

## EXAMINING THE IMPACT OF EASE OF USE, DATA SECURITY, AND USEFULNESS ON QRIS APPLICATION USAGE INTENSITY AMONG STUDENTS

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### ABSTRACT

This study aims to evaluate the influence of ease of use, data security, and usefulness on the usage intensity of the Quick Response Code Indonesian Standard (QRIS) application among students at the State University of Jakarta. This research employs a quantitative method with a survey approach. Data were obtained through questionnaires distributed to 150 students who have used the QRIS application. The sampling technique applied was convenience sampling. Data analysis was conducted using the Partial Least Square (PLS) method. The results of the study indicate that ease of use has a positive and significant influence on the intensity of QRIS application usage. Similarly, data security shows a positive and significant effect on usage intensity. Additionally, usefulness is found to have a positive and significant impact on the intensity of QRIS application usage among students at the State University of Jakarta. This study provides practical implications for QRIS application developers and stakeholders in the education sector to enhance features of ease of use, security, and usefulness to increase the usage intensity of the application among students.

**Keyword: QRIS, Ease of use, Data security, Usefulness, Usage intensity**

### ABSTRAK

Penelitian ini bertujuan untuk mengevaluasi pengaruh kemudahan penggunaan, keamanan data, dan kebermanfaatan terhadap tingkat pemakaian aplikasi *Quick Response Code Indonesian Standard* (QRIS) oleh mahasiswa Universitas Negeri Jakarta. Penelitian ini menggunakan metode kuantitatif dengan pendekatan survei. Data diperoleh melalui kuesioner yang disebarakan kepada 150 mahasiswa yang sudah menggunakan aplikasi QRIS. Teknik pengambilan sampel yang diterapkan adalah convenience sampling. Analisis data dilakukan dengan metode *Partial Least Square* (PLS). Hasil penelitian menunjukkan bahwa kemudahan penggunaan berpengaruh positif dan signifikan terhadap intensitas pemakaian aplikasi QRIS. Demikian juga, keamanan data yang berpengaruh positif dan signifikan terhadap intensitas penggunaan. Selain itu, kebermanfaatan juga berpengaruh positif dan signifikan terhadap intensitas pemakaian aplikasi QRIS oleh mahasiswa Universitas Negeri Jakarta. Penelitian ini memberikan implikasi praktis bagi para pengembang aplikasi QRIS serta pemangku kepentingan di sektor pendidikan untuk meningkatkan fitur kemudahan, keamanan, dan kebermanfaatan, guna meningkatkan tingkat penggunaan aplikasi tersebut di kalangan mahasiswa.

**Kata kunci: QRIS, Kemudahan penggunaan, Keamanan data, Kebermanfaatan, Intensitas pemakaian**

**INTRODUCTION**

The development of information technology has experienced significant growth, facilitated various activities, and drove a more effective and efficient digital economy. Digital technology transforms all economic activities, including trade, agriculture, and finance (Madichie et al., 2021). One implementation is cashless transaction payments using electronic money, which simplifies both online and offline transactions (Sihaloho et al., 2020).

According to Abidin (2015), the development of non-cash payment systems or electronic money is continuously advancing alongside increasingly sophisticated technology each year. This encourages users and payment system service providers to continually enhance user convenience. The high adoption of electronic money for non-cash transactions is influenced by various products such as chip-based e-money cards and server-based digital wallet applications, which allow users to store specific amounts of funds accessible via their mobile devices.

In Indonesia, several popular digital wallet applications include OVO, GoPay, Dana, Doku, ShopeePay, and LinkAja. The advantages of using digital wallets lie in their ease of use, convenience, and security. The payment process involves simple steps where the seller provides a QR Code for scanning by the consumer. Digital transactions are swiftly verified for success, contingent upon sufficient funds in the consumer's digital wallet or e-money and adequate internet connectivity. The significance of QR codes in enhancing digital payment efficiency is recognized by Bank Indonesia (Central Bank of the Republic of Indonesia), which has established standards for this technology as part of modern payment methods (Sya'roni et al., 2021).

