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Analysis of Public Satisfaction in Using QRIS as a Digital Payment Tool with The End User Computing Satisfaction (EUCS) Method

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Abstract

QRIS is a server-based QR code that enables transaction processes through e-wallets, e-money, and mobile banking. Although the number of users continues to increase, the success of QRIS implementation does not only depend on the number of users but also on the level of public satisfaction as end users. Therefore, it is important to know the extent to which the public is satisfied with the use of QRIS. To measure the level of public satisfaction objectively and systematically, the End User Computing Satisfaction (EUCS) method will be used. The EUCS method is a method for measuring user satisfaction with an information system or application through 5 variables: format, content, ease of use, accuracy, and timeliness. The results of the analysis show the variables that significantly affecting the level of public satisfaction are the Ease of Use and Timelines which indicate that the public prioritizes ease of use and transaction speed over other factors. The research results also show that QRIS is easier to use compared to other digital payment methods, and based on the F-test, the effectiveness of QRIS in conducting digital payment transactions is also considered good.

Keywords: *analysis; digital payment tools; EUCS method; QRIS; public satisfaction*

1. Introduction

The rapid advancement in the era of digitalization has caused significant changes in payment methods, which are starting to be replaced by various innovative solutions such as QRIS. QRIS is a server-based QR code that enables transaction processes through e-wallets, e-money, and mobile banking, which have been effectively used since 1st January 2020.[1]. Currently, QRIS is the government's main support for the changing system in Indonesia. The current millennial generation, which is the largest user of e-wallets in Indonesia, is the main target of QRIS users. Bank Indonesia (BI) reports that every year, digital transactions increase by 37,8% and their value reaches 21.4 trillion.[2]. Several researchers have conducted analysis on QRIS, one of them named N.I. Putri, Z. Munawar, and R. Komalasari (2022). The researchers conducted a study titled "User Interest in QRIS As a Payment Tool in Post-Pandemic Era". The variables used in the research are perceived benefits, interest, risk, and ease of use. The results obtained from 90 QRIS users indicate that these variables influence the interest and intensity of using QRIS as digital payment tool, with 44% of respondents still feeling concerned if QRIS does not function properly during payments.[3].

Although the number of users continue to increase, the success of QRIS implementation does not only depend on the number of users but also on the public satisfaction level as end users. Therefore, it is important to know the extent to which the public feels satisfied with the use of QRIS. To measure the level of public satisfaction objectively and systematically, the End User Computing Satisfaction (EUCS) methos will be used. The EUCS method is a method for measuring user satisfaction with an information system or application through 5 variables: format, content, ease of use, accuracy, and timeliness.[4]. This method was chosen because, in addition to being reliable, the 5 variables in the EUCS method are considered capable of covering all important aspects of the user experience in using QRIS.

2. Literature Review

2.1. QRIS

The QR code standard in Indonesia used as an online payment method through mobile banking, servers, or e-wallets is known as QRIS (Quick Response Code Indonesia Standard). The purpose of QRIS is to facilitate transactions conducted is public, making them easy and naturally supervised by integrated regulatory authorities.[5]. End User Computing Satisfaction (EUCS) Method

The EUCS method is one way to measure user satisfaction levels with applications or information systems. In 1988, the EUCS method was created to measure variables that can affect user satisfaction with computer-based information system.[4]. Over time, a number of instruments were eventually obtained by reviewing the list of instrument items derived from previous studies, The result was the acquisition of 12 valid and reliable instruments, which were then divided into 5 variables including:

1. Content
   Based on the content of the information system, this dimension describes end-user satisfaction. User needs and up-to-date information must be met by the content of the information system. User satisfaction can increase in proportion to the completeness of the information.
2. Accuracy
   The accuracy of the system in processing input and generating information. The number of errors produced during data processing can indicate how accurate a system is when processing data.
3. Formats
   This dimension measures how satisfied users are with the way information is presented and its appearance. User satisfaction can be improved through attractive and user-friendly design.
4. Ease of Use
   Ease of use in a system is very important because it encompasses the entire process, including data input, processing, information retrieval, and the final data display for users.
5. Timeliness
   The distribution of information and the timeliness of presentation are very important. To evaluate whether the system operates in real time, it can be seen from how quickly the system processes input and generates output.

