

Digital Payment Efficiency through QRIS Convenience and Security: The Mediating Role of Trust

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Abstract

Drawing on the Technology Acceptance Model (TAM) and Diffusion of Innovation, this study examines the effects of Quick Response Code Indonesian Standard (QRIS) ease and security on digital payment efficiency, with trust as a mediator. Using a quantitative approach, the study sampled 96 residents of Denpasar City (Gen X and Y) City using the Lemeshow formula. Seven hypotheses were tested using Structural Equation Modeling (SEM-PLS). QRIS convenience significantly improved digital payment efficiency ($\beta=0.439$; $p<0.05$) and trust ($\beta=0.567$; $p<0.05$). Conversely, QRIS security does not directly affect efficiency ($\beta=0.089$; $p>0.05$), but significantly increases trust ($\beta=0.312$; $p<0.05$). Trust significantly enhanced efficiency ($\beta=0.537$; $p<0.05$) and mediated the effects of both convenience ($\beta=0.305$; $p<0.05$) and security ($\beta=0.168$; $p<0.05$). QRIS convenience directly impacts efficiency and trust, whereas security primarily influences efficiency through trust. Focusing on Gen X and Y in Denpasar, these findings suggest that policymakers and providers should prioritize strengthening convenience, security, and user trust to maximize digital payment efficiency. Theoretically, this study extends the TAM and DOI frameworks by positioning trust as a vital mediator in QRIS adoption within a multigenerational urban context.

Keywords: Convenience, Digital Payment Efficiency, Security, Trust

1. INTRODUCTION

Technological developments in the financial sector, Financial Technology (Fintech), have become a major driving force in the evolution of the global financial sector, including Indonesia (Abubakar & Handayani, 2018). The increasing use of digital technology in financial services has enabled FinTech service providers to reach consumers previously unserved by traditional financial institutions (Adelaja, Umeorah, Abikoye, & Neziyanya, 2024; Aswirah, Arfah, & Alam, 2024). The development of Fintech can be felt with the availability of various types of digital payment methods. Digital payment is a transformative financial process that involves the electronic transfer of funds for purchasing goods and services using various digital platforms and devices (Saputri & Sari, 2020). One of the digital payment media widely used in Indonesia is the Quick Response Code Indonesian Standard (Violinda & Jian) (Petroccione, Graziano, Musella, & Hadjielias, 2025).

Using Quick Response Code Indonesian Standard (QRIS), people can make payments at various merchants simply by scanning one type of standardized QR code, without having to worry about compatibility with different digital wallets or mobile banking applications. This makes the payment ecosystem more integrated and inclusive (Muniarty, Dwiriansyah, Wulandari, Rimawan, & Oviyadin, 2023). Consumers' desire to use QRIS as a digital payment tool is based on various factors, such as the perception of convenience, security, and trust that transactions using QRIS are safe, the benefits of using QRIS, or the relatively low level of risk in using QRIS as a payment tool (Anggraeni & Anggraini, 2025; Tanha et al., 2024).

Ease of use of QRIS is one factor that can influence the efficiency of digital payment systems. Ease of use refers to how confident someone is in using a technology and how it will be free from difficulties (Anzie, Manalu, Savitri, Putri, & Zusrony, 2024). Although convenience is experienced when transacting using QRIS, obstacles and problems can arise. The convenience provided by QRIS must be balanced with technological knowledge to minimize the negative impacts that may arise from transactions using QRIS. Research Buluati, Karundeng, and Suyanto (2023) shows that ease of use of QRIS has a positive and significant impact on the efficiency of digital payments.

In addition to the convenience of QRIS user security factors, it is also a matter of concern in terms of digital payment efficiency (Bhimasta, Surya, & Pramudita, 2025; Petroccione et al., 2025).

As the security felt by users increases their trust in this digital payment system, they are more comfortable and confident in making transactions ([Meliana & Bayudi, 2025](#)). Security provides convenience to users, increases user trust, and leads to an increase in the number of users ([Idawati & Pratama, 2020](#)). Based on the results of research [Putra and Nurainun \(2021\)](#) and [Kurbani, Adelia, and Novalia \(2024\)](#), researchers can assume that the security of QRIS use is related to the efficiency of digital payments. QRIS user security greatly influences trust because the security felt by users increases their trust in this digital payment system, so they are more comfortable and confident in making transactions. Security provides convenience to users, increases user trust, and leads to an increase in the number of users ([Rohmah et al., 2024](#)). Bank Indonesia guarantees QRIS security directly through an international standard security system.

