organizational changes: Lessons from an international multicultural context. *Cogent Business and Management*, *10*(2). https://doi.org/10.1080/23311975.2023.2228028

Al-Marri, A., Aldossari, N., Al-Mahish, M., Brizmohun, R., AlKulaib, M., & Alaulami, A. (2021). Determinants of using the mobile payment to buy coffee among female college students in Saudi Arabia. *International Journal of Advanced and Applied Sciences*, *8*(6), 88–93. https://doi.org/10.21833/ijaas.2021.06.010

Al-Saedi, K., Al-Emran, M., Ramayah, T., & Abusham, E. (2020). Developing a general extended UTAUT model for M-payment adoption. *Technology in Society*, *62*, 101293. https://doi.org/https://doi.org/10.1016/j.techsoc.2020.101293

Alghifari, A.f., dan Rahayu, T. S. M. (2021). Pengaruh Diskon, Kualitas Website, Persepsi Risiko Dan Kepercayaan Terhadap Keputusan Pembelian Pada Online Shop Shopee: Studi Pada Mahasiswa Universitas Muhammadiyah Purwokerto. *Jurnal Manajemen*, *15*(2), 223–236.

Almeida Lucas, G., Lunardi, G. L., & Bittencourt Dolci, D. (2023). From e-commerce to m-commerce: An analysis of the user's experience with different access platforms. *Electronic Commerce Research and Applications*, *58*, 101240. https://doi.org/https://doi.org/10.1016/j.elerap.2023.101240

Alrawad, M., Lutfi, A., Almaiah, M. A., & Elshaer, I. A. (2023). Examining the influence of trust and perceived risk on customers intention to use NFC mobile payment system. *Journal of Open Innovation: Technology, Market, and Complexity*, *9*(2), 100070. https://doi.org/10.1016/j.joitmc.2023.100070

Ansori, A. D., & Nugroho, S. S. (2024). The Role of Trust on the Continuance Usage Intention of Indonesian Mobile Payment Application. *Gadjah Mada International Journal of Business*, *26*(2), 231–257. https://doi.org/10.22146/gamaijb.70452

Arciniegas, L. (2021). The foodscape of the

urban poor in Jakarta: street food affordances, sharing networks, and individual trajectories. *Journal of Urbanism: International Research on Placemaking and Urban Sustainability*, *14*(3), 272–287. https://doi.org/10.1080/17549175.2021.1924837

Arief, F., & Salehudin, I. (2024). Unlocking B2B Purchase Engagement: Investigating Its Drivers and Consequences in App-Based Service Subscriptions for MSMEs. *Jurnal Manajemen Teori Dan Terapan| Journal of Theory and Applied Management*, *17*(1), 1–22. https://doi.org/10.20473/jmtt.v17i1.51494

Arora, M., Gupta, J., & Mittal, A. (2023). Adoption of food delivery apps during a crisis: exploring an extended technology adoption model. *Global Knowledge, Memory and Communication*, *ahead-of-p*(ahead-of-print). https://doi.org/10.1108/GKMC-01-2023-0005

Aurel, V., Abdurrahman, A., & Indriya, F. (2023). Pengaruh Perceived Ease of Use, perceived Security, Perceived Risk dan Trust Terhadap Minat Penggunaan Aplikasi Pospay. *SEIKO: Journal of Management & Business Risk*, *6*(1), 48–61. https://doi.org/10.37531/sejaman.v6i1.3410

Avgerou, C. (2019). Contextual explanation: Alternative approaches and persistent challenges. *MIS Quarterly: Management Information Systems*, *43*(3), 977–1006. https://doi.org/10.25300/MISQ/2019/13990

Azhari, H. (2021). Analisis Pengaruh Ease of Use, Shopping Experience dan Advertisement Terhadap Minat Beli E-commerce customers Tokopedia di Kota Batam. *Skripsi Untuk Memenuhi Salah Satu Syarat Memperoleh Gelar Sarjana*, 1–66.