To test 12 items and 5 variables in the EUCS method, many studies have been conducted on various computer system or applications. The confirmatory factor analysis (CFA) method is used to test construct validity. From the study, it can be proven that method 4: Five First-Order Factors and One Second Order Factor is the most appropriate measurement method for the EUCS instrument. This is shown in Figure 2. [4].

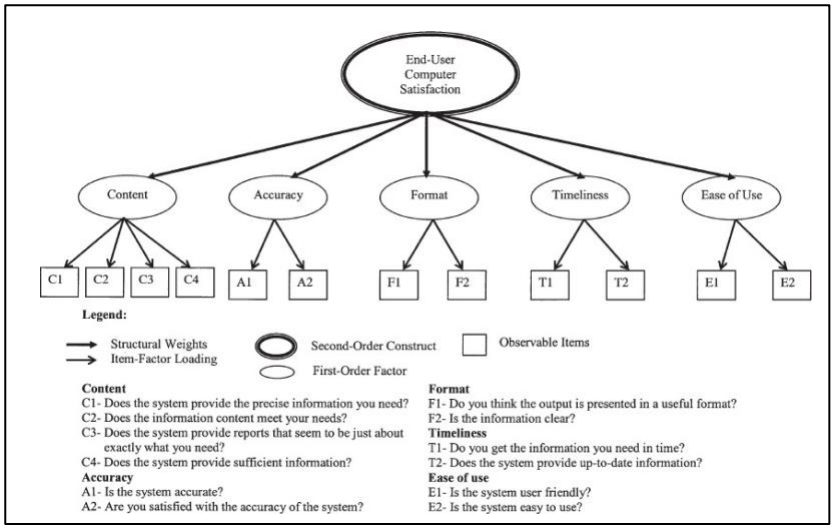

Fig. 1: Five First Prder Factors and One Second Order Method

2.2. Website

A collection of digital pages that can be accessed by anyone with internet connection and contains various types of information in the form of text, photos, audio, or video is called a website. Types of websites include: [6].

1. A static website is a type of website whose appearance is predetermined and never changes. To change the page, it must be done manually by editing the code that forms the structure of the website.
2. A dynamic web is a type of web whose appearance can change automatically depending on various factors such as time, user data, or user interaction. The backend page is usually provided to change the website's content.
3. Interactive web is a type of web tha involves interaction among its users. Usually in the form of a blog or discussion forum where the discussion flow is moderated by a moderator.

2.3. Framework Laravel

A framework is a set of tools, libraries, and best practices provided to help developers build applications more efficiently and in a structured manner, Framework offers a standard structure and reusable code that can reduce complexity in the software development process. The PHP framework called Laravel was created to build sophisticated, fast, and organized web applications. Since its first release by Taylor Otwell in 2011, Laravel has evolved into one of the most widely used PHP frameworks. By separating business logic, views, and data control using the Model-View-Controller (MVC) design, Laravel can simplify the process of creating and maintaning applications.[7]. Laravel aims to make web develoopment an enjoyable process for developers by providing modern features that simplify various tasks such as authentication, routing, sessions, and caching.

