

Quality in Use of Digital Wallet based on ISO/IEC 25022

Windy Rahmadia Pradanita

¹*Department of Information Technology and Communication
Sepuluh Nopember Institute of Technology
Surabaya, Indonesia
Email: windyrahmadiap@gmail.com*

Siti Rochimah

¹*Department of Information Technology and Communication
Sepuluh Nopember Institute of Technology
Surabaya, Indonesia
Email: siti@if.its.ac.id*

Abstract— The growth of financial technology (fintech) has led to an increase in cashless transactions. One of the technology that is developing and widely used is digital wallets. Because of the frequent use of digital wallet services, an assessment to measure quality in use needs to be done. Quality in use relates to user interaction with software when the product is used. The assessment standard used to measure quality in use is ISO/IEC 25022. The criteria assessed are effectiveness, efficiency, satisfaction, and freedom from risk. To strengthen the results obtained, a correlation between the existing criteria and the quality in use of digital wallets is sought. From these results, it will be known which criteria have the highest correlation to the quality in use of digital wallets. This study does not focus on assessing the quality in use of each digital wallet, but on digital wallets globally (in this study the digital wallets used are OVO, Gopay, and Dana) because after the results of the questionnaire, almost all respondents use more than one digital wallet, even besides the mentioned digital wallets. The conclusion obtained in this study is that digital wallet product users are satisfied with the use of digital wallets although there are still some risks that may arise.

Keywords—*Digital wallet, ISO/IEC 25022, quality in use, correlation analysis*

I. INTRODUCTION

In recent years, there has been an increase in cashless transactions, which is the influence of developments in financial technology (fintech). One of the technologies that are currently developing is a digital wallet. Digital wallets are technology developed to make it easier for users to make cashless payments. With this technology, all transactions can be carried out effectively and quickly because there is no need to bother carrying cash and waiting for change when the transaction is finished.

Digital wallets are applications that can be downloaded easily at the corresponding app store such as the Google Play Store or Apple App Store. After the application is downloaded, users are required to fill in their data to create a digital wallet account. The digital wallet application will use several features on the smartphone such as camera, GPS, fingerprint authentication, etc [1].

Ease of use of developing technology can result in the faster the technology can be accepted by the community [2]. Using a digital wallet is included in the easy category, by topping up an amount of money into a digital wallet account. Then the money will be used to make payments. In addition to making transactions easier, users can also view the history of transactions made [3].

OVO, Gopay, and Dana are digital wallet products that are very popular in Indonesia. Many digital wallet services can be utilized by users, one of which is a payment of all transactions made by users. Because of the frequent use of digital wallet services, an assessment to measure quality in use needs to be done.

The purpose of this paper is to find out what the public thinks about the quality in use of digital wallets and can also be used as input for the developer. Quality in use relates to user interaction with software when the product is used [4]. The assessment standard used to measure quality in use is ISO/IEC 25022. The criteria assessed are effectiveness, efficiency, satisfaction, and freedom from risk [5]. This assessment is obtained from user opinions [6] and is usually measured using a user survey [7].

The results of the digital wallet assessment using ISO/IEC 25022 are then tested whether it correlates with the quality in use of the digital wallet. Correlation test is performed to determine the relationship that occurs between effectiveness, efficiency, satisfaction, and freedom from risk to quality in use of digital wallets. From these results will be known which aspects require a lot of attention from the developer which can then be used as input for further development so that digital wallet products can meet user needs.

This paper proposes the assessment of quality in use of digital wallet products based on ISO/IEC 25022. In addition, this study will also prove whether the effectiveness, efficiency, satisfaction, and freedom from risk affect the quality in use of digital wallet products. Case studies in this study are some of the well-known digital wallet products in Indonesia, namely OVO, Gopay, and Dana.

In this paper, section I describes a brief overview of the research conducted. Section II explains the related work related to the research carried out and the ISO/IEC 25022 standard. Section III describes the methodology used for the research. Section IV describes the results obtained after the study. Section V contains a discussion of the results obtained after the research. Section VI concludes the paper.

