

Acceptance analysis of payment system Quick Response Code Indonesian Standard (QRIS) using technology acceptance model

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Abstract

Digital age has a significant impact on people's daily activities. One of the benefits of digitalization is the emergence of digital payment systems to facilitate transactions. QRIS (Quick Response Indonesian Standard) is one of the non-cash payment systems launched by Bank Indonesia and the Indonesian Payment Systems Association in 2019. Although QRIS continues to increase users every year, the tendency of Indonesian people to use cash or debit cards for transactions is still high. In addition, the discovery of security loopholes in the QRIS payment system also makes people hesitant to use the system. This study aims to examine the effect of perceived ease of use, perceived usefulness, perceived security on actual usage through behavioral intention to use as an intervening variable. The type of research used is explanatory research. Sampling was carried out using non-probability techniques with purposive sampling and accidental sampling methods. The population of this study was QRIS users residing permanently or temporarily in Semarang City. Data processing was carried out using the SmartPLS 3.2.9 software. The results of this study showed that perceived ease of use did not influence actual usage, either directly or indirectly. However, perceived usefulness and perceived security have an indirect effect on actual usage. The influence of behavioral intention to use is full mediation on perceived usefulness and perceived security on actual usage.

Keywords: Technology acceptance model; Partial least square; Perceived ease of use; Perceived usefulness; Perceived security; Behavioral intention to use; Actual usage

1. Introduction

The development of digital technology has changed the way people transact, with more and more opting for cashless payments. This is influenced by the wide penetration of smartphones and the continued development of innovations in fintech, which is financial technology. Cashless payments are highly favored by Indonesians as they provide many benefits, such as convenience, efficiency, and affordability. According to data from Bank Indonesia (2021), the ratio of cash and non-cash transactions in Indonesia is 16.7%. This means that 83.3% of buying and selling transactions in Indonesia are done non-cash. These non-cash instruments are grouped into two types, namely Payment Instruments Utilizing Cards or *Alat Pembayaran Menggunakan Kartu* (APMK) and Electronic Money or *Uang Elektronik* (UNIK). APMK is a payment instrument in the form of a card, be it credit, ATM (Automated Teller Machine), or debit. UNIK is digital money that is stored on server media or chips and managed by the money issuer.

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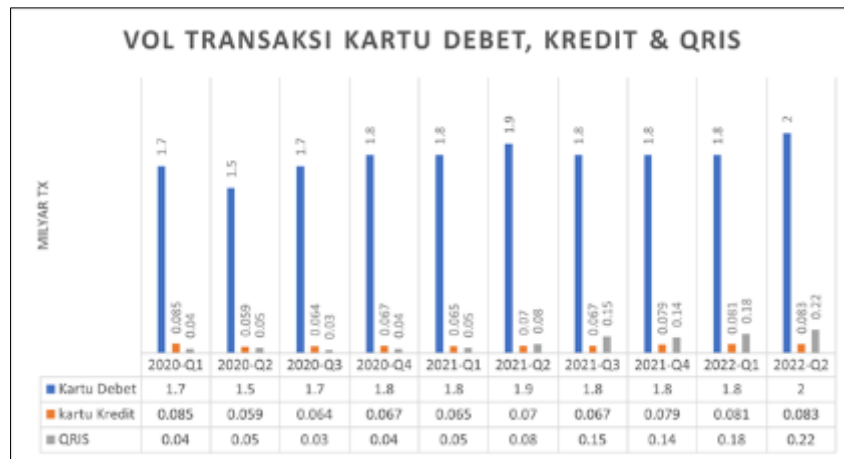


Figure 1 Transaction Volume of Debit Cards, Credit Cards and QRIS (accessed & processed June 2022)