3. Research Methods

The model used in this research is a video-based media development model that consist od several stages, namely:

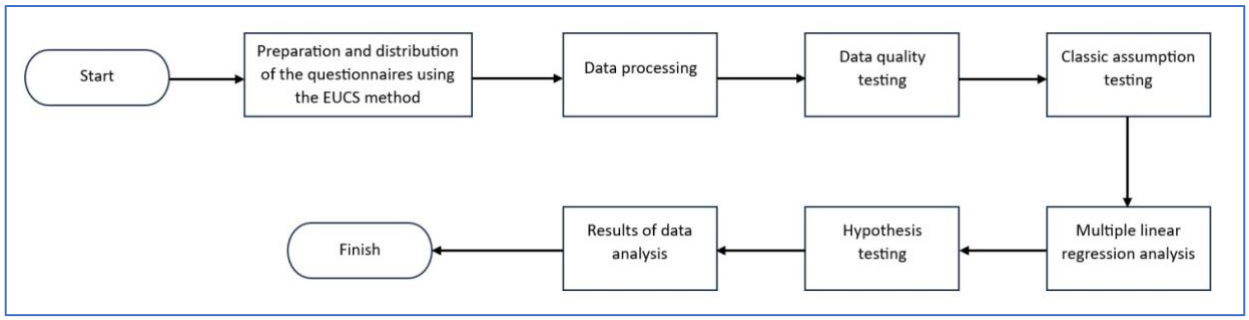

Fig. 2: EUCS Method Implementation Stages

1. Preparation and Distribution of The Questionnaire Using EUCS Method
   The first stage is to arrange and distribute a questionnaire to measure QRIS user satisfaction. To gather information on the 5 user satisfaction variables, namely format, accuracy, ease of use, content, and timeliness, the questionnaire will be structured based on the EUCS method. The respondents, consisting of QRIS users, will be asked to evaluate their experience using the QRIS payment system. The questionnaire arrrangement using the EUCS method is shown in Table 1 below.

Table 1: Questionnaire Arrangement

Variable	Code	Questions
Content	C1	Is the information provided by the system accurate and meets your needs?
	C2	Can the provided information content meet your needs?
	C3	Does the system provide the reports exactly as you need them?
	C4	Is the information provided by the system complete?
Accuracy	A1	Has the system been accurate?
	A2	Are you satisfied with the accuracy of the system?
Format	F1	In your opinion, has the output been displayed in an appropriate and useful format?
	F2	Is the information presented in a clear format?
Ease of Use	E1	Is the system user-friendly?
	E2	Is the system easy to use?
Timeliness	T1	Is the system able to provide the information you need in a timely manner?
	T2	Does the system provide up-to-date information?

2. Data Processing
   After the questionnaires are collected, the next step is to process the obtained data. Data processing includes data cleaning (for example, removing incomplete or invalid data) and preparing the data for further analysis. Clean data will be prepared for more in-depth statistical analysis.
3. Data Quality Testing
   Data quality testing is conductiong at this stage to ensure that the collected information is accurate and valid. This involves validity and reliability test to ensure the questionnaire can measure what is intended to be evaluated and to ensure that respondent's answers are consistent. Tesing the quality of the data is important to ensure that the analysis results will be accurate.
4. Classic Assumptions Testing
   The purpose of this test is to verify that the data used in multiple linear regression analysis meets basic assumptions such as multicollinearity, normality, and heteroscedasticity. This test is necessary to ensure that the regression model used is unbiased and that the analysis results are reliable.
5. Multiple Linear Regression Analysis
   In this section, the relationship between user satisfaction variables and factors that may influence the level of user satisfaction with the use of QRIS is tested using linear regression analysis. Based on the parameters measured in the questionnaire, this regression model will identify which variables have the most significant impact on the satisfaction level.
6. Hypothesis Testing
   Hypothesis testing aims to provide a scientific basis for decision-making by determining whether there is enough evidence to support a particular statement or claim based on the available data. Hypothesis testing in this research is divided into 3 tests: partial testing (t-test), simultaneous testing (F-test), and the coefficient of determination test (R2). Data Analysis Results
   After the regression analysis is completed, the results will be obtained to provide insight into how the measured variables affect QRIS users' satisfaction. These results will provide an overview of which areas need improvement to enchance user satisfaction. The analysis results can also show the strength of the relationship between satisfaction variables and QRIS usage, as well as providing recommendations for the system or service improvements.