This study used convenience and security as independent variables, trust as a mediating variable, and digital payment efficiency as a dependent variable. Researcher trust was incorporated as a mediating variable to evaluate its potential in strengthening the relationship between QRIS convenience, security, and digital payment efficiency. The mediating variable in this study was a partial mediator. This research focuses on Gen X and Y Communities as respondents. Gen X is a community born between 1965 -1980 [Jiménez-Zarco, Mendez-Aparicio, and Izquierdo-Yusta \(2024\)](#) while Gen Y is a community born between 1981 – 1996 [Caraka et al. \(2022\)](#), the researcher's consideration in choosing Gen X and Gen Y Communities as respondents because Gen X was born in a technological transition period, so they are familiar with the digital and non-digital world. Gen X are digital immigrants and tend to be more skeptical and cautious regarding new technologies.

Within the DOI framework, trust serves as a mandatory precursor to innovation adoption for this group. They require empirical evidence of robust security measures before perceiving a digital payment system as being truly efficient. Gen Y, as digital natives, places a high premium on convenience, aligning with the Perceived Ease of Use construct in TAM ([Widjanarko, 2025](#)). Gen Y exhibits a higher propensity to tolerate potential security risks, provided that the platform offers superior speed and seamless integration ([Chatterjee, 2025](#)). For this generation, security is perceived as a functional baseline, a fundamental requirement rather than a distinct competitive advantage. Denpasar city was chosen as the research location because it represents a densely populated urban area with mature digital financial literacy. The purpose of this study is to determine the influence of each variable of convenience, security and trust on the efficiency of digital payments, as well as to determine the mediating role of the trust variable. This research is expected to increase scientific insight into conducting research in the field of financial management, especially those related to the efficiency of digital payments using QRIS, and can also increase digital knowledge, especially digital finance.

2. LITERATURE REVIEW

A literature review is an important step in research that aims to find theories or concepts that can be used as a basis for analyzing data and building a framework for thinking in research. The theories used to support this research are the Diffusion of Innovation ([Fundeanu & Badele](#)) Theory Rogers [García-Avilés \(2020\)](#) and the Technology Acceptance Model (TAM) by Theory Davis ([Fecira & Abdullah, 2020](#)).

2.1 The Impact of QRIS Convenience on Digital Payment Efficiency

Ease is the confidence of using technology free from difficulties ([Anzie et al., 2024](#)). Ease of use of QRIS is one of the factors that can influence the efficiency of digital payments, this is conveyed by Research from [Buluati et al. \(2023\)](#) entitled The Influence of Ease, Security and Trust in Transactions using QRIS on the Efficiency of Digital Payments for MSMEs in Boalemo Regency from the results of research that has been conducted, states that the ease and security of using QRIS have a positive and significant influence on the Efficiency of Digital Payments. And also supported by Research [Kurniawan, Maulana, and Iskandar \(2023\)](#) entitled “The Influence of QRIS Usefulness, Ease of QRIS, and QRIS Security on the Efficiency of Digital Payments in Accounting Students of the Faculty of Business and Economics, Islamic University of Indonesia”. Based on the above description, the hypothesis that researchers can conclude is as follows:

H₁: The ease of use of QRIS has a positive and significant effect on digital payment efficiency

2.2 The Impact of QRIS Security on Digital Payment Efficiency

The security of QRIS is an important factor that influences the efficiency of digital payments. Research conducted by [Sebayang \(2023\)](#) with the research title "The Influence of Perceived Trust and Perceived Security on the Interest of Using QRIS as a Digital Payment Tool for Halal MSMEs in Medan City" with research results that partially state that security perceptions have a significant effect on the interest in using QRIS as a digital payment tool. Research conducted by [Noer, Fadhilah, Prihananto, and Noer \(2023\)](#) with the title "The Influence of Perceived Ease of Use and Security on Public Interest in Transacting Using QRIS Digital Payment Services (Case Study at Genbi Commissariat of Medan Area University)" states that the results of the research Security has a positive and significant effect on the interest in using QRIS digital payments. Based on the above description, the hypothesis that researchers can conclude is as follows:

H₂: The security of QRIS usage has a positive and significant effect on the efficiency of digital payments (study on the Denpasar City community, Gen X and Gen Y)

2.3 The Effect of QRIS Ease on Trust

Trust is defined as consumer behavior in deciding to use QRIS as a payment transaction tool, which is influenced by incoming information from various sources, including marketing efforts and cultural-environmental factors ([Yudiantara & Widagda, 2022](#)). Research [Anzie et al. \(2024\)](#) entitled "The Influence of Perceived Benefits and Perceived Ease of Use Through Trust on QRIS Use Decisions among Generation Z Students in Pekanbaru City" states that QRIS Ease of Use has a positive and significant effect on trust. Based on the above description, the hypothesis that researchers can conclude is as follows:

H₃: Ease of use of QRIS has a positive and significant effect on trust (study on Denpasar City Gen X and Gen Y communities)

2.4 The Influence of QRIS Security on Trust

In the Big Indonesian Dictionary, safety is defined as being free from disturbance, protected, without doubt, and peaceful. Security is also defined as a state of peace or a quality that protects individuals ([Meliana & Bayudi, 2025](#)). In the context of financial technology such as QRIS, security is considered very important ([Juatri, Ridhwan, & Amri, 2024](#)). When users feel safe, they will be more confident in using it; therefore, it can be assumed that security is one of the factors that increases a person's trust. Based on the above description, the hypothesis that researchers can conclude is as follows:

H₄: Security of QRIS usage has a positive and significant effect on trust (study on Denpasar City Gen X and Gen Y communities)

2.5 The Influence of Trust on Digital Payment Efficiency

Trust is defined as consumer behavior in deciding to use QRIS as a payment transaction tool, which is influenced by information received from various sources, including marketing efforts and cultural-environmental factors ([Yudiantara & Widagda, 2022](#)). The results show that the trust factor has a positive and significant impact on the decision to use a non-cash payment system ([Sebayang, 2023](#)). Based on the description, the hypothesis that researchers can conclude is as follows:

H₅: Trust in QRIS usage has a positive and significant effect on Digital Payment Efficiency (study on Gen X and Gen Y Denpasar City Communities)

2.6 The Impact of QRIS Convenience on Digital Payment Efficiency Through Trust

According to expert opinions, trust is a condition that arises when consumers believe in the honesty and integrity of a company. Research conducted by [Gultom, Setyawan, and Laksono \(2023\)](#) entitled "The Role of Trust in Mediating the Effects of Perceived Ease of Use and Perceived Digital Value on Intention to Use e-Payment" states that the results of perceived ease of use and perceived digital value, as well as trust, have a direct effect on e-payment. However, when trust acts as a

mediator, it only plays a role in influences the perception of digital value towards e-payment, while the perception of ease of use does not have a significant effect. Trust plays a partial mediating role in the influence of perceived digital value on e-payment. Based on the description, the hypothesis that researchers can conclude is as follows:

H_6 : Ease of use of QRIS has a positive and significant effect on Digital Payment Efficiency through Trust (study on Denpasar City Society Gen X and Gen Y)

2.7 The Influence of QRIS Security on Digital Payment Efficiency Through Trust

Digital transaction security is becoming an increasingly important issue with the adoption of QRIS in Indonesia. The security of QRIS is an important factor influencing the efficiency of digital payments (Rinaldi et al., 2024). QRIS user security greatly influences trust because the security perceived by users increases their trust in this digital payment system, so they are more comfortable and confident in making transactions. Security provides convenience to users, increases user trust, and leads to an increase in the number of users (Idawati & Pratama, 2020). Based on the description, the hypothesis that researchers can conclude is as follows:

H_7 : The security of QRIS usage has a positive and significant effect on the efficiency of digital payments through trust (study on the Denpasar City community, Gen X and Gen Y)

Based on the formulation of the problem, objectives, concepts, and hypotheses, the relationship between the variables of QRIS convenience and QRIS security on the efficiency of digital payments mediated by the trust variable can be seen in the research model below.