II. LITERATURE REVIEW

A. Related Work

Aaina Khan, et al [3] surveyed the use of E-wallets. The results obtained are although digital wallet still has weaknesses in interoperability and standardization of security and formats, but a digital wallet is the best in helping the transaction process. Based on their survey 81%

of the population said that digital wallets were very helpful and the rest said that using digital wallets was difficult because of the limited knowledge they had.

Satadruti Chakraborty and Dipa Mitra [8] revealed that customer demographics, such as age, education level, duration of usage of digital wallets, and income, significantly influence the use of digital wallets for payment purposes. Only customer demographics have no influence on the frequency of use. The factors that significantly influence user satisfaction with digital wallet services are system availability, security, and contact factors. Although customer demographics gender does not show differences in their perceptions of user satisfaction, customer demographics gender significantly influences system availability, fulfillment, and contact factors.

Mamta Brahmabhatt [9] conducted a study to measure user perceptions of E-wallets in the city of Ahmedabad, India. From this research, it was found that the majority of respondents (92%) agreed to choose digital wallets instead of conventional payments.

According to Miklesh Prasad Yadava and Madhu Arorab [10], user satisfaction is influenced by problems, risks, and solutions. Problem factors have a negative relationship with user satisfaction. While the risk factors and solutions have a positive relationship with user satisfaction.

Safroni Isrososiawan, et al [11] argue that using DANA (one of the digital wallet products in Indonesia) can increase efficiency in the form of trimming transaction time so that it can speed up services and transactions made. Factors that influence the speed of services and transactions include perceived usefulness and ease of use.

Meanwhile, according to Amit Kumar Nag and Bhumiphat Gilitwala [12] the perceived benefits when using a digital wallet can also affect the intention to use. In addition to the perceived benefits, ease of use also affects intention to use.

B. ISO/IEC 25022

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization [5]. ISO/IEC 25022 stands for assessing the quality in use of a product or system. The criteria assessed are as follows.

- 1) Effectiveness
Effectiveness is measurement of accuracy and completeness with which users achieve specific goals.
- 2) Efficiency
Efficiency is measurement of resources expended in relation to the accuracy and completeness with which users achieve goals.
- 3) Satisfaction
Satisfaction is measurement of degree to which user needs are satisfied when a product or system is used in a specified context of use.
- 4) Freedom from Risk
Freedom from risk is measurement of degree to which a product or system mitigates the potential risk to economic status, human life, health, or the environment.

III. METHODOLOGY

The research method used in this study is divided into six phases, namely designing conceptual frameworks, formulate the hypothesis, make a questionnaire, validity and reliability test, data analysis, and test the hypothesis. To simplify the depiction of research methods can be seen in Figure 1.

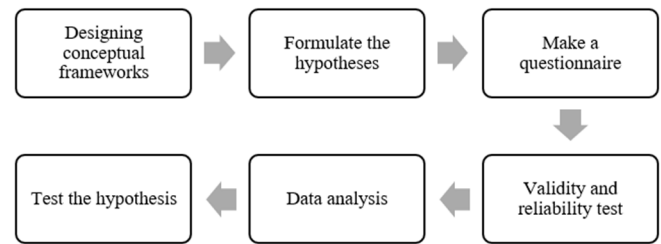


Fig. 1. Research Method

The criteria used to assess the quality in use of a digital wallet are guided by ISO/IEC 25022. There are four criteria used namely effectiveness, efficiency, satisfaction, and freedom from risk [5]. From the existing criteria, then the correlation will be calculated with the quality in use of the digital wallet. For convenience, a conceptual framework is created that can be seen in Figure 2.