Bangsa, J. R., & Khumaeroh, L. L. (2023). The Effect of Perceived Benefits and Ease of Use on the Decision to Use Shopeepay QRIS on Digital Business Students of Ngudi Waluyo University. *Manajemen Dan Akuntansi*, *3*(1), 62–67. http://jibaku.unw.ac.id

Bank Indonesia. (2019). *QR Code Indonesian Standard (QRIS) Implementation*. https://www.bi.go.id/en/edukasi/Documents/QRIS.pdf

Bank Indonesia. (2023). *Monetary Policy Report: Quarter III 2023 Bank Indonesia*.

Bank Indonesia. (2024). *Quick Response Code Indonesian Standard (QRIS)*. Knowledge Base. https://bicara131.bi.go.id/knowledgebase/article/KA-01061/en-us

Barney, J. (1991). Firm Resources and Sustained Competitive Advantage. *Journal of Management*, *17*(1), 99–120.

Baron, R. ., & Kenny, D. . (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*, 1173–1182.

Bijker, W. E. (1996). Of Bicycles, Bakelites, and Bulbs: Toward a Theory of Sociotechnical Change. In *Technology and Culture*. MIT Press. https://doi.org/10.2307/3107114

Bimantara, B. (2020). Pengaruh Kualitas Pelayanan Dan Persepsi Risiko Terhadap Kepuasan Pelanggan Dalam Menggunakan Jasa Ekspedisi J&T Express Samarinda. *Jurnal Administrasi Bisnis Fisipol Unmul*, *8*(3), 258. https://doi.org/10.54144/jadbis.v8i3.3718

Brama Kumbara, V. (2021). Determinasi Nilai Pelanggan Dan Keputusan Pembelian: Analisis Kualitas Produk, Desain Produk Dan Endorse. *Jurnal Ilmu Manajemen Terapan*, *2*(5), 604–630. https://doi.org/10.31933/jimt.v2i5.568

Brewster, A. L., Fraze, T. K., Gottlieb, L. M., Frehn, J., Murray, G. F., & Lewis, V. A. (2020). The Role of Value-Based Payment in Promoting Innovation to Address Social Risks: A Cross-Sectional Study of Social Risk Screening by US Physicians. *The Milbank Quarterly*, *98*(4), 1114–1133. https://doi.org/https://doi.org/10.1111/1468-0009.12480

Buabeng-Andoh, C. (2018). Predicting students' intention to adopt mobile learning: A combination of theory of reasoned action and technology acceptance model. *Journal of Research in Innovative Teaching & Learning*, *11*(2), 178–191.

Buananta, S. E. A., & Christian, L. (2024). Machine Learning Model of Customer Behavior on E-Banking Transaction Using Classification Technique. *Journal of Theoretical and Applied Information Technology*, *102*(7), 2990–3001.

Creswell, J. W., & Creswell, J. D. (2018). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (Fifth). SAGE Publications Inc. https://doi.org/10.4324/9780429469237

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly: Management Information Systems*, *13*(3), 319–339. https://doi.org/10.2307/249008

Davis, F. D. (2018). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly: Management Information Systems*, *13*(3), 319–339. https://doi.org/10.2307/249008

Davis, F. D., & Granić, A. (2024). *The technology acceptance model: 30 years of TAM*. Springer.

Desita, W., & Dewi, G. A. K. R. S. (2022). Pengaruh Persepsi Kemanfaatan, Persepsi Kemudahan Penggunaan, Persepsi Risiko, Promosi dan Fitur Layanan terhadap Minat Menggunakan Transaksi Non Cash pada Aplikasi Dompet Elektronik (E-Wallet). *Jurnal Akuntansi Profesi*, *13*(1), 115–124.