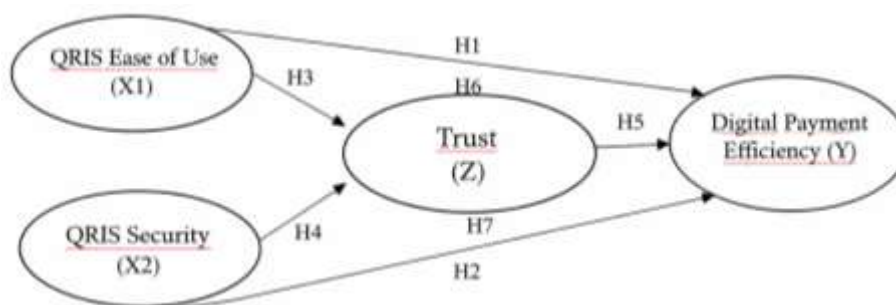


Figure 1. Framework of thought

Figure 1 illustrates a conceptual research model examining the relationships between QRIS Ease of Use (X_1), QRIS Security (X_2), Trust (Z), and Digital Payment Efficiency (Y). Both X_1 and X_2 serve as independent variables influencing Y directly and indirectly through the mediating variable Z (Trust). Specifically, X_1 is hypothesized to directly affect Y (H_1) and Trust (H_3), while X_2 is proposed to influence Trust (H_4) and directly impact Y (H_2). Trust (Z) is further hypothesized to have a direct effect on Digital Payment Efficiency (Y) through H_5 , and also mediates the relationships from X_1 (H_6) and X_2 (H_7) to Y . This model highlights how the ease of use and security of QRIS can enhance digital payment efficiency both directly and by fostering user trust.

3. METHODOLOGY

This study aims to determine the efficiency of digital payments with the ease and security of using QRIS through a case study of trust in Denpasar City residents who are classified as Gen X and Gen Y QRIS reason for choosing QRIS as the object of study because, compared to several digital payment methods, it is easy to use by people who are classified as Gen X and Gen Y (millennials). Those classified as Gen X and Gen Y (Millennials) were born during the technological transition period; therefore, they are familiar with the digital and non-digital worlds. The research location included the Denpasar City area.

The population in this study is the entire Denpasar city community belonging to Gen X and Gen Y, the number of which is unknown with certainty. The sample used the Lemeshow formula, which obtained 96 samples, with the sample determination method using the purposive sampling technique. The data collection method used in this study is observation, namely conducting direct observation of the location and object to be studied, and interviews, namely the method of collecting

data by asking sources related to the research being conducted. A questionnaire is a data collection method that involves providing respondents with written questions and statements. The questions were structured based on 12 indicators. This study also used documentation data collection methods and literature studies. To ensure the empirical integrity of the data collection tool, the instrument underwent formal validity and reliability tests. To answer the proposed hypothesis, the data analysis technique used in this study was PLS-SEM using SmartPLS 4.

4. RESULTS AND DISCUSSIONS

4.1 Respondent characteristics

Based on the collected data, respondent characteristics were obtained, including gender, age, occupation and education. Respondent characteristics were obtained based on the number of questionnaires returned and completed by the respondents, which can be reported as follows:

Table 1. Respondent characteristics

No	Characteristics	Choice	Number of people	%age (%)
1	Gender	Man	42	44
		Woman	54	56
		Total	96	100
2	Age	29-44 years	66	69
		45-60 years	30	31
		Total	96	100
3	Work	Self-employed	25	26
		Employee Private	47	49
		ASN/BUMN	24	25
		Students	0	0
		Other	0	0
		Total	96	100
4	Education	High School/Vocational School	7	7
		Diploma	15	16
		Bachelor degree)	63	66
		Other	11	11
		Total	96	100

Table 1 shows that the gender of the respondents in this study were predominantly female, with 54 people or 56 %. Based on age, the dominant respondents in this study were 22-44 years old, with 66 people or 69 % of the total sample. Based on occupation, the respondents in this study were predominantly private employees, with 47 people or 49 %. Based on education, respondents with a bachelor's degree (S1) dominated, with 63 people or 66 %.