Bank Indonesia has introduced Quick Response Code Indonesian Standard (QRIS), the Quick Response Code Indonesia Standard, in collaboration with ASPI to standardize QR code usage nationwide. QRIS aims to optimize secure digital payment systems, improve government efficiency, and accelerate financial inclusion in Indonesia. Agustian and Wibisono (2023) found that QRIS payments benefit significantly from widespread smartphone ownership, which has become essential for daily use. According to APJII and BPS surveys in 2023, Indonesia had 215.63 million internet users, constituting 78.19% of the total population. Smartphones, utilized by 98.3% of users for daily internet access, are pivotal in increasing adoption of server-based non-cash payment methods in society.

Figure 1 is the transaction value data using QRIS from 2021 to 2023, indicating a significant rapid increase.

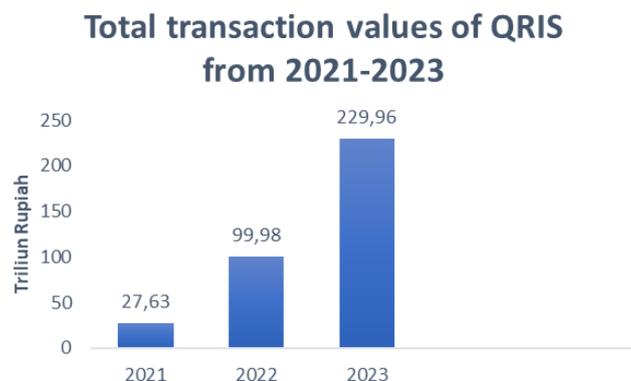


Figure 1. Transaction value data of QRIS from 2021-2023 (in trillion Rupiah)

Source: Bank Indonesia Publication Report

Based on data from Bank Indonesia (Table 1), the usage of QRIS has shown a significant increase from 2021 to 2023. By October 2023, the number of QRIS users reached 45.58 million, exceeding the initial target of 45 million users, with transaction values

reaching 229.96 trillion Indonesian Rupiah. This marks a 58.5% increase compared to the previous year's 28.8 million users. Most merchants registered with QRIS are micro-enterprises, totaling 29.63 million, predominantly from MSMEs at 91.9%. Micro-enterprises dominate with a share of 55.7%, followed by small enterprises at 30.17%, medium enterprises at 6.02%, and large enterprises at 3.74%. QRIS is expected to simplify digital payment transactions, enhance efficiency, and ensure security.

The significant rise in QRIS usage, particularly among millennials and Gen Z, notably students, is attributed to the convenience offered by this technology. QRIS enables easier and beneficial payments for both buyers and sellers, utilizing a single QR code through the same payment application. Millennials and Gen Z, actively engaging in financial technologies like digital wallets, contribute significantly to the annual growth in QRIS usage (Putri et al., 2022).

According to students, security as the capability to safeguard user data from threats, including theft and fraud within the banking sector. Pambudi (2014) explains that before opting for QRIS, consumers consider crucial factors including transaction security. However, according to a recent study by Lim et al. (2022), security does not significantly influence students' interest in e-wallets. This indicates that security is not a primary consideration in QRIS adoption. In addition to usability and security, perceived usefulness is also crucial in users' decisions regarding QRIS. This perception reflects how much users perceive positive benefits from the technology. Research on users' interest in mobile QR Code payments shows that perceived benefits significantly influence user interest in adopting this technology, alongside trust factors (Fandiyanto, 2019). Furthermore, in e-commerce contexts like Tokopedia, customer trust also has a crucial positive impact on user interest in using the platform (Putri et al., 2022). However, it was found that perceived usefulness does not always influence users' intention to adopt electronic money in Malaysia. This study highlights that perceived usefulness of QRIS is mainly related to convenience, speed, simplicity, and efficiency in payment transactions. This indicates that QRIS provides practical benefits to users in their transaction experiences (Abdullah, Redzuan, & Daud, 2020).