Dickie, M., Adamowicz, W., Gerking, S., & Veronesi, M. (2022). Risk Perception, Learning, and Willingness to Pay to Reduce Heart Disease Risk. *Journal of Benefit-Cost Analysis*, *13*(3), 363–382. https://doi.org/10.1017/bca.2022.14

Ediputra, M. R., & Amalyah, A. A. (2022). Analysis Factors Affecting Consumer Preferences in using Qris Payment In-Store. *2022 5th International Conference of Computer and Informatics Engineering (IC2IE)*, 29–34. https://doi.org/10.1109/IC2IE56416.2022.9970086

Etikan, I. (2016). Comparison of Convenience Sampling and Purposive Sampling. *American Journal of Theoretical and Applied Statistics*, *5*(1), 1. https://doi.org/10.11648/j.ajtas.20160501.11

Ferdinand, A. (2014). *Management research methods*. BP Diponegoro University. Semarang.

Ghozali, I. (2018). *Aplikasi Analisis Multivariate dengan Program SPSS 25* (9th ed.). Badan Penerbit Universitas Diponegoro.

Glejser, H. (1969). A New Test for Heteroskedasticity. *Journal of the American Statistical Association*, *64*(325), 316–323. https://doi.org/10.1080/01621459.1969.10500976

Gruntkowski, L. M., & Martinez, L. F. (2022). Online Grocery Shopping in Germany: Assessing the Impact of COVID-19. *Journal of Theoretical and Applied Electronic Commerce Research*, *17*(3), 984–1002. https://doi.org/10.3390/jtaer17030050

Gupta, S., Pandey, D. K., El Ammari, A., & Sahu, G. P. (2023). Do perceived risks and benefits impact trust and willingness to adopt CBDCs? *Research in International Business and Finance*, *66*, 101993. https://doi.org/https://doi.org/10.1016/j.ribaf.2023.101993

Gustafson, A., Gillespie, R., Dewitt, E., Cox, B., Dunaway, B., Haynes-Maslow, L., Steeves, E. A., & Trude, A. C. B. (2022). Online Pilot Grocery Intervention among Rural and Urban Residents Aimed to Improve Purchasing Habits. *International Journal of Environmental Research and Public Health*, *19*(2). https://doi.org/10.3390/ijerph19020871

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate Data Analysis* (7th ed.). Pearson.

Hamzah, M. I., Ramli, F. A. A., & Shaw, N. (2023). The moderating influence of brand image on consumers' adoption of

QR-code e-wallets. *Journal of Retailing and Consumer Services*, *73*(March). https://doi.org/10.1016/j.jretconser.2023.103326

Harto, B. R., & Munir, Z. (2021). Analisis Kepercayaan, Persepsi Resiko Dan Keamanan Terhadap Keputusan Pembelian Konsumen Pada Situs Jual Beli Shopee. *Jurnal Sistem Informasi Dan Manajemen*, *9*(1), 89–98.

Hayes, A. F. (2018). *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach (Methodology in the Social Sciences)* (2nd ed.). The Guilford Press.

Hayes, A. F., & Preacher, K. J. (2010). Quantifying and testing indirect effects in simple mediation models when the constituent paths are nonlinear. *Multivariate Behavioral Research*, *45*(4), 627–660. https://doi.org/10.1080/00273171.2010.498290

Herzberg, F. (1968). One More Time: How Do You Motivate Employees? *Harvard Business Review*, *46*, 56–62.

Intal, G. L., Payas, J. D., Fernandez, L. M., & Domingo, B. M. (2020). Restaurant Information System (RIS) with QR Code to Improve Service Operations of Casual Fine Dining Restaurant. *2020 IEEE 7th International Conference on Industrial Engineering and Applications (ICIEA)*, 1054–1059. https://doi.org/10.1109/ICIEA49774.2020.9102036

Jin, S., Cao, Y., Jones, G., Li, W., & Frewer, L. J. (2023). Consumers' purchase intentions towards traced foods: A comparative analysis between the United Kingdom and China. *Food Control*, *152*, 109828. https://doi.org/https://doi.org/10.1016/j.foodcont.2023.109828

Jogiyanto, H. M. (2019). *Sistem Informasi Keprilakuan*. Andi Offset.