4.2 Validity Test

Validity testing was conducted using convergent validity using the Average Variance Extracted (AVE) value with a minimum value of 0.5 (Soltanizadeh, Abdul Rasid, Mottaghi Golshan, & Wan Ismail, 2016). The results of data processing on the Average Variance Extracted (AVE) aspect in Table 2 show that the AVE value of the relationship between manifest variables in the construct is above 0.5. In relation to the recommendation that the measurement value must be greater than 0.5, the items in this study can be said to be valid because the construct can explain 50 % or more of the item variance. The digital payment efficiency variable had the largest AVE value, 0.963.

Table 2. Convergent validity based on AVE

Variables	AVE	Information
Efficiency of digital payments	0.963	Valid
Convenience	0.724	Valid



Security	0.602	Valid
Trust	0.905	Valid

A method that can be used to assess discriminant validity is by comparing the square root of the Average Variance Extracted (AVE) for each construct with the correlation between one construct and another in the model. If a model has a square root of AVE for each construct that is greater than the correlation between the construct and the other constructs, then the model is said to have a good discriminant validity.

Table 3. Discriminant validity based on the Fornell-Larcker Criterion

Variables	Digital Payment Efficiency	QRIS Security	QRIS Convenience	Trust
Digital Payment Efficiency	0.981			
QRIS Security	0.494	0.776		
QRIS Convenience	0.826	0.318	0.670	
Trust	0.874	0.493	0.667	0.951

Table 3 shows the results of the discriminant validity test based on the Fornell–Larker criterion with the square root value of the Average Variance Extracted (AVE) greater than the correlation involving the latent variable, indicating that discriminant validity is met for all variables.

4.3 Reliability Test

The construct reliability test was conducted by measuring two criteria: composite reliability and Cronbach's alpha. A construct is declared reliable if the composite reliability value is and Cronbach alpha is above 0.7. From Table 4, it can be seen that all variables have composite reliability and Cronbach’s alpha above 0.7. Therefore, all are said to be reliable.

Table 4. Composite reliability test results

Variables/dimensions	Cronbach's alpha	Composite reliability	Criteria
Efficiency of digital payments	0.992	0.992	Fulfil
Convenience	0.778	0.784	Fulfil
Security	0.778	0.784	Fulfil
Trust	0.738	0.748	Fulfil

4.4 Structural Model Evaluation (inner model)

The coefficient of determination is used to measure the degree of variation in changes in endogenous variables relative to the exogenous variables. The higher the coefficient of determination, the better the predictive model, as presented in Table 5.

Table 5. R-square value on endogenous variables

Variables	R-square
Efficiency of digital payments	0.877
Trust	0.532

Based on Table 5, the R-square value for the digital payment efficiency variable is 0.877, meaning that 87.7 % of digital payment efficiency is due to convenience, security, and trust. However, 12.3 % of digital payment efficiency is due to other variables not examined in this study. The R-square value for trust is 0.532, meaning that 53.2 % of trust is due to convenience and security. Meanwhile, 46.8 % is due to other variables.



4.5 Collinearity statistics

The purpose of this multicollinearity test was to determine multicollinearity between variables by examining the correlation values between the independent variables. The Collinearity Statistics (VIF) table, used to examine the multicollinearity test, shows that the inner values of each VIF variable are between 0.2 and 5 [Risher and Hair Jr \(2017\)](#), so the multicollinearity assumption test, as shown in Table 6, does not violate.

Table 6. Collinearity test

Variables	Inner VIF value
QRIS Convenience -> Digital Payment Efficiency	1,800
QRIS Convenience -> Trust	1,113
QRIS Security -> Digital Payment Efficiency	1,321
QRIS Security -> Trust	1,113

Statistical collinearity using the Variance Inflation Factor (VIF) approach is shown in. The inner VIF value of QRIS convenience on Digital Payment Efficiency was 1,800. The inner VIF value of QRIS convenience on trust was 1.113. The inner VIF value of QRIS security on Digital Payment Efficiency was 1,321, the inner VIF value of QRIS security on trust was 1,113, thus, all variables had inner VIF values in the range of 0.2 – 5, so they did not violate the multicollinearity assumption.