Although QRIS offers advantages in a payment system that utilizes a single barcode for all types of digital payment tools, some consumers still prefer using cash for various reasons. This phenomenon raises fundamental questions about the acceptance of QRIS. Considering that the presence of QRIS is seen as a relevant technological advancement in the modern era, it is important to investigate whether its advantages such as ease of use, security, and benefits can influence how frequently students use QRIS (Wibowo, 2017). This study aims to evaluate the influence of ease of use, data security, and usefulness on the usage intensity of the QRIS application among students at the State University of Jakarta

## LITERATURE REVIEW

### TAM (Technology Acceptance Model)

The Technology Acceptance Model was first introduced by Fred Davis. It was designed to predict how user accept and use information systems. TAM is an extension of the Theory of Reasoned Action developed by Ajzen & Fishbein (1988). It has been widely applied in studies considering psychological and social factors that influence technology acceptance by users. The goal of TAM is to explain and predict user acceptance of information systems, considering beliefs about system benefits, ease of use, behaviour, goals or needs, and actual usage of specific technologies (Ajzen, 1980).

TAM expands upon TRA by specifically addressing the implementation of information technology. It posits that the key determinants influencing a user inclination to use a technology are Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). Perceived Usefulness refers to the extent to which an individual perceives that employing a

particular system would enhance their job performance or productivity. Perceived Ease of Use, on the other hand, denotes the degree to which an individual believe that using the system would require minimal effort (Davis, 1989).

Numerous empirical investigations have employed TAM to explore and forecast user acceptance of diverse technologies across various contexts. Scholars have investigated factors influencing PU and PEOU, such as system attributes, user experience, training programs, and social influences. Additionally, extensions of the Technology Acceptance Model (TAM), including the Unified Theory of Acceptance and Use of Technology (UTAUT), have integrated other constructs like social influence and facilitating conditions to enhance the model's explanatory power (Venkatesh et al., 2003). In conclusion, TAM remains a fundamental theory in the realm of technology adoption, offering valuable insights into the determinants shaping user acceptance and usage patterns. Its versatility has been demonstrated across different settings, making significant contributions to both theoretical advancements and practical applications in the field of information systems research (F. Abdullah & Ward, 2016).

### **Perceived Ease of Use**

Davis (1989) emphasizes that how easy a technology is perceived to be used plays a crucial role in its adoption by users. Systems that are perceived as user-friendly are more likely to gain acceptance. The higher the perceived ease of use of a system probability that users will actively utilize the technology. Concept of "ease of use" suggests user perceive the technology they employ as straightforward and requiring minimal effort. Venessa and Aripadono (2023) defines ease of use as the degree to which individuals perceive that using a system requires little effort. This viewpoint is corroborated by Faizani and Indriyanti (2021) who interpret ease of use as the belief that a system can streamline tasks with minimal effort. Consequently, the smoother the interaction with a system, the stronger the belief in its efficacy.

### **Security Data**

Tahar (2020) defines "perceived security" as users' perceptions of their ability and control over their personal data within the context of technological systems. Chawla and Joshi, (2019) assert that "perceived security" encompasses users' confidence in the security of the channels or transaction platforms they use. Security is a critical aspect of information technology, involving a series of steps and procedures to protect information, resources, and integrity from potential threats or risks (Chazar, 2015).

Pandey et al. (2020) explain that security includes procedures, mechanisms, and programs to authenticate information sources, ensure data integrity, and protect privacy to prevent economic losses from data breaches and maintain network stability. Zamani et al. (2018) argues that concept of security refers to the ability to protect against potential threats. In a digital context, security is defined as an entity's capability to safeguard user information and financial transaction data from theft during transactions. The primary goals of security are to prevent unauthorized access, maintain the integrity of crucial data, and ensure the smooth operation of systems.

### **Perceived Usefulness**

Usefulness in the Technology Acceptance Model (TAM), first proposed by Davis (1989), pertains to the user's trust that utilizing technology will offer advantages to them. It is defined as the confidence that utilizing a system will improve the efficiency or effectiveness of users' activities, such as students expecting QRIS as a payment system to provide sufficient benefits to warrant continued use. According to Venessa and Aripadono (2023),

perceived usefulness is individuals' belief in the technology's ability to enhance their performance. Nuryasman and Warningsih (2021) assert that perceived usefulness reflects individuals' views on the benefits of a technology service. If fintech technology systems can enhance feelings of security, comfort, and effectiveness, this can influence a positive response to the service and increase interest in adopting it. From the explanations above, it can be concluded that usefulness is individuals trust the benefits of information technology that can enhance their performance. Same like the greater the likelihood that individuals will adopt the use of such technology systems (Wardani, Usman, & Munawaroh, 2022).

### **Usage Intensity**

QRIS usage intensity includes how often individuals use QRIS digital payment services in various daily transactions, as well as how wide their reach is in various payment contexts (Stojanovic, 2018). This includes the frequency and value of transactions carried out via QRIS in a certain period, as well as the diversity of its use in various types of services or businesses. This measurement is important for understanding the adoption of digital payment technology in society and its impact on financial inclusion and overall digital economic growth (Muchtar et al., 2024).

### **METHOD**

This research uses a quantitative approach, with the Structural Equation Modeling (SEM) method to determine the intensity of QRIS use among Jakarta State University students which is influenced by ease of use, data security and usability. Data collection was carried out using a questionnaire designed with a Likert scale. The collected data is then systematically studied from various sources, organized into units, categorized, validated, and interpreted using analytical reasoning to draw conclusions.

The sampling method used in this study was non-probability sampling, chosen by the indefinite and unknown size of the population. The sample criteria included students who were at least in their third semester, currently or previously engaged in internships or employment, and had an income. The researcher calculated the sample size for this study using the Lemeshow formula referenced from Nanincova (2019), resulting in 150 respondents as the sample. The analysis technique utilized in this study was descriptive analysis and SEM PLS (Structural Equation Modeling-Partial Least Squares). This technique allows researchers to examine complex relationships between latent variables (constructs) that cannot be measured directly, but are measured through indicator variables (observable variables). Model evaluation is carried out in two steps (Hair et al., 2013), namely; (a) Outer Model: Measuring the reliability and validity of the construct through indicators. Involves testing factor loadings, composite reliability, and convergent and discriminant validity; and (b) Inner Model: Assessing the relationship between latent variables. Using path coefficients and R-square to evaluate structural models. After testing the outer and inner models, hypothesis testing is carried out.

### **RESULTS AND DISCUSSION**

#### **Respondent Profile**

In this research, researchers distributed questionnaires to 150 students at State University of Jakarta. The respondent profile is differentiated based on gender, faculty, monthly income, and type of e-wallet. Table 1 presents the profile of respondents who participated in this questionnaire. The majority of QRIS users are female, totaling 101 respondents (67.3%), while the remaining 49 respondents (32.7%) are male.

Table 1. Respondent Profile Based on the Gender

Gender	Frequency	Percentage
Man	49	32,7%
Woman	101	67,3%
Total	150	100%

Table 2. Respondent Profile Based on the Faculty

Faculty	Frequency	Percentage
Faculty of Economics	61	40.7%
Faculty of Engineering	22	14.7%
Faculty of Languages and Arts	18	12.0%
Faculty of Education	14	9.3%
Faculty of Social Sciences	13	8.7%
Faculty of Mathematics and Natural Sciences	10	6.7%
Faculty of Sport Sciences	8	5.3%
Faculty of Psychology Education	4	2.7%
Total	150	100.0%

Table 2 outlines the profile of respondents involved in this study. The data indicates that the highest number of QRIS users are from the Faculty of Economics, totaling 61 respondents (40.7%). The Faculty of Engineering ranks second with 22 respondents (14.7%). This trend may be attributed to a greater distribution of questionnaires completed by students from both the Faculty of Economics and the Faculty of Engineering. Next, the respondents profile by monthly income as displayed in 3.

Table 3. Respondent Profile Based on the Monthly Income (In IDR)

Monthly Income	Frequency	Percentage
< 500,000	54	36.0%
1,000,000 – 2,500,000	50	33.3%
2,500,000 – 3,500,000	33	22.0%
3,500,000 – 5,500,000	9	6.0%
> 5,500,000	4	2.7%
Total	150	100.0%

The data indicates that respondents earning approximately 500,000 IDR are more prevalent than those with substantially higher incomes. This prevalence is attributed to the fact that many respondents are students with part-time jobs who have not yet secured a stable income. Conversely, respondents who are engaged in internships or full-time employment predominantly earn between 1,000,000 and 3,500,000 IDR. Next, the profile of respondents by type of e-wallet used can be seen in the Table 4.

Table 4. Respondent Profile Based on the Type of E-Wallet

Type of E-Wallet	Frequency	Percentage
OVO	30	20.0%
Gopay	28	18.7%
DANA	22	14.7%
ShopeePay	22	14.7%
LinkAja	8	5.3%
Others	40	26.7%
Total	150	100.0%

Table 4 outlines the profile of respondents who participated in the research. The data indicates that a significant portion of respondents, 40 individuals (26.7%), utilize payment applications other than OVO, Gopay, LinkAja, ShopeePay, and Dana. Furthermore, 30

respondents (20%) use OVO, 28 respondents (18.7%) use Gopay, 22 respondents (14.7%) use ShopeePay, 22 respondents (14.7%) use Dana, and 8 respondents (5.3%) use LinkAja.

To analyze the data, researchers employed descriptive analysis using Microsoft Excel and SmartPLS version 4. The data utilized in this study is primary data, collected directly by the researchers through questionnaires distributed to respondents via Google Forms. The results were subsequently processed using SmartPLS 4.0 software. Variable measurements utilized a Likert scale, with a rating scale ranging from 1 (indicating Strongly Disagree) to 5 (indicating Strongly Agree).

**Analysis Descriptive Statistics**

Table 5 illustrates that there were 150 respondents with complete data, ensuring the integrity of the dataset used for analysis. The variable related to "ease of use" ranged from a minimum of 25 to a maximum of 60, with most respondents consistently rating it as 5 or "Strongly Agree" across the 12 survey questions. The difference between the highest and lowest values was 35. The mean score for the "ease of use" variable was 52, with a standard deviation of 8.8. These results indicate a favourable outcome, as the mean exceeds the standard deviation, suggesting a normal distribution of data without significant deviations in this study.

Table 5. Descriptive Statistics for Ease of Use

<b>Ease of Use</b>	
<i>N Valid</i>	150
<i>Missing</i>	0
<i>Mean</i>	52
<i>Standard Deviation</i>	8.8
<i>Range</i>	35
<i>Minimum</i>	25
<i>Maximum</i>	60

According to Table 6, the total number of respondents (N) is 150, with no missing data, ensuring the validity of the processed data. The data security variable ranges from a minimum of 9 to a maximum of 30, reflecting strong agreement across the 6 questions related to data security on the questionnaire. This results in a range of 21 between the maximum and minimum values. The mean value for the data security variable is 23, with a standard deviation of 5.3. These findings suggest a positive outcome, as the mean exceeds the standard deviation, indicating a normal distribution of data without significant deviations in the conducted study.

Table 6. Descriptive Statistics for Data Security

<b>Data Security</b>	
<i>N Valid</i>	150
<i>Missing</i>	0
<i>Mean</i>	23
<i>Standard Deviation</i>	5.3
<i>Range</i>	21
<i>Minimum</i>	9
<i>Maximum</i>	30

According to Table 7, the total number of respondents (N) is 150, with no missing data, ensuring the validity of the processed data. The usefulness variable ranges from a minimum of 18 to a maximum of 60, indicating strong agreement across the 12 questions on the questionnaire. This results in a range of 42 between the maximum and minimum values. The mean score for the usefulness variable is 49, accompanied by a standard deviation of 10.5. These findings suggest a favourable outcome, as the mean exceeds the standard

deviation, indicating a normal distribution of data without significant deviations in the conducted study.

Table 7. Descriptive Statistics for Usefulness

Usefulness	
<i>N Valid</i>	150
<i>Missing</i>	0
<i>Mean</i>	49
<i>Standard Deviation</i>	10.5
<i>Range</i>	42
<i>Minimum</i>	18
<i>Maximum</i>	60

According to Table 8, the total number of respondent’s (N) is 150, with no missing data, ensuring the validity of the processed data. The usage intensity variable ranges from a minimum of 9 to a maximum of 30, indicating strong agreement across the 6 questions on the questionnaire. This results in a range of 21 between the maximum and minimum values. The mean value for the usage intensity variable is 23, with a standard deviation of 6.2. These findings suggest a positive outcome, as the mean exceeds the standard deviation, indicating a normal distribution of data without significant deviations in the conducted study.

Table 8. Descriptive Statistics for Usage Intensity

Usage Intensity	
<i>N Valid</i>	150
<i>Missing</i>	0
<i>Mean</i>	23
<i>Standard Deviation</i>	6.2
<i>Range</i>	21
<i>Minimum</i>	9
<i>Maximum</i>	30

### Hypothesis Testing

#### *Influence of Ease of Use on Usage Intensity*

After evaluating the models, namely the outer and inner models, hypothesis testing is carried out. Hypothesis testing results can be seen in Table 9. The results of the first hypothesis test indicate that ease of use has a positive and significant impact on usage intensity, as evidenced by the original sample value, which shows a 36% effect. This means that the ease of use of a digital payment system influences the level of usage intensity of that system. Users highly value the ease of use in a digital payment system. Typically, the more user-friendly a digital payment system is, the more frequently and intensively it will be used (Gupta et al., 2021). This is supported by Zuhro et al. (2021) findings, which illustrate that the ease of making payments via smartphones eliminates the need for users to carry cash for transactions at merchants. The heightened perception of ease when using electronic money correlates with increased usage intensity of the electronic payment system.

Table 9. Results Path Coefficients

Hypothesis	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics	P values	Decision
X1 -> Y	0.361	0.351	0.145	2.488	0.013	<i>Accepted</i>
X2 -> Y	0.175	0.181	0.080	2.187	0.029	<i>Accepted</i>
X3 -> Y	0.305	0.313	0.149	2.050	0.040	<i>Accepted</i>

### *Influence of Data Security on Usage Intensity*

The second hypothesis test demonstrates that data security significantly and positively affects usage intensity, with the original sample value showing a 17% impact. This indicates that the security features of a digital payment system play a substantial role in determining the intensity of QRIS usage as a payment method. Security positively influences the frequency and depth of QRIS usage among students at the State University of Jakarta. When users perceive the security measures implemented by Bank Indonesia as reliable, they are more likely to increase their usage intensity of QRIS for transactions (Pandey et al., 2020). These findings align with research by Sunarya (2022), the analysis also determined that security has a positively to the usage intensity of QRIS.

### *Influence of Usefulness on Usage Intensity*

The third hypothesis test reveals that usefulness has a significant and positive effect on usage intensity, as evidenced by an original sample value indicating a substantial impact of 30%. This suggests that the perceived benefits of a digital payment system significantly influence the intensity of its usage. Nenandha and Mayangsari (2022) state that when individuals perceive significant benefits from a technology, it naturally leads to increased usage intensity. These findings align with previous research by Fatmawati (2015), which identifies perceived usefulness as a critical determinant in assessing the extent of new technology adoption. In the case of QRIS, the perceived benefits, including efficiency and convenience, are critical in enhancing the frequency and duration of service use (Violinda & Khorunnisya, 2022).

## **CONCLUSION AND RECOMMENDATION**

This section conclusions from research results and suggestions from researchers. If necessary, the implications and limitations of the research can be added. 1) The ease of use directly impacts usage intensity positively and significantly with a value of 0,361. This indicates that the more convenience students at the State University of Jakarta experience in using QRIS, the more likely they are to use it for their daily needs; 2) Data security directly impacts usage intensity positively and significantly with a value of 0,175. This finding suggests that higher levels of data security and confidentiality in an application will increase the usage intensity of QRIS among students at the State University of Jakarta; 3) Usefulness directly impacts usage intensity positively and significantly with a value of 0,305. This demonstrates that students at the State University of Jakarta are inclined to increase their use of QRIS due to the substantial benefits it offers them. therefore, it can be concluded that all hypotheses in this study are accepted. There is an influence between ease of use and usage intensity, data security and usage intensity, and perceived usefulness and usage intensity.

The impact of ease of use, data security, and perceived usefulness on QRIS usage intensity highlights their critical role in promoted the adoption of digital payment technology. To significantly increase QRIS adoption rates, both service providers and regulators should implement strategic initiatives. Companies should prioritize the development of intuitive and user-friendly interfaces to simplify QRIS usage in everyday transactions. Enhancing data security through the adoption of cutting-edge technologies and educating users about data protection measures is crucial. Enhancing the perceived benefits of QRIS by offering attractive incentives like discounts or exclusive promotions can enhance user perceptions of its value. These steps aim to foster higher QRIS usage intensity, thereby creating a more efficient and secure digital payment environment for users.

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