Kahneman, D. (2011). *Thinking Fast and Slow* (Vol. 17). Straus and Giroux.

Kahneman, D., & Tversky, A. (1979). Prospect Theory: An Analysis of Decision Under Risk. *Econometrica*, *47*(2), 263–291.

Kempen, E., & Tobias-Mamina, R. J. (2022). Applying behavioral reasoning theory to South African female consumers' emerging apparel-shopping behavior during COVID-19. *Journal of Global Fashion Marketing*, *13*(3), 221–237. https://doi.org/10.1080/20932685.2022.2033632

Koay, K. Y., & Ang, K. (2024). Understanding consumers' intentions to use QR code menus in the post-COVID-19 pandemic. *British Food Journal*, *126*(5), 2172–2186. https://doi.org/10.1108/BFJ-10-2023-0880

Kolb, D. A. (1984). *Experiential Learning: Experience as The Source of Learning and Development*. Prentice Hall, Inc. https://doi.org/10.1016/B978-0-7506-7223-8.50017-4

Kotler, M., Cao, T., Wang, S., & Qiao, C. (2020). *Marketing Strategy in the Digital Age*. WORLD SCIENTIFIC. https://doi.org/doi:10.1142/11737

Kotler, P., & Armstrong, G. (2018). *Principles of Marketing Global* (17th ed.). Pearson Education.

Kotler, P., & Keller, K. L. (2016). *Marketing management* (15th ed.). Pearson Education.

Li, S., Liu, F., Zhang, Y., Peng, K., & Yu, Z. (2022). Research on Personalized Product Integration Improvement Based on Consumer Maturity. *IEEE Access*, *10*, 39487–39501. https://doi.org/10.1109/ACCESS.2022.3166480

Li, X. E., Jervis, S. M., & Drake, M. A. (2015). Examining Extrinsic Factors that Influence Product Acceptance: A Review. *Journal of Food Science*, *80*(5), R901–R909. https://doi.org/10.1111/1750-3841.12852

Liébana-Cabanillas, F., Alcántara-Pilar, J. M., Singh, N., & Pavluković, V. (2024). Overview of the Adoption of Online Food Ordering Services in Spain and India. An Analytical Approach Based on the Stimulus-Organism-Response

Model. *International Journal of Human–Computer Interaction*, *40*(14), 3748–3762. https://doi.org/10.1080/10447318.2023.2201550

Liu, Z., Li, X., Wu, C., Zhang, R., & Durrani, D. K. (2022). The impact of expectation discrepancy on food consumers' quality perception and purchase intentions: Exploring mediating and moderating influences in China. *Food Control*, *133*, 108668. https://doi.org/https://doi.org/10.1016/j.foodcont.2021.108668

Loewenstein, G. F., Hsee, C. K., Weber, E. U., & Welch, N. (2001). Risk as Feelings. *Psychological Bulletin*, *127*(2), 267–286. https://doi.org/10.1037/0033-2909.127.2.267

Macca, L. S., Shehzad, N., Kovacova, M., & Santoro, G. (2024). Unlocking e-commerce potential: micro and small enterprises strike back in the food and beverage industry. *European Journal of Innovation Management*. https://doi.org/10.1108/EJIM-01-2023-0023

Machín, L., Brunet, G., Fajardo, G., Bonilla, L., Costa, M., González, F., Bentancor, S., Girona, A., Verdier, S., Curutchet, M. R., Cauci, A., Pochellú, L., & Ares, G. (2024). Exploring food purchase decisions in food insecure households: An exploratory qualitative study in an emerging Latin American country. *Food Quality and Preference*, *116*, 105146. https://doi.org/https://doi.org/10.1016/j.foodqual.2024.105146

Mahardika, A. (2022). Keputusan Menggunakan Qris Pada Umkm Selama Masa Pandemi Covid-19 UMKM Selama Masa Pandemi Covid-19. *Uin Raden Intan Lampung*, 3–5.