4. Results

The results of the research is the development of a website for analyzing public satisfaction in using QRIS as a payment tool with the EUCS method to visualize the test results that have been conducted. Here are some results of the system interface used by the respondent, where this page contains a form for filling out the questionnaire.

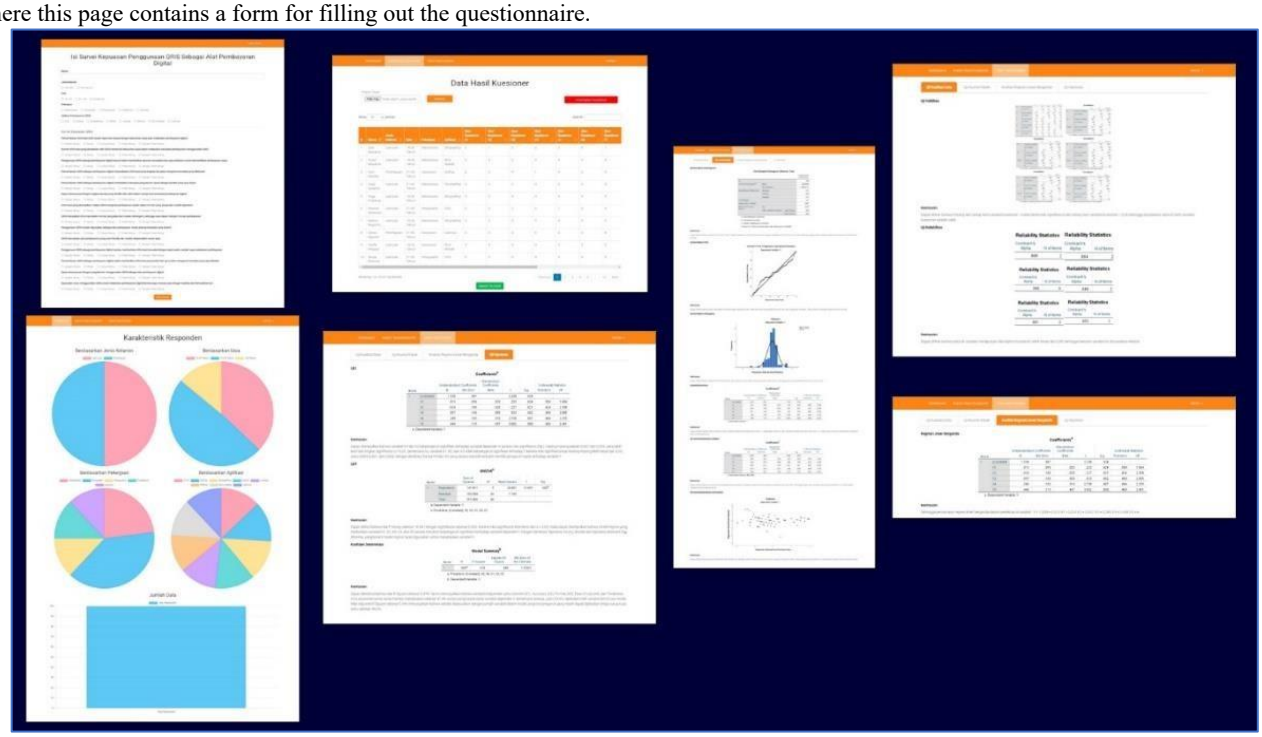

Fig. 3: Questionnaire Form Interface

The data analysis method used for this research is Multiple Linear Regression. The results of the analysis are shown in table 2.