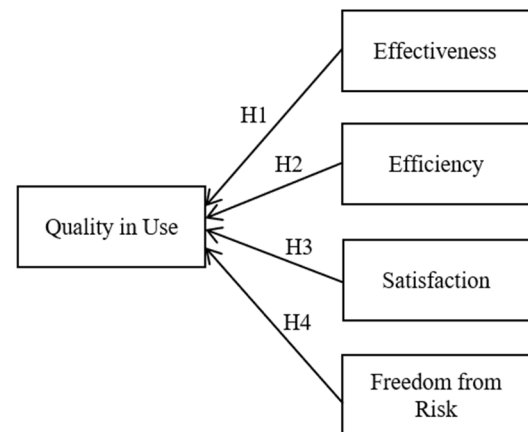


Fig. 2. Conceptual Framework

The conceptual framework is made to make it easier to describe the correlation that occurs so that a hypothesis can be made. From figure 2 it can be seen that there are four proposed hypotheses, namely:

- H1 : Effectiveness positively affects the quality in use of e-wallet
- H2 : Efficiency positively affects the quality in use of e-wallet
- H3 : Satisfaction positively affects the quality in use of e-wallet
- H4 : Freedom from risk positively affects the quality in use of e-wallet

Quality in use assessment is carried out by surveying digital wallet users. The survey was conducted using a questionnaire method. Respondents who participated in this study were 100 digital wallet users, especially OVO, Gopay, and Dana users. The general opinion holds that the minimum sample is 5% of the population to be accurate, but this opinion can be inefficient because the purpose of using a sample is to attract a part of the population efficiently.

According to Sudaryono, a sample size of between 30 and 500 is considered effective depending on the research question [13].

The questionnaire was made based on predetermined criteria. There are four predetermined criteria which will be translated into twenty-four statement items. The effectiveness criteria are broken down into five statement items. The efficiency criteria are broken down into five statement items. The satisfaction criteria are broken down into nine statement items. The freedom from risk criteria is broken down into five statement items.

After the questionnaire is made then the validity and reliability test is carried out to test whether the questionnaire made is valid and reliable before it is distributed. The validity and reliability test involves 10% of the number of respondents who will participate. When the questionnaire has been declared valid and reliable the next step is to distribute the questionnaire to 100 respondents.

The results of the questionnaire are collected and then analyzed. Data analysis was carried out to find out what percentage was obtained for each criteria according to the results of the respondents. From this percentage, it will be known whether the digital wallet gets a good response from users by existing criteria. The formula used is.

$$percentage = \frac{\sum score}{maxScore \times \sum respondent} \times 100\% \quad (1)$$

From the equation 1, $\sum score$ is the sum of the score obtained from the respondent's answer to each statement item on the questionnaire. The score is obtained from the product of the number of respondents with that Likert scale. $MaxScore$ is the maximum value of the multiplication between the number of statement items on the questionnaire with a max Likert scale that is 5. $\sum respondent$ is the number of respondents who participated in the study.

Next is to test the hypothesis that was made. To do this test a correlation test with formula is used.

$$r_{xy} = \frac{n \sum xy - \sum x \sum y}{\sqrt{n \sum x^2 - (\sum x)^2} \sqrt{n \sum y^2 - (\sum y)^2}} \quad (2)$$

From the equation 2, r_{xy} is the correlation between x variable and y variable. In this study, x variable is a criteria that affects quality in use, namely effectiveness, efficiency, satisfaction, and freedom from risk. While y variable is quality in use.

IV. EXPERIMENTATION

The validity and reliability tests are carried out to determine whether the questionnaire that has been made is valid and reliable before the questionnaire is ready to be distributed. The results of the validity test can be seen in table I.