New innovations in the fintech industry are born from efforts to solve existing problems in financial services. One of the new technologies born is a payment system utilizing QR codes. To respond to the development of this technology, Bank Indonesia together with the Indonesian Payment System Association launched QRIS (Quick Response Indonesian Standard). QRIS is a national QR code payment method standardization that aims to overcome previous problems, namely public confusion due to the many different QR codes. As a relatively new technology QRIS has experienced a significant increase in usage. But the increase only occurred in big cities whose facilities and community behavior were ready to adopt the technology. According to data from Bank Indonesia (2023) 70% of QRIS users still come from big cities in Java, while the rest are divided across cities in Java. This can be a potential that the use of QRIS can still continue to increase in the future and become a problem that must be resolved immediately. Not only that, report data obtained from the official ASPI website (2022) the volume of QRIS usage is still far behind the debit card instrument, where debit card users reach 2 billion transactions compared to QRIS which is only 2 million transactions. This proves that the tendency of Indonesians to utilize old payments is still high, such as cash or debit cards. This is unfortunate because high usage rates are the main goal of adopting a new system. So to find out the factors of using the QRIS system, the Technology Acceptance Model is used.

The Technology Acceptance Model (TAM) is defined by a model developed in predicting and explaining the acceptance of users of information systems. The Technology Acceptance Model (TAM) by Fred D. Davis in 1989 is a development of the Technology of Reasoned Action (TRA) acceptance model [1]. The development of the model continues to give rise to new models such as the Theory of Planned Behavior (TPB) developed by Fishbein and Ajzen 1975 and TAM 2 developed by Venkatesh and Davis 2000 where in each new model there is an addition or reduction of constructs. In the TAM model to predict actual use or Actual Usage, it can be seen that Behavior Intention to Use or one's intention to use the system itself. In other words, the higher the intention to use the system, the higher the intensity of use of the system. Behavioral Intention to Use is influenced by perceived ease of use and perceived usefulness to encourage the use of the system. Previous research utilizing the TAM method to measure the acceptance of a technology has been carried out, one of which is by A. Taufan and R. T. Yuwono examining the acceptance factors of GO-PAY payments. The study found that perceived ease of use and perceived value, perceived usefulness affect the intention to use GO-PAY [2].

The TAM model continues to develop along with the times and continues to be used by various researchers both at home and abroad [3]. In research C. Flavián and M. Guinalú, development of the TAM model is the addition of the Perceived Security variable or perceived security to predict the acceptance of a system [4]. Perceived Security is the attitude of users' trust in their personal information (personal and monetary) that will not be stored, viewed and manipulated during the process of delivery, transit and storage from unwanted and responsible parties [4]. In other words, if the system is perceived as secure, it will increase a person's desire to use the system. The security of a system is a very important topic in today's digital age. The Indonesian Ministry of Communication and Information revealed that cybersecurity is a major challenge faced by Indonesia. This is because there are many cases of data leakage and theft by parties that can be called hackers. Not only that, the QRIS payment system is also experiencing problems with its system security. Information obtained from the South Jakarta Police has received reports of fraud by sticking fake stickers in several places in Jakarta. This needs immediate action by BI and ASPI so that users are not afraid and reluctant to use the QRIS payment system due to system security issues.

This study examines the influence of Perceived Ease of Use (PEOU), Perceived Usefulness (PU), and Perceived Security (PS) on perceived QRIS usage (AU), with Behavioral Intention to Use (BIU) as the intermediate variable. The acronyms of each variable will continue to be used in this study. The focus of novelty in this study is the object under study, namely the QRIS payment system and the addition of the perceived security variable as a development of Davis' (1989) TAM model [5]. Based on the background that has been stated "The Effect of Perceived Ease Of Use, Perceived Usefulness, Perceived Security on Actual Usage of the Quick Response Code Indonesian Standard (QRIS) Payment System Through Behavioral Intention To Use As An Intervening Variable (E-Wallet And M-Banking Users In Semarang City)".

2. Material and methods

This research uses a quantitative approach to analyse the relationship between variables. The aim is to test the hypothesis that has been formulated and analyse the influence between variables. The definitions of all variables used in this study are as follows:

- Perceived Ease of Use is defined by the user's perception of how easy a particular system or product is to use. This includes the level of ease in understanding the features of the system, navigation, and interaction with the user [5], [6].
- Perceived Usefulness is defined by the user's perception of the extent to which the system or product is beneficial to the user's needs or goals. It relates to the extent to which the system can assist users in completing tasks or achieving their goals [5], [6].
- Perceived Security is defined by the user's perception of the level of security of the system or product, including data privacy and information security. It includes users' beliefs that the use of the system will not pose a risk or threat to their security [4].
- Behavioral Intention to Use is defined by an individual's intention and desire to use the system or product in real activities. It reflects the willingness of individuals to adopt or use the system based on their perceptions of its ease of use, usefulness, and security [5], [6], [7], [8].
- Actual Usage is defined by the actual level of use of a system or product by an individual or group. It reflects the realization of the behavioral intention of use and can be measured by the amount and frequency of use of the system or product [5], [6].