Mandel, N., & Smeesters, D. (2008). The Sweet Escape: Effects of Mortality Salience on Consumption Quantities for High- and Low-Self-Esteem Consumers. *Journal of Consumer Research*, *35*(2), 309–323. https://doi.org/10.1086/587626

Marth, S., Hartl, B., & Penz, E. (2022). Sharing on platforms: Reducing perceived risk for peer-to-peer platform consumers through trust-building and regulation. *Journal of Consumer Behaviour*, *21*(6), 1255–1267. https://doi.org/https://doi.org/10.1002/cb.2075

Mastana, A. S. (2023). Factors Influencing Consumer Intentions To Purchase Groceries Over the Internet: an Exploratory Study During the Pandemic. *International Journal of Professional Business Review*, *8*(2), 1–19. https://doi.org/10.26668/businessreview/2023.v8i2.859

Ningsih, H. A., Sasmita, E. M., & Sari, B. (2021). Persepsi Risiko Terhadap Keputusan Menggunakan Uang Elektronik (QRIS ) Pada Mahasiswa. *Jurnal IKRA-ITH Ekonomika*, *4*(1), 1–9.

Nunnally, J. D. (1978). *Psychometric Theory (2nd ed), New York: McGraw-Hill*. (2nd ed.). McGraw-Hill. https://api.semanticscholar.org/CorpusID:166821603

Nurhayaty, E., Suleman, D., Puspasari, A., Zahra, Z., Herawati, N., Yuniarti, P., & Rahadjeng, I. R. (2021). Determinants of consumer decisions in shopping for food through online applications. *International Journal of Data and Network Science*, *5*(4), 495–500. https://doi.org/10.5267/j.ijdns.2021.9.001

Pal, A., Herath, T., De', R., & Rao, H. R. (2021). Is the Convenience Worth the Risk? An Investigation of Mobile Payment Usage. *Information Systems Frontiers*, *23*(4), 941–961. https://doi.org/10.1007/s10796-020-10070-z

Parastiti, D. E. P., Mukhlis, M., & Haryono, A. (2019). Analisis Penggunaan Uang Elektronik Pada Mahasiswa Fakultas Ekonomi Universitas Negeri Malang (Studi Kasus: Uang Elektronik Brizzi). *Jurnal Ekonomi Dan Studi Pembangunan*, *7*(1), 75–82.

Patrick, L. C., & Marques, J. A. L. (2024). Mini-programs in mobile payment to access eGovernment in China's Greater Bay Area - exploring the determinants and mechanism from self-determination and

motivation theory. *Cogent Social Sciences*, *10*(1), 2300515. https://doi.org/10.1080/23311886.2023.2300515

Pavlou, P. A. (2003). Consumer acceptance of electronic commerce: Integrating trust and risk with the technology acceptance model. *International Journal of Electronic Commerce*, *7*(3), 101–134. https://doi.org/10.1080/10864415.2003.11044275

Peemanee, J., & Wongsahai, E. (2021). Technology acceptance and service convenience on repeat purchase decision of food delivery business in Thailand. *IOP Conference Series: Earth and Environmental Science*, *756*(1). https://doi.org/10.1088/1755-1315/756/1/012029

Peterson, R. A. (1994). A Meta-Analysis of Cronbach's Coefficient Alpha. *Journal of Consumer Research*, *21*(2), 381–391. http://www.jstor.org/stable/2489828

Podsakoff, P. M., MacKenzie, S. B., & Podsakoff, N. P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annual Review of Psychology*, *63*, 539–569. https://doi.org/10.1146/annurev-psych-120710-100452

Pratiwi, F. N. (2023). The Influence of The QRIS Payment Method on Purchase Decisions in Bandung State Polytechnic Students. *International Journal Administration, Business & Organization*, *4*(3), 79–87.