TABLE I. VALIDITY TEST

Criteria	Statement Item	r-count	r-table	Explanation
Effectiveness	E1	0.919	0.632	Valid
	E2	0.754	0.632	Valid
	E3	0.856	0.632	Valid

Criteria	Statement Item	r-count	r-table	Explanation
	E4	0.749	0.632	Valid
	E5	0.919	0.632	Valid
Efficiency	EF1	0.715	0.632	Valid
	EF2	0.836	0.632	Valid
	EF3	0.871	0.632	Valid
	EF4	0.793	0.632	Valid
	EF5	0.856	0.632	Valid
Satisfaction	S1	0.752	0.632	Valid
	S2	0.777	0.632	Valid
	S3	0.759	0.632	Valid
	S4	0.640	0.632	Valid
	S5	0.919	0.632	Valid
	S6	0.780	0.632	Valid
	S7	0.927	0.632	Valid
	S8	0.931	0.632	Valid
	S9	0.825	0.632	Valid
Freedom from Risk	R1	0.697	0.632	Valid
	R2	0.676	0.632	Valid
	R3	0.749	0.632	Valid
	R4	0.720	0.632	Valid
	R5	0.745	0.632	Valid

Table I has several components, namely criteria, item statement, r-count, r-table, and explanation. The criteria component contains the criteria to be assessed. Existing criteria are based on ISO/IEC 25022. The statement item component contains statements that are in the questionnaire. The code written on the statement item is the criteria code and sequence number to make writing easier. The r-count component contains the results of calculating the score of each statement item against the total of all statements. The r-table component contains the values of the specified r-values. The value of r-table with respondents as many as 10 and the significance of 0.05 is 0.632. The explanation component contains an explanation of the statement item status. If the r-count is more than r-table, then the status of the statement item is valid.

The E code in the item statement presents the effectiveness and has 5 statements in the questionnaire. The EF code in the item statement presents efficiency and has 5 statements in the questionnaire. The S code in the statement item presents the satisfaction criteria. The S code has several characteristics namely, the S1 and S2 code present usefulness characteristics, the S3, S4, and S5 code present trust characteristics, the S6 and S7 code present pleasure characteristics, the S8 and S9 code present comfort characteristics. The R code in the item statement presents the freedom from risk criteria. The R code has several characteristics namely, the R1 code presents the economic risk characteristics, the R2 and R3 code present health and safety risk characteristics, the R4 and R5 code present environmental risk characteristics.

Based on table I can be seen that the r-count of each statement item is more than r-table so it can be concluded that the questionnaire made is valid.

After the validation test is then carried out the reliability test. The results of the reliability can be seen in table II.

TABLE II. RELIABILITY TEST

Criteria	Alpha Cronbach	Explanation
Effectiveness	0.915	Reliable
Efficiency	0.886	Reliable
Satisfaction	0.952	Reliable
Freedom from Risk	0.914	Reliable

Table II has several components, namely criteria, Alpha Cronbach, and explanation. The criteria component contains the criteria to be assessed. Existing criteria are based on ISO/IEC 25022. The Alpha Cronbach component contains the results of the reliability test of each existing criteria. The explanation component contains an explanation of the status of the criteria. If the Alpha Cronbach value is more than 0.7, then the status of the item statement is reliable.

Based on table II it can be seen that all statement items in each criteria have Alpha Cronbach values above 0.7 so that it can be concluded that the questionnaire made is reliable.

This study does not focus on the quality in use of each digital wallet, but on digital wallets globally (in this study the digital wallets used are OVO, Gopay, and Dana) because after the results of the questionnaire were obtained, almost all respondents used more than one digital wallet, even apart from digital wallets that are mentioned.

Data analysis was performed to find out what percentage of results from digital wallet user responses obtained through questionnaires. The data that has been collected will be analyzed based on a formula (1). The results of the percentages are then matched with the score interpretation criteria table to find out whether the results obtained are not good or very good. The results of data analysis of the quality in use of a digital wallet can be seen in table III.

TABLE III. DATA ANALYSIS

Criteria	Percentage	Explanation
Effectiveness	85%	Very good
Efficiency	84%	Very good
Satisfaction	83%	Very good
Freedom from Risk	73%	Good

Table III has several components, namely criteria, percentage, and explanation. The criteria component contains the criteria to be assessed. The criteria are based on ISO/IEC 25022. The percentage component contains the results of the data analysis of each existing criteria. The explanation component contains an explanation of the status of the criteria. The percentage value is obtained from the Likert scale calculation results with five percentage scales, namely 0% - 20% in the not very good category, 21% - 40% in the

not good category, 41% - 60% in the pretty good category, 61% - 80% in the good category, and 81% - 100% in the very good category.

Hypothesis tests are done by measuring the correlation between effectiveness, efficiency, satisfaction, and freedom from risk with quality in use of a digital wallet. The results of the correlation test can be seen in table IV.

TABLE IV. CORRELATION ANALYSIS

Variable	r-count	r-table	Exp
Effectiveness → Quality in Use	0.853	0.197	Accepted
Efficiency → Quality in Use	0.874	0.197	Accepted
Satisfaction → Quality in Use	0.939	0.197	Accepted
Freedom from Risk → Quality in Use	0.730	0.197	Accepted

Table IV has several components, namely variables, r-count, r-table, and exp. The variable component contains the relationship that occurs in each variable. This relationship is obtained from the conceptual framework that has been prepared previously. The r-count component contains the results of calculations from the correlation analysis. The r-table component contains the values of the specified r values. The value of r-table with respondents as many as 100 and the significance of 0.05 is 0.197. The exp component contains an explanation of the status variable.

To find out whether there is a correlation between the two variables, a simple assumption is made.

- H0 : There is no positively affect between the existing criteria and the quality in use of digital wallet
- H1 : There is a positively affect between the existing criteria and the quality in use of digital wallet

The basis for making decisions to answer the assumptions made is.

- If r-count > r-table then reject H0
- If r-count < r-table then accept H0

Based on table IV it is known that r-counts all criteria more than r-tables so that the assumption received is that there is a positive influence between the criteria and the quality in use of a digital wallet.

V. RESULT

In the previous section namely experimentation was obtained the measurement results of quality in use of a digital wallet which then analyzed the results described in this section.

In this study there are four hypotheses proposed, namely.

- H1 : Effectiveness positively affects the quality in use of e-wallet
- H2 : Efficiency positively affects the quality in use of e-wallet
- H3 : Satisfaction positively affects the quality in use of e-wallet
- H4 : Freedom from risk positively affects the quality in use of e-wallet

This hypothesis is measured based on the results of questionnaire answers that have been distributed to 100 respondents using digital wallets. The questionnaire was prepared based on predetermined criteria. There are four criteria, namely effectiveness, efficiency, satisfaction, and freedom from risk. From the four criteria, there are broken down into twenty-four statement items.

Statement items that have been made are then tested for validity and reliability to find out whether the statements made are valid and reliable. The results obtained during the validity test are all items declared to be valid because they meet the validity test requirements that the r-count obtained is more than r-table. After the questionnaire is declared valid then a reliability test is performed. The results obtained that the reliability test is all the criteria stated reliable for a questionnaire because it meets the reliability test requirements that have Alpha Cronbach values of more than 0.7.

After the questionnaire is declared valid and reliable then the questionnaire is distributed to 100 respondents using a digital wallet. Data obtained from respondents are collected and then analyzed. The results of the data analysis show that the effectiveness criteria get results of 85% and is in a very good category, the efficiency criteria get results of 84% and is in the very good category, satisfaction criteria get results of 83% and is in the very good category, while the criteria for freedom from risk get a result of 73% and is in a good category.

Hypothesis tests are done by measuring the correlation between effectiveness, efficiency, satisfaction, and freedom from risk with quality in use of a digital wallet. The results obtained from the correlation test are all the existing criteria have positive effects on the quality in use of a digital wallet. Effectiveness positively affects the quality in use of a digital wallet of 0.853. Efficiency positively affects the quality in use of a digital wallet of 0.874. Satisfaction positively affects the quality in use of a digital wallet of 0.939. Freedom from risk positively affects the quality in use of a digital wallet of 0.730.

VI. CONCLUSION

The conclusion obtained in this study is that digital wallet product users are satisfied with the use of digital wallets although there are still some risks that may arise.

According to the results of the assessment of quality in use of a digital wallet products based on ISO/IEC 25022, three criteria fall into the very good category, namely effectiveness, efficiency and satisfaction, while the freedom from risk criteria fall into the good category. From this it follows that even though digital wallet products have high effectiveness and efficiency and many users are satisfied with their use, there are still several small-scale risks felt by users. The risk felt by users can be said to be small-scale because the results of the risk assessment get a result of 73% and are still in the good category.

According to the results of the correlation test, there are four criteria that affect the quality in use of a digital wallet,

namely effectiveness, efficiency, satisfaction, and freedom from risk. The biggest correlation is owned by satisfaction criteria that are equal to 0.939 and the smallest is owned by the freedom from risk criteria that is 0.730. This proves that the user is very satisfied with the use of e-wallet although there are still some risks that may arise.

The criteria used for quality in use assessment on digital wallets can be used outside Indonesia because they use the criteria in ISO/IEC 25022.

REFERENCES

- [1] A. Almuhammadi, "An Overview of Mobile Payments, Fintech, and Digital Wallet in Saudi Arabia," 7th International Conference on Computing for Sustainable Global Development (INDIACom), pp. 271-278, 2020.
- [2] T. M. Kesumastuti, "The Process of Adoption Interest in Using Digital Wallet in Central Jakarta (Case Study on Go-Pay Users)," *International Journal of Multicultural and Multireligious Understanding*, vol. 7, pp. 277-286, 2020.
- [3] A. Khan, A. Khedkar, P. Kanojia, and S. Pareek, "Safer e-wallets," *International Journal of Scientific and Engineering Research*, vol. 8, pp. 102-104, 2017.
- [4] I. Atoum, "A novel framework for measuring software quality-in-use based on semantic similarity and sentiment analysis of software reviews," *Journal of King Saud University - Computer and Information Science*, vol. 32, pp. 113-125, 2020.
- [5] ISO/IEC, *Systems and software engineering — Systems and software Quality Requirements and Evaluation (SQuaRE) — Measurement of quality in use*, 1st ed., 2016.
- [6] M. B. Garcia, "Human-Library Interaction: A Self-Service Library Management System Using Sequential Multimodal Interface," 11th International Conference on Humanoid Nanotechnology, Information Technology, Communication and Control, Environment, and Management (HNICEM), pp. 1-6, 2019.
- [7] T. Komiyama, S. Fukuzumi, M. Azuma, H. Washizaki, and N. Tsuda, "Usability of Software-Intensive Systems from Developers' Point of View," *Human-Computer Interaction. Design and User Experience*, vol. 12181, pp. 450-463, 2020.
- [8] S. Chakraborty and D. Mitra, "A study to identify parameters that affect customer satisfaction for e-wallet services in india," *Global Journal for Research Analysis*, vol. 6, pp. 449-452, 2017.
- [9] M. Brahmabhatt, "A study on customers perception towards e-wallet in ahmedabad city," *IUJ Journal of Management*, vol. 6, pp. 11-15, 2018.
- [10] M. P. Yadav and M. Arora, "A study on impact on customer satisfaction for e-wallet using path analysis model," *International of Information System and Management Science*, vol. 2, pp. 248-251, 2019.
- [11] S. Isrososiawan, R. Hurriyati, and P. D. Dirgantari, "Technology acceptance model (tam) toward dana e-wallet customer," *Jurnal Minds: Manajemen, Ide dan Inspirasi*, vol. 6, pp. 181-192, 2019.
- [12] A. K. Nag and B. Gilitwala, "E-wallet factors affecting its intention to use," *International Journal of Recent Technology and Engineering (IJRTE)*, vol. 8, pp. 3411-3415, 2019.
- [13] Sudaryono, *Metode Penelitian Pendidikan*, Edisi 1. Jakarta: Kencana, 2016.