4.6 Hypothesis Testing

The next step was to analyze the relationship between trust (*M*) and digital payment efficiency (*Y*) using Partial Least Squares (PLS). Relationship analysis was performed by calculating the path coefficients for each path (path analysis) [\(Duryadi, 2025\)](#). This relationship analysis was performed using the bootstrapping method [\(Alfons, Ates, & Groenen, 2022\)](#). If the p-value is <0.05, there is a significant effect. If the original sample value is positive, the influence between the variables is positive. Hypothesis testing was based on the results of the significance test of the influence of the structural model, as shown in Table 7.

Table 7. Structural model parameter estimation

Relationship between variables	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
QRIS Convenience -> Efficiency Digital Payments	0.439	0.439	0.060	7.355	0,000
Security -> Efficiency Digital Payments	0.089	0.088	0.050	1.770	0.077
Convenience -> Trust	0.567	0.568	0.050	11.305	0.000
QRIS Security -> Trust	0.312	0.312	0.065	4.809	0.000
Trust -> Efficiency Digital Payments	0.537	0.539	0.058	9.293	0.000
QRIS Convenience -> Trust -> Digital Payment Efficiency	0.305	0.307	0.046	6,627	0,000
QRIS Security -> Trust -> Digital Payment Efficiency	0.168	0.169	0.041	4,056	0,000

Based on the testing of the structural model parameter estimates shown in Table 7, the following can be concluded:

The direct effect of QRIS convenience on digital payment efficiency shows a positive original sample value of 0.439 with a p-value of $0.000 < 0.05$, thus confirming that QRIS convenience has a positive and significant effect on digital payment efficiency. Therefore, H_1 is accepted in this study. This indicates that the easier a digital payment system, in this case, QRIS, is to use, the more efficient the transaction process is for users. QRIS usability is assessed based on various aspects, such as a simple interface, fast transaction processing, integration with various banking applications or digital wallets, and ease of scanning QR codes without the need for additional devices. These features directly reduce transaction times, the need for cash, and payment input errors, ultimately increasing efficiency. These results align with the Technology Acceptance Model (TAM) theory, which states that perceived ease of use drives the adoption of new technology. This finding is inconsistent with the results of a previous study ([Maulana, 2024](#)).

The direct effect of QRIS security on digital payment efficiency shows a positive original sample value of 0.089 with a p-value of $0.077 > 0.05$, thus indicating that QRIS security has a positive and insignificant effect on digital payment efficiency. Therefore, H_2 is rejected in this study. The results of the data analysis show that the QRIS security variable has a positive but insignificant effect on digital payment efficiency. This means that although the perception of QRIS security tends to increase digital payment efficiency, it is not statistically strong enough to be declared significant. Theoretically, security is an important factor in digital payment systems (DPS). As a QR code-based payment system, the QRIS is equipped with various security protocols, such as data encryption, user authentication, and fraud protection. However, the results of this study indicate that the level of security perceived by users is not a primary factor driving digital payment efficiency. This finding is inconsistent with that of a previous study ([Rohmah et al., 2024](#)).

The direct effect of QRIS convenience on trust shows a positive original sample value of 0.567 with a p-value of $0.000 < 0.05$, thus indicating that QRIS convenience has a positive and significant effect on trust. Thus, H_3 is accepted. These findings indicate that the easier the QRIS is to use, the higher the public's level of trust in this digital payment system. Ease of use encompasses various aspects, such as a simple interface, fast transaction processing, interoperability with various banking platforms and digital wallets, and ease of access and use without requiring special training. When users perceive a system as easy to understand and operate, they tend to feel more comfortable and secure, which directly strengthens their trust in the system. These results are consistent with the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT) ([Williams, Rana, and Dwivedi \(2015\)](#)), which state that the perceived ease of use of technology significantly influences user attitudes and confidence in adopting new technologies.

The direct effect of QRIS security on trust shows a positive original sample value of 0.312 with a p-value of $0.000 < 0.05$, thus indicating that QRIS security has a positive and significant effect on trust. Thus, H_4 is accepted. This means that the higher the perceived security of the QRIS, the greater the level of trust in using it as a digital payment tool. Security is a key element in building user trust in technology-based services, such as digital payment systems. In the context of QRIS, security aspects include user data protection, transaction information encryption, strong authentication, and fraud and abuse prevention.

The direct effect of trust on digital payment efficiency shows a positive original sample value of 0.537 with a p-value of $0.000 < 0.05$, indicating that trust has a positive and significant effect on digital payment efficiency. Therefore, H_5 is accepted in this study. This means that the higher a user's level of trust in a digital payment system, the more efficient their payment process. In this context, trust encompasses user confidence that the digital payment system is secure, reliable, and consistently performs. When users feel confident in the QRIS, they tend to be more comfortable using it without worrying about risks such as fraud, technical disruptions, or data breaches.

The effect of QRIS convenience on payment efficiency, mediated by trust, shows a positive original sample value of 0.305 with a p-value of $0.000 < 0.05$. This result indicates that trust mediates the effect of QRIS convenience on digital payment efficiency. Thus, H_6 is accepted. The direct effect of QRIS convenience on digital payment efficiency is significant, thus indicating that the nature of the mediation that occurs is partial mediation. When users find QRIS easy to use, they tend to



perceive the system as being secure, reliable, and professional. This feeling of trust makes them more confident and efficient when making transactions without the need for verification processes or excessive doubt. Because the mediation is partial, it can be concluded that ease of use remains the primary factor influencing efficiency, but trust strengthens the relationship, although it does not completely bridge the gap. Therefore, both ease and trust must be considered simultaneously in the development of digital payment systems such as QRIS.

The effect of QRIS security on digital payment efficiency with trust mediation shows a positive origin sample value of 0.168, with a p-value of 0.000 < 0.05. This result indicates that trust mediates the effect of QRIS security on digital payment efficiency. Thus, H_7 is accepted. The direct effect of QRIS security on digital payment efficiency is insignificant; therefore, it is stated that the nature of the mediation that occurs is full mediation. This statement is strengthened by the VAF test, as follows:

$$VAF = \frac{0.567 * 0.537}{(0.567 * 0.537) + 0.055} * 100\%$$

$$VAF = \frac{0.304479}{0.359479} * 100\%$$

$$VAF = 0.847000798 = 84.70\%$$

Based on the results of the VAF calculation, the value shows 84.70 %, so the innovation mediation variable acts as a full mediation. In other words, the influence of security on efficiency is not direct but rather entirely through user trust. This means that while QRIS security is highly perceived by users, including aspects such as personal data protection, prevention of transaction misuse, and system reliability, these factors do not directly increase the transaction efficiency. Instead, security first builds trust, and this trust drives efficiency in QRIS use.

5. CONCLUSIONS

5.1 Conclusion

Based on the research results, it can be concluded that QRIS convenience and trust have a positive and significant effect on digital payment efficiency, whereas QRIS security has a positive but insignificant effect. The convenience and security of QRIS have a positive and significant effect on trust. The mediating role of trust for QRIS convenience on digital payment efficiency is partial mediation, while the role of trust for QRIS security on digital payment efficiency is full mediation

5.2 Research Limitations

This study only used respondents from Gen X and Gen Y with regional limitations, namely only using the Denpasar city area; therefore, the research results cannot necessarily be generalized to all digital payment users in other areas. This study only used convenience, security, and trust as factors influencing digital payment efficiency. Other variables, such as digital literacy, Internet network quality, transaction costs, and user experience, are also likely to be influential.

5.3 Suggestions and Directions for Future Research

Suggestions that researchers can convey based on the findings in this study should expand the use of QRIS in places frequently visited by Denpasar city residents who are classified as Gen X and Y, such as traditional markets, food stalls, grocery stores, cafes, coworking spaces, and places of worship, will make them more accustomed and confident in using QRIS. For further research, it is better to use several variables that have not been studied in this study that can be used to measure the level of efficiency of digital payments, and further research can also use other digital payment methods, such as e-money and e-wallet.

AUTHOR CONTRIBUTIONS

LNO conceptualized the research, formulated the hypotheses, and was primarily responsible for the writing of the manuscript. PYW contributed to the methodology design, including data collection and statistical analysis, while NWWP assisted with the literature review and theoretical framework development. GADMY supported the data analysis using Structural Equation Modeling (SEM-PLS) and the interpretation of results. GAS contributed to the discussion of findings and final revisions. All authors reviewed and approved the final manuscript for submission.

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