Table 2: Multiple Linear Regression Analysis Results

Coefficients[a]				
		Unstandardized Coefficients		Standardized Coefficients
Model		B	Std. Error	Beta
1	(Constant)	1.538	.687	
	X1	.013	.059	.023
	X2	-.024	.106	-.026
	X3	.057	.109	.056
	X4	.289	.105	.310
	X5	.448	.115	.457
a. Dependent Variable: Y				

From table 2, the value is known:

$\alpha = 1.538$
$\beta_1 = 0.013$
$\beta_2 = -0.024$
$\beta_3 = 0.057$
$\beta_4 = 0.289$
$\beta_5 = 0.448$

So, the multiple linear regression equation that can be obtained is:

$$Y = 1.538 + 0.013\ X_1 - 0.024\ X_2 + 0.057\ X_3 + 0.289\ X_4 + 0.448\ X_5 + e$$

From the equation, it can be explained as follows:

a. Because the constant value (α) is 1.538, the user satisfaction value is 1.538 units without the variables Content, Accuracy, Format, Ease of Use, and Timeliness.
b. Assuming the variables Accuracy, Format, Ease of Use, and Timeliness are constant, the user satisfaction value will increase by 0.013 units for every 1 unit increase in the Content variable (X1), which has positive value of $\beta_1 = 0.013$
c. Assuming the variables Format, Content, Ease of Use, and Timeliness are constant, the user satisfaction value will decrease by 0.024 units for every 1 unit increase in the Accuracy variable (X2), which has negative value of $\beta_2 = -0.024$Assuming the variables Accuracy, Content, Ease of Use, and Timeliness are constant, the user satisfaction value will increase by 0.057 units for every 1 unit increase in the Format variable (X3), which has positive value of $\beta_3 = 0.057$
d. Assuming the variables Accuracy, Format, Content, and Timeliness are constant, the user satisfaction value will increase by 0.289 units for every 1 unit increase in the Ease-of-Use variable (X4), which has positive value of $\beta_4 = 0.289$
e. Assuming the variables Accuracy, Content, Format, and Ease of Use are constant, the user satisfaction value will increase by 0.448 units for every 1 unit increase in the Timeliness variable (X5), which has positive value of $\beta_5 = 0.448$

To ensure whether the dimensions of the independent variable have a substantial impact on the dependent variable, a t-test will be conducted. Here is the testing format:

1) H_0: $b_1, b_2 = 0$ (Content, Format, Accuracy, Timeliness, and Ease of Use do not affect user satisfaction of users in using the system).
2) H_1: $b_1, b_2 \neq 0$ (Content, Format, Accuracy, Timeliness, dan Ease of Use affect the user satisfaction in using system).

By comparing the t_{value} with the t_{table} at a 95% reliability level and a 5% error rate, the hypothesis can be accepted or rejected. With a test that is using a significance level of (α) = 0,05 and then n (sample) =100 people. Degrees of freedom(df)= n-6=94, resulting in a t_{table} value of 1.985. The criterion for this t-test is:

H_0 is accepted if $t_{table} < t_{value}$ at $\alpha = 0,05$

H_1 is accepted if $t_{value} > t_{table}$ at $\alpha = 0,05$

The test results are shown in Table 3 below.

Tabel 3: t-test Result

Coefficients[a]			
Model		**t**	**Sig.**
1	(Constant)	2.238	.028
	X1	.223	.824
	X2	-.227	.821
	X3	.523	.602
	X4	2.758	.007
	X5	3.892	.000
a. Dependent Variable: Y			

From the results of the t-test displayed in Table 3, it can be concluded that variables X4 and X5 have a significant effect on the dependent variable Y, because their significance values (Sig.) are 0.007 and 0.000, which are smaller than the significance level α = 0,05. Meanwhile, variable X1, X2, and X3 do not have a significant influence on Y, as their significance values are each greater than 0.05. To determine the extent to which the dimensions of the independent variables working together impact the dependent variable, an F-test was conducted. Here is the testing format:

1) H_0: $b_1, b_2 = 0$ (Content, Format, Accuracy, Timeliness, and Ease of Use do not affect user satisfaction of users in using the system).
2) H_1: $b_1, b_2 \neq 0$ (Content, Format, Accuracy, Timeliness, dan Ease of Use affect the user satisfaction in using system).

By comparing the F_{value} with the F_{table} at a 95% reliability level and a 5% error rate, the hypothesis can be accepted or rejected. The significance level of (α) = 0,05 and the sample size (n) is 100 people. Degrees of freedom(df)= n-6=94, resulting in a F_{table} value of 2.31. If $F_{value} > F_{table}$, then H_0 is rejected and H_1 is accepted, whereas If $F_{value} < F_{table}$, then H_0 is accepted and H_1 is rejected. The results are shown in the following table 4.

Tabel 4: F-Test Result

ANOVA[a]						
Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	Regression	147.411	5	29.482	16.941	.000[b]
	Residual	163.589	94	1.740		
	Total	311.000	99			
a. Dependent Variable: Y						
b. Predictors: (Constant), X5, X4, X1, X3, X2						

From the test results in Table 4, an F value of 16.941 was obtained with a significance value of 0.000, Because the significance value is lower than α = 0,05, it can be concluded that the regression model involving variable X1, X2, X3, X4 and X5 simultaneously has a significant effect on the dependent variable Y. Therefore, the null hyphothesis (H_0) is rejected and the alternative hypothesis (H_1) is accepted, which means the regression model is suitable for explaining variable Y.

The level of influence of Format, Content, Accuracy, Timeliness, and Ease of Use variables is measured by the coefficient of determination represented as R^2. The results of the Determination Coefficient (R^2) test are shown in the following table 5.

Tabel 5: the coefficient of determination test Result (R^2)

Model Summary[b]				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	.688[a]	.474	.446	1.31921
a. Predictors: (Constant), X5, X4, X1, X3, X2				
b. Dependent Variable : Y				

adjusted R^2 value of 0.446 indicates that after adjusting for the number of variables in the model. The proportion of influence that can still be explained remains quites strong at 44,6%.

From the T-test results displayed in table 3, it is known that only 2 out of 5 independent variables significantly affect user satisfaction in using QRIS as a digital payment tool, namely ease of use (X4) and timeliness (X5). This proves that ease of use and timeliness are key factors influencing user satisfaction. QRIS is designed to simplify the transaction process, so user feel facilitated in making payments without the need for complicated procedures. This convenience creates a sense of comfort and efficiency, especially for novice users who are not accustomed to using digital financial technology. Meanwhile, timeliness reflects the speed and reliability of the QRIS system in completing transactions in real-time, which is the main expectation of users when making payments in various situation, especially at cash register or quick service. The fast and uninterrupted transaction process certainly enchances users trust and satisfaction with the QRIS service.

On the other hand, the variables Content (X1), Accuracy (X2), and Format(X3) do not show a significant influence on user satisfaction. This could be because QRIS users tend to focus more on functional aspects than on the information displayed. Most users use QRIS only as a quick means to complete transactions, so they do not pay much attention to the informational content presented during the transaction process. Similary, with accuracy and display format, as long as the transaction is successfully completed without significant obstacles, the appearance and technical details are not the main priorities for users. Thus, although these aspects are important for the system's perspective, from the end user's point of view, their impact on satisfaction is not directly felt.

5. Conclusion

From the research conducted, in can be proven that the variables that influence user satisfaction the most in using QRIS as a digital payment tool are Ease of Use (X4) and Timeliness (X5). This shown that users prioritize ease of use and transaction speed over detailed information, accuracy, or system appearance when determining their satisfaction level with the use of QRIS. The effectiveness of QRIS in conducting digital payment transactions for users is also considered good because based on the F-test and R^2, all independent variables simultaneously have significant impact on user satisfaction.

For future research, it is recommended to focus on improving the aspects of ease of use and timeliness of the application, as these two aspects have proven to be the most influential on user satisfaction. Additionally, future research can further explore the comparison between QRIS and other digital payment methods or apply other analytical method beside multiple linear regression, such as Structural Equation Modeling (SEM), Path Analysis, or other methods.

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