Purnamasari, R. D. A., Sasana, H., & Novitaningtyas, I. (2021). *Pengaruh perceived ease of use, perceived usefulness, perceived risk, dan brand imageterhadap keputusan pembelian menggunakan metode pembayaran paylater* [Universitas Tidar]. https://journal.feb.unmul.ac.id/index.php/JURNALMANAJEMEN/article/view/10130

Renaldy, M., & Susilowati, C. (2020). Pengaruh Perceived Usefulness, Perceived Ease of Use, dan Trust terhadap Purchase Decision. *Jurnal Manajemen Bisnis Dan Kewirausahaan*, *03*(1), 23.

Rostiani, R., Firdausi, A. S. M., Arini, H. M., Mulyani, Y. P., & Sunarharum, T. M. (2024). The effect of Islamic attributes, destination image, scepticism, perceived value and halal awareness on the intention to engage in Muslim-friendly travel. *Journal of Islamic Marketing*, *15*(2), 613–632. https://doi.org/10.1108/JIMA-12-2022-0322

Sahi, G. K., Mahajan, R., & Jones, P. (2024). Strategic imperatives for new product success: An internal stakeholder perspective. *Journal of Innovation and Knowledge*, *9*(1), 100467. https://doi.org/10.1016/j.jik.2024.100467

Schmidthuber, L., Maresch, D., & Ginner, M. (2020). Disruptive technologies and abundance in the service sector - toward a refined technology acceptance model. *Technological Forecasting and Social Change*, *155*, 119328. https://doi.org/https://doi.org/10.1016/j.techfore.2018.06.017

Schuetz, S., & Venkatesh, V. (2020). Blockchain, adoption, and financial inclusion in India: Research opportunities. *International Journal of Information Management*, *52*, 101936.

Shah, A. M., Yan, X., & Qayyum, A. (2022). Adoption of mobile food ordering apps for O2O food delivery services during the COVID-19 outbreak. *British Food Journal*, *124*(11), 3368–3395. https://doi.org/10.1108/BFJ-09-2020-0781

Shukla, A., & Mishra, A. (2022). Role of Review Length, Review Valence and Review Credibility on Consumer's Online Hotel Booking Intention. *FIIB Business Review*, *12*(4), 403–414. https://doi.org/10.1177/23197145221099683

Silalahi, P. R., Safira, R., Hubara, Z. A., & Sari, E. P. (2022). Pengaruh Dompet Digital Terhadap Budaya Belanja Individu di Kota Medan. *EKOMBIS REVIEW: Jurnal Ilmiah Ekonomi Dan Bisnis*, *10*(2), 869–878. https://doi.org/10.37676/ekombis.v10i

2.2673

Sitohang, F., Sembiring, S., Indonesia, U. A., Rahayu, C., Barat, K. B., Informasi, F. T., & Advent, U. (2024). Pengaruh pembayaran qris terhadap minat beli konsumen usaha mixue effect of qris payment on costumer purchase intention of mixue business. *Journal of Information Technology and Computer Science (INTECOMS)*, *7*(2).

Song, H., Ruan, W. J., & Jeon, Y. J. J. (2021). An integrated approach to the purchase decision making process of food-delivery apps: Focusing on the TAM and AIDA models. *International Journal of Hospitality Management*, *95*, 102943. https://doi.org/https://doi.org/10.1016/j.ijhm.2021.102943

Speight, K. C., Schiano, A. N., Harwood, W. S., & Drake, M. A. (2019). Consumer insights on prepackaged Cheddar cheese shreds using focus groups, conjoint analysis, and qualitative multivariate analysis. *Journal of Dairy Science*, *102*(8), 6971–6986. https://doi.org/10.3168/jds.2018-16209

Sugiyono. (2019). *Metode penelitian kuantitatif kualitatif dan R dan D* (2nd ed.). Alfabeta.

Sujarweni, W. (2015). *SPSS untuk penelitian*. Pustaka Baru Press.

Suryani, D., Ermansyah, & Al Sukri, S. (2020). Pengaruh Perceived Ease Of Use, Perceived Usefulness Dan Trust Terhadap Kepuasan Pelanggan Gojek. *Indonesian Journal of Business Economics and Management*, *1*(2021), 11–19.