This study takes the population of Semarang City residents who have at least once used the QRIS payment method and or have the intention to use the QRIS payment method. Data obtained from the Semarang City Dispendukcapil as of June 2022 proves that the total population of Semarang City is 1,688,133 people. This research utilises non-probability sampling technique with accidental sampling method. The sample selection considerations are based on criteria, namely people who are at least 17 years old, located in the city of Semarang, e-wallet and / or m-banking users and have ever and or are interested in using the QRIS payment system. The sample of this study was 100 respondents. This is based on the recommendation I. Ghozali which states that research using the Partial Least Square (PLS) method requires a minimum sample of 30 and a maximum of 100 people [9]. This research instrument is useful in collecting research data, and researchers use questionnaires. The questionnaire contains 24 questions designed to measure various research variables. The data was then analysed using Structural Equation Modelling (SEM) based on Partial Least Square (PLS) using SmartPLS 3.3.9 software.

Rating scale according to Sugiyono is a research instrument that uses numbers to measure research variables [10]. Respondents are asked to provide answers on a certain scale to show the level of agreement or disagreement of the respondent. With this, this research scale is more flexible, not only measuring attitudes, but the level of perception of research respondents. According to W. Abdillah explains that the rating scale includes qualitative and ratio scales. The ratio nature of the rating scale allows arithmetic operations, including in SEM analysis [11].

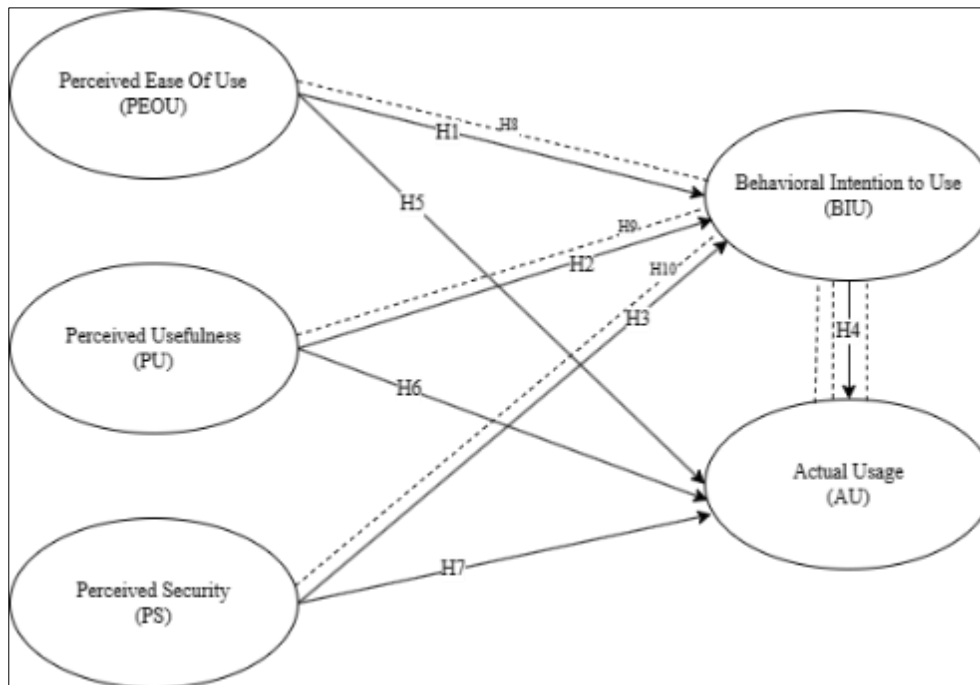


Figure 2 Research model

Based on the research model presented in Figure 2, the research hypothesis can be formulated as follows:

- H_1 : It is suspected that perceived user-friendliness has an influence on the intention to use QRIS payments.
- H_2 : It is suspected that perceived usefulness has an influence on the intention to use QRIS payments.
- H_3 : It is suspected that security perceptions have an influence on the intention to use QRIS payments.
- H_4 : It is suspected that the intention to use the system has an influence on the actual use of the QRIS payment system.
- H_5 : It is suspected that the perceived ease of use has an influence on the actual use of the QRIS payment system.
- H_6 : It is suspected that perceived usefulness has an influence on the actual use of the QRIS payment system.
- H_7 : It is suspected that security perceptions have an influence on the actual use of the QRIS payment system.
- H_8 : It is suspected that intention to use mediates between perceived ease of use on actual use of the QRIS payment system.
- H_9 : It is suspected that usage intention mediates between perceived usefulness and actual use of the QRIS payment system.
- H_{10} : It is suspected that intention to use mediates between perceived security and actual use of the QRIS payment system.

3. Results and discussion

3.1. Respondent Characters

The results prove that the majority of respondents, namely women (70%) with an age range of 20-22 years (48%) work as students or college students (61%) earning a monthly income of Rp 1,000,000 - Rp 3,000,000 (57%) utilising the Shopee-Pay e-wallet platform (39%) and utilising the BCA m-banking platform (36%).

3.2. Evaluation of Measurement (Outer Model)

The Outer Model or measurement model proves how the influence of each indicator on the latent variable. The Outer Model will test how far the level of reliability and validity of a research instrument is. Outer model measurement involves three stages, namely testing discriminant validity, convergent validity, and composite reliability. The results of

this study prove that there are several indicators that are not valid and reliable so that they must be removed or dropped, including PEOU1, PEOU6, PU5.

3.2.1. Convergent Validity

The level of validity convergence proves how well the construct is measured by its latent variables. A high loading factor value proves that the construct and its latent variable have a strong relationship, so the validity convergence is high. In accordance with the rule of thumb mentioned in W. Abdillah book, validity can be considered good if the LF value > 0.7 [12].

Table 1 Loading Factor Results

	<i>AU</i>	<i>BIU</i>	<i>PEOU</i>	<i>PU</i>	<i>PS</i>	Remarks
AU1	0.848					valid
AU2	0.865					valid
AU3	0.785					valid
BIU1		0.814				valid
BIU2		0.862				valid
BIU3		0.755				valid
BIU4		0.791				valid
PEOU2			0.872			valid
PEOU3			0.871			valid
PEOU4			0.834			valid
PEOU5			0.763			valid
PU1				0.843		valid
PU2				0.766		valid
PU3				0.808		valid
PU4				0.801		valid
PS1					0.813	valid
PS2					0.774	valid
PS3					0.859	valid
PS4					0.778	valid
PS5					0.780	valid

SmartPLS Data Processing Result. 2023.

The table above proves the results of data processing utilising the PLS Algorithm technique, it is found that all items have a value exceeding 0.7, with this declared valid.

3.2.2. Discriminant Validity

Discriminant validity ensures that a construct has no influence on other latent variables. The measurement can be done by comparing the AVE (Average Variance Extracted) score of each construct with the correlation of other constructs and based on the cross-loading value.

Table 2 Cross Loading Results

	AU	BIU	PEOU	PU	PS
AU1	0.848	0.718	0.540	0.625	0.526
AU2	0.865	0.597	0.526	0.550	0.517
AU3	0.785	0.539	0.354	0.470	0.561
BIU1	0.523	0.814	0.505	0.619	0.562
BIU2	0.573	0.862	0.594	0.725	0.617
BIU3	0.594	0.755	0.527	0.508	0.496
BIU4	0.712	0.791	0.482	0.595	0.630
PEOU2	0.541	0.660	0.872	0.664	0.501
PEOU3	0.490	0.533	0.871	0.646	0.530
PEOU4	0.495	0.512	0.834	0.672	0.493
PEOU5	0.376	0.454	0.763	0.636	0.405
PU1	0.520	0.608	0.675	0.843	0.561
PU2	0.514	0.565	0.596	0.766	0.560
PU3	0.528	0.640	0.573	0.808	0.565
PU4	0.570	0.635	0.667	0.801	0.577
PS1	0.499	0.556	0.456	0.557	0.813
PS2	0.485	0.591	0.422	0.494	0.774
PS3	0.601	0.725	0.590	0.723	0.859
PS4	0.379	0.399	0.413	0.440	0.778
PS5	0.548	0.539	0.406	0.545	0.780

SmartPLS Data Processing Result. 2023.