Syari, A. P., Karyani, E., Pamungkas, P., & Fariz Achsanta, A. (2024). Digital Literacy and Cashless Payment: Evidence from Indonesia. *The Asian Journal of Technology Management*, *17*(1), 51–58. http://dx.doi.org/10.12695/ajtm.2024.17.1.4

Tan, S. J. (2019). Strategies for reducing consumers' risk aversion in Internet shopping. *Journal of Consumer Marketing*, *16*(2), 163–180.

Tang, J.-W., & Tsai, P.-H. (2024). Exploring critical determinants influencing businesses' continuous usage of mobile payment in post-pandemic era: Based on the UTAUT2 perspective. *Technology in Society*, *77*, 102554. https://doi.org/https://doi.org/10.1016/j.techsoc.2024.102554

Thamrin, A., & Farncis, T. (2019). *Manajemen Pemasaran. PT. Raja Grafindo Persada*. Rajawali Press. Jakarta.

Thomas-Francois, K., & Somogyi, S. (2022). Consumers' intention to adopt virtual grocery shopping: do technological readiness and the optimisation of consumer learning matter? *International Journal of Retail & Distribution Management*, *50*(5), 638–657. https://doi.org/10.1108/IJRDM-06-2020-0206

Toma, P., Manta, F., Morrone, D., & Campobasso, F. (2023). Familiar worldwide: how PDO products reflect quality in consumers' appraisal and behaviour. *The TQM Journal*, *35*(2), 470–491. https://doi.org/10.1108/TQM-07-2021-0216

Tul-Krzyszczuk, A., Icon, B. W., & Forysiński, G. (2024). Digital trust in mobile payment in food services during the COVID-19 pandemic: a case from Poland. In *Trusy in Social and Business Relations* (1st ed.). Routledge. https://doi.org/10.4324/9781032633749-16

Utami, B. (2024). The Impact of the QRIS Payment System on the Digital Economy Development. *Jurnal Ekonomi Manajemen Dan Bisnis*, *1*(3), 141–148. https://doi.org/10.62017/jemb

Vale, V. T., Baptista, B. M., & Faria, S. M. P. S. (2024). COVID-19, digital transformation, consumers' experience: Factors influencing satisfaction and loyalty in food retail. In & C. A. J. Remondes, P. Madeira (Ed.), *Connecting With Consumers Through Effective Personalization and Programmatic Advertising* (pp. 1–22). IGI Global. https://doi.org/10.4018/978-1-6684-9146-1.ch001

Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology

acceptance model: Four longitudinal field studies. *Management Science*, *46*(2), 186–204.

Wang, X., & Li, Y. (2024). Comparing influencing factors of online and offline fresh food purchasing: consumption values perspective. *Environment, Development and Sustainability*, *26*(5), 12995–13015. https://doi.org/10.1007/s10668-023-04056-5

Wardhani, M. R. T. (2020). *Pengaruh Perceived Ease of Use Dan Perceived Risk Terhadap Buying Intention Dengan Customer Attitude Sebagai Intervening*.

Yamin, M. A. Y., & Abdalatif, O. A. A. (2024). Examining consumer behavior towards adoption of quick response code mobile payment systems: transforming mobile payment in the fintech industry. *Humanities and Social Sciences Communications*, *11*(1), 675. https://doi.org/10.1057/s41599-024-03189-w

Yang, Z., Ouyang, T., Fu, X., & Peng, X. (2020). A decision-making algorithm for online shopping using deep-learning–based opinion pairs mining and q-rung orthopair fuzzy interaction Heronian mean operators. *International Journal of Intelligent Systems*, *35*(5), 783–825. https://doi.org/https://doi.org/10.1002/int.22225

Yeo, S. F., Tan, C. L., Kumar, A., Tan, K. H., & Wong, J. K. (2022). Investigating the impact of AI-powered technologies on Instagrammers' purchase decisions in digitalization era–A study of the fashion and apparel industry. *Technological Forecasting and Social Change*, *177*, 121551. https://doi.org/https://doi.org/10.1016/j.techfore.2022.121551

Yunita, N. R., Sumarsono, H., & Farida, U. (2019). Pengaruh Persepsi Risiko, Kepercayaan, Dan Keamanan Terhadap Keputusan Pembelian Online Di Bukalapak. *ISOQUANT : Jurnal Ekonomi, Manajemen Dan Akuntansi*, *3*(1), 90.