Table 2 proves that the correlation of the AU variable with its indicators is higher when compared to the indicators of other variables (BIU, PEOU, PU, PS). The same applies to the indicators of the other constituent variables. Where the correlation value is higher than the correlation of the indicator with variables that are not its constituents. Thus, the cross-loading test results can be said to be valid because the loading factor value on one variable when compared to other variables is higher.

3.2.3. Composite Reliability

The high Cronbach's Alpha and Composite Reliability values prove that the instrument is declared reliable (can be trusted to produce accurate data). In accordance with the rule of thumb mentioned in W. Abdillah book the value of Cronbach's Alpha and Composite Reliability must exceed 0.07 [12].

Table 3 Cronbach's Alpha and Composite Reliability Results

	Cronbach's Alpha	Composite Reliability	Remarks
AU	0.781	0.872	Reliable
BIU	0.820	0.881	Reliable
PEOU	0.857	0.903	Reliable
PU	0.818	0.880	Reliable
PS	0.862	0.900	Reliable

SmartPLS Data Processing Result. 2023.

Based on Table 3, it proves that the Cronbach's Alpha and Composite Reliability values for each variable are above 0.70, which means that these scores prove that the stability and consistency of the instruments used are very high. From this explanation, it can be concluded that the reliability of the instrument has been fulfilled.

3.3. Evaluation of Structural Model (Inner Model)

3.3.1. Coefficient of Determination (R-Square)

The R-square value proves how much influence the independent variable has on the dependent variable. According to Chin (1998) in S. Yamin and H. Kurniawan R2 criteria can be divided into three classifications, namely: substantial (0.67), moderate or moderate (0.33) and weak or weak (0.19) [13].

Table 4 R-Square Results

	R Square
Actual Usage (Y)	0.593
Behavioral Intention to Use (Z)	0.653

SmartPLS Data Processing Result. 2023.

Based on table 4, it shows that the effect of PEOU, PU, and PS on BIU with an R-square (R2) score of 0.593. This means that the variability of the BIU construct that can be explained by the influence of the independent variables is 59.3% while the remaining 40.7% is described by other variables not studied. Table 4 also proves the influence of PEOU, PU, and PS on AU, which proves the R-square (R2) score of 0.653, which means that the variability of the AU construct that can be explained by the influence of the independent variables is 65.3% while the remaining 34.7% is explained by other variables not studied.

3.4. Hypothesis Test

Table 7 Summary of Effect Test Results

	Original Sample (O)	T Statistics (O/STDEV)	P Values
Direct Effect			
BIU -> AU	0.504	4.227	0.000
PEOU -> AU	0.057	0.538	0.591
PEOU -> BIU	0.124	0.854	0.393
PS -> AU	0.154	1.413	0.158
PS -> BIU	0.355	3.178	0.002
PU -> AU	0.126	1.004	0.316
PU -> BIU	0.416	2.508	0.012
Indirect Effect			

PEOU -> BIU-> AU	0.062	0.732	0.465
PS -> BIU -> AU	0.179	2.548	0.011
PU -> BIU -> AU	0.210	2.068	0.039
Total Effect			
BIU -> AU	0.504	4.277	0.000
PEOU -> AU	0.119	1.090	0.276
PEOU -> BIU	0.124	0.854	0.393
PS -> AU	0.333	3.117	0.002
PS -> BIU	0.355	3.178	0.002
PU -> AU	0.336	3.104	0.002
PU -> BIU	0.416	2.508	0.012

SmartPLS Data Processing Result. 2023.

Table 7 which contains a summary of all influence tests in this study, proves that the most optimal path is PU to AU through BIU with a value of 0.210, a t-statistic of 2.068 > t-table score of 1.96, and a p-value of 0.039 < from sig. 5%. This can also be shown from the total effect value obtained from the sum of the direct effect and indirect effect, which makes the effect of PU on AU optimal, namely with a value of 0.336, a t-statistic of 3.104, and a p-value of 0.002.

3.4.1. Direct Effect

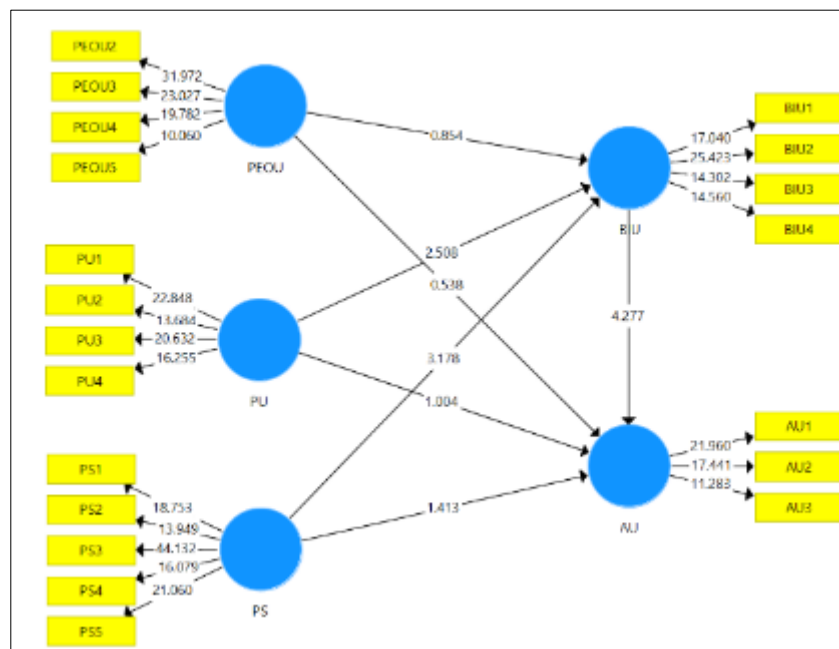


Figure 3 PLS Bootstrapping Model

Direct effect testing is carried out to see whether the independent variable directly affects the dependent variable. This hypothesis test can be done by looking at the path parameters in the path coefficient and the significant level of the T-statistic. The requirements for hypothesis acceptance in this study are p-value <0.05 and t-statistic > 1.96 at sig. 5%.

Table 5 Direct Effect Test Results

	Original Sample (O)	T Statistics (O/STDEV)	P Values
Direct Effect			
BIU -> AU	0.504	4.227	0.000
PEOU -> AU	0.057	0.538	0.591
PEOU -> BIU	0.124	0.854	0.393
PS -> AU	0.154	1.413	0.158
PS -> BIU	0.355	3.178	0.002
PU -> AU	0.126	1.004	0.316
PU -> BIU	0.416	2.508	0.012

SmartPLS Data Processing Result. 2023.

H1: The results of testing H1 prove that the path coefficient or path coefficient of the PEOU variable (X1) on BIU (Z) has a negative effect where the score is 0.124, with a t-statistic value of 0.854 < t table score of 1.96, and a p-value of 0.393> from the sig number. 5%. This study proves that the PEOU variable has a negative and meaningless effect on BIU. With this, it can be concluded that H1 which states that "It is suspected that perceived user-friendliness has an influence on the intention to use QRIS payments" is rejected.

H2: The results of testing H2 prove that the path coefficient or path coefficient of the PU variable (X2) on BIU (Z) has a positive influence which is a score of 0.416, with a t-statistic value of 2.508> t-table score of 1.96, and a p-value of 0.012 < from sig. 5%. This study proves that the PU variable has a significant positive effect on BIU. With this, it can be concluded that H2 which states that "It is suspected that perceived usefulness has an influence on the intention to use QRIS payments" is accepted.

H3: The results of testing H3 prove that the path coefficient or path coefficient of the PS variable (X3) on BIU (Z) has a positive influence which scores a value of 0.355, with a t-statistic value of 3.178> t table score of 1.96, and a p-value of 0.002 < from sig. 5%. This study proves that the PS variable has a significant positive effect on BIU. With this, it can be concluded that H3 which states that "It is suspected that perceived security has an influence on the intention to use QRIS payments" is accepted.

H4: The results of testing H4 prove that the path coefficient or path coefficient of the BIU variable (Z) on AU (Y) has a positive influence which scores a value of 0.504, with a t-statistic value of 4.227> t table score of 1.96, and a p-value of 0.000 < from sig. 5%. This study proves that the BIU variable has a significant positive effect on AU. With this, it can be concluded that H4 which states that "It is suspected that the intention to use the system has an influence on the actual use of the QRIS payment system" is accepted.

H5: The results of testing H5 prove that the path coefficient or path coefficient of the PEOU variable (X1) on AU (Y) has a positive direction and has no effect where the score is 0.057, with a t-statistic value of 0.538 < the t table score of 1.96, and a p-value of 0.591> from the sig number. 5%. This study proves that the PEOU variable has a negative and not meaningful effect on AU. With this, it can be concluded that H5 which states that "It is suspected that perceived user-friendliness has an influence on the actual use of the QRIS payment system" is rejected.

H6: The results of testing H6 prove that the path coefficient or path coefficient of the PU (X2) variable on AU (Y) has a negative effect which score is 0.126, with a t-statistic value of 1.004 < t table score of 1.96, and a p-value of 0.316> from the sig number. 5%. This study proves that the PU variable has a negative and not meaningful effect on AU. With this, it can be concluded that H6 which states that "It is suspected that perceived usefulness has an influence on the actual use of the QRIS payment system" is rejected.

H7: The results of testing H6 prove that the path coefficient or path coefficient of the PS variable (X3) on AU (Y) has a negative effect which score is 0.154, with a t-statistic value of 1.413 < the t table score of 1.96, and a p-value of 0.158> from the sig number. 5%. This study proves that the PS variable has a negative and not meaningful effect on AU. With this, it can be concluded that H7 which states that "It is suspected that perceived security has an influence on the actual use of the QRIS payment system" is rejected.

3.4.2. Indirect Effect

Mediation analysis compares the direct and indirect effects of independent variables on the dependent variable. Direct effects indicate a direct causal relationship, while indirect effects indicate a causal relationship mediated by intervening variables. This study uses one intervening variable, namely Behavioural Intention to Use, to test mediation. Baron & Kenny (1986) explain that a variable can act as an intervening variable if it fulfils the following conditions:

- No mediation: the independent variable can significantly affect the dependent variable without going through the mediator or intervening variable.
- Full mediation: the independent variable cannot directly affect the dependent variable without going through the intervening variable.
- Partial mediation: independent variables can influence the dependent variable without involving intervening variables.

Table 6 Specific Indirect Effect Test Results

	Original Sample (O)	T Statistics (O/STDEV)	P Values
Indirect Effect			
PEOU -> BIU -> AU	0.062	0.732	0.465
PS -> BIU -> AU	0.179	2.548	0.011
PU -> BIU -> AU	0.210	2.068	0.039

SmartPLS Data Processing Result. 2023.

H8: The results of testing the indirect effect prove that the path coefficient of the PEOU variable (X1) on the AU variable (Y) through BIU (Z) has a positive influence which scores a value of 0.062, with a t-statistic value of 0.732 < t table score 1.96, and a p-value of 0.465 > from sig. 5%. With this, it can be concluded that the PEOU variable has a positive and significant influence on AU through BIU.

By comparing the two effects above, it can explain that the mediating effect of the PEOU variable on AU through BIU is no mediation, because the presence of BIU does not change the effect between PEOU on AU which is directly insignificant and after the presence of BIU as a mediating variable is still insignificant.

H9: The results of testing the indirect effect prove that the path coefficient of PU (X2) on the AU variable (Y) through BIU (Z) has a positive direction where the score is 0.210, with a t-statistic value of 2.068 > t table score of 1.96, and a p-value of 0.011 < from sig. 5%. With this, it can be concluded that the PU variable has a positive and significant influence on the AU variable through BIU.

By comparing the two effects above, it can explain that the mediating effect of PU variables on AU variables through BIU is full mediation, because the presence of BIU changes the effect between PU on AU which is directly insignificant to significant.

H10: While the results of indirect effect testing prove that the path coefficient of PS (X3) on the AU (Y) variable through BIU (Z) has a positive direction where the score is 0.179, with a t-statistic value of 2.548 > t table score of 1.96, and a p-value of 0.010 < from the sig. 5%. With this, it can be concluded that the PS variable has a positive and significant influence on the AU variable through BIU.

By comparing the two effects above, it can explain that the mediating effect of the PS variable on the AU variable through BIU is full mediation, because the presence of BIU changes the effect between PS on AU which is directly insignificant to significant.

3.5. Managerial Implications

The findings of this study can provide several managerial implications for companies. This study, which examines the influence between the variables Perceived Usefulness, Perceived Ease of Use and Perceived Security on Actual Usage through Behavioural Intention to Use, found that the most optimal path is the effect of PU on AU through BIU, this can be interpreted that the benefits obtained from using QRIS are the main factor for someone to use this payment system. Some benefits are strongly felt by users that are not found in other payment systems. These benefits include payments

that do not require physical contact and are completely cashless, transactions can be made only with a smartphone, transaction times are relatively fast, there is no change that sometimes confuses users.

The benefits obtained are the key factors that encourage the use of the QRIS payment system. But with all the benefits that have been obtained, in order to increase the intensity of use and the number of QRIS users, there are several suggestions and input based on the results of this study. Suggestions and input that hopefully can be implemented by related parties include:

- Encourage and disseminate the availability of the QRIS payment system to be more evenly distributed throughout Indonesia.
- Adding a stronger proof of payment on large payment amounts.
- Adding and prioritizing dynamic MPM (Merchant Presented Mode) QRIS machines in crowded places such as tourist attractions, restaurants, and others.

4. Conclusion

The use of non-cash payment methods by Indonesians continues to increase along with the emergence of various new payment systems. As one of the new payment systems in Indonesia, QRIS has great potential to be widely used by the public. This study adopts the TAM model and the addition of perceived security variables to determine the level of acceptance and overcome the problems that exist in the QRIS payment system. This study has the results of 5 accepted hypotheses (H2, H3, H4, H9, H10) and 5 rejected hypotheses (H1, H5, H6, H7, H8).

Based on previous research, the rejection of H1 which tests the direct effect between PEOU and BIU proves that QRIS users ignore the ease of use of the system focusing on other aspects such as the benefits obtained and the guarantee of system security. Another factor that may have caused the rejection is that in Indonesia there is no payment system similar to QRIS, so users cannot compare what the ease of use of the system should be. Furthermore, the rejection of H5, H6, H7 which tests the direct effect between PEOU, PU, PS on AU is because the independent variable used in this study measures the attitude of using the system while the dependent variable used is the intensity of use, so that to measure the influence between these variables, intervening variables are needed as a bridge to connect between these variables. Finally, the rejection of H9 which tests the indirect and mediating influence between PEOU on AU through BIU is due to the previously found absence of PEOU's influence on BIU, with this it can be concluded that the actual use of QRIS is not determined either directly or indirectly by its ease of use.

The research results prove that usefulness and security guarantees have a positive influence on the intention to use QRIS. This matter proves that the community feels that QRIS really helps them in their daily activities, especially payments. Not only that, people also feel the security guarantee provided by the QRIS payment system so that people are comfortable and want to use it. Thus, the results of this research also prove that the desire of the community to use QRIS further affects the intensity of use of the system itself.

Based on the results of this study, there are several recommendations that can be given to Bank Indonesia and the Indonesian Payment System Association as the manager of QRIS, so that the level of use of this payment system becomes higher and more evenly distributed in Indonesia. Such as simplifying the terms and conditions for joining as a merchant. This intends to make more new merchants appear and users are more accustomed to using QRIS in their daily activities. Summarizing QRIS features that have similar functionality and socializing important features such as the use of QRIS with a large nominal to the public. Improvement and equalization of internet network infrastructure and optimization of the QRIS application are also needed because the system is highly dependent on the availability of a stable and responsive network. Finally, the addition of a reliable fast reporting service will increase users' sense of security when problems occur when using the system.

Compliance with ethical standards

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Disclosure of conflict of interest

The authors declare no conflict of interest.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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