Yusmarni, Y., Putri, A., & Paloma, C. (2021). Factors affecting consumer's purchasing decision of vegetables during Covid-19 pandemic in Padang, West Sumatera. *IOP Conference Series: Earth and Environmental Science*, *741*(1). https://doi.org/10.1088/1755-1315/741/1/012069

Zabel, C., & Telkmann, V. (2021). The adoption of emerging technology-driven media innovations. A comparative study of the introduction of virtual and augmented reality in the media and manufacturing industries. *Journal of Media Business Studies*, *18*(4), 235–266. https://doi.org/10.1080/16522354.2020.1839172

Zaman, U., Koo, I., Abbasi, S., Raza, S. H., & Qureshi, M. G. (2022). Meet Your Digital Twin in Space? Profiling International Expat's Readiness for Metaverse Space Travel, Tech-Savviness, COVID-19 Travel Anxiety, and Travel Fear of Missing Out. *Sustainability (Switzerland)*, *14*(11). https://doi.org/10.3390/su14116441

Zhong, Y., & Moon, H. C. (2022). Investigating Customer Behavior of Using Contactless Payment in China: A Comparative Study of Facial Recognition Payment and Mobile QR-Code Payment. *Sustainability (Switzerland)*, *14*(12). https://doi.org/10.3390/su14127150

Zulfa, L., & Hidayati, R. (2018). Analisis Pengaruh Persepsi Risiko, Kualitas Situs Web, Dan Kepercayaan Konsumen Terhadap Keputusan Pembelian Konsumen E-Commerce Shopee Di Kota Semarang. *Diponegoro Journal of Management*, *7*(3), 1–11. http://ejournal-s1.undip.ac.id/index.php/dbr

Appendix A: Measurement Items

| **Variable** | **Item Code** | **Measurement Item** | **Literature Source** |
|---|---|---|---|
| Ease of Use (X1) | X1.1 | QRIS application is easy to use for payments at food stalls | Venkatesh & Davis (2000) |
| | X1.2 | QRIS payment features are easily accessible | |
| | X1.3 | The interface and intructions in QRIS are clear and easy to understand | |
| | X1.4 | QRIS provides flexibility in payment methods | |
| | X1.5 | Overall, the QRIS system is simple and not confusing | |
| Perceived Risk (X2) | X2.1 | I feel safe from fraud when using QRIS | Tan (2019) |
| | X2.2 | The risk of financial loss when using QRIS is low | |
| | X2.3 | I do not worry about delivery delays when using QRIS | |
| | X2.4 | The product received matches my expectation when paying with QRIS | |
| | X2.5 | My personal data are safe when using QRIS | |
| | X2.6 | Information provided in QRIS transactions is clear and reliable | |
| Use of QRIS (Y1) | Y1.1 | QRIS improves the payment process at food stalls | Arciniegas (2021) |
| | Y1.2 | QRIS simplifies the payment process at food stalls | |
| | Y1.3 | Using QRIS provides benefits in digital transactions | |
| Purchase Decision (Y2) | Y2.1 | I buy products that meet my needs and desires | Speight et al., (2019) and S. Li et al., (2022): |
| | Y2.2 | I am interested in trying products available through QRIS payment | |
| | Y2.3 | I am confident in the quality of products purchased via QRIS | |
| | Y2.4 | I am willing to make repeat purchases using QRIS | |

*Note.* All items measured on a 5-point Likert scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree.