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The Effect of Information Quality and Service Quality on User Satisfaction of the Government of Kabupaten Malang

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ABSTRACT

Currently, the government has implemented performance digitization through information systems that are published through official channels owned by the government, one of which is the government of Kabupaten Malang. The objective of this research was to assess or gauge the measurement and test variables and indicators that affect the quality of the Kabupaten Malang government website with the link www.malangkab.go.id/mlg The problem is, not many governments have launched applications paying attention to the factors that influence user satisfaction so that the government has not been able to prioritize repairs and optimize website performance to meet constituent needs that continue to grow in the digital era. This research employs a survey to identify the causal elements that impact the factors contributing to user satisfaction on the website. The causal factors include website service quality, information quality, and usability quality in user satisfaction. Respondents used in this study were website operators for regional apparatus in Kabupaten Malang, consisting of 81 respondents who met the requirements. In obtaining valid and reliable data, multiple linear regression and hypothesis testing were carried out. There are 4 multiple linear regressions that are carried out, namely, multicollinearity test, autocorrelation test, heteroscedasticity test, and normality test. The results of the influence of service quality, and information quality on user satisfaction through usability quality are 5 models that have a significant influence, that is Service Quality to Usability Quality, Information Quality to Usability Quality, Service Quality to User Satisfaction, Information Quality to User Satisfaction, and Usability Quality to User Satisfaction.

Keywords: Government; Measurement; Quality of Information; User satisfaction; Website Services.

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1. INTRODUCTION

The emergence of information technology in recent times has had a profound and crucial influence on diverse facets of human existence, encompassing education, communication, business, and governance. One of the main applications of information technology is the website. Websites have become an integral part of our daily lives, offering a wide range of functionalities and benefits [1,2,3]. The website allows users to access information anytime and anywhere, as long as they are connected to the internet. Websites can be utilized by individuals, companies, organizations and the government for various purposes, ranging from commercial, educational and social purposes, one of which is the Government of Kabupaten Malang with the

link https://www.malangkab.go.id/mlg/.

Utilization of the Website in the government environment aims to improve the quality of services provided to the community. The website has brought the world closer and provides easy access to information and services on a global scale so that the information provided must be of high quality and up to date [4,5]. User satisfaction is an important measure in evaluating the services provided by an organization. Indicators in determining the level of user satisfaction in using the website include conducting user satisfaction surveys, analyzing website usage, conversion rates from website visitors to users, retention rates of users who return to using the website on a regular basis and abandonment rates (termination of interaction) at various stages of website use, user feedback and reviews, customer service analysis [6,7,8]. Measuring user satisfaction in using the website is very important for identifying areas of improvement, evaluating the success of marketing strategies and website design, and understanding user preferences and needs [9,10,11].

Previous studies conducted by researchers [12,13] have unveiled a significant correlation between the quality of websites and various factors such as system quality, information quality, service quality, and design quality on user satisfaction. The research conducted by [14,15] discovered that website design quality positively influences user satisfaction, while service quality also has a positive impact on user satisfaction. Website service quality refers to the level of quality and satisfaction experienced by users when interacting with a website. It encompasses various aspects of the website's performance, functionality, and usability that contribute to the overall user experience. Information quality refers to the accuracy, reliability, relevance and completeness of the information presented on a website [12,16,17]. It is a critical aspect of website service quality as it directly impacts the user's ability to find, understand, and trust the information provided [18,19,20]. Based on this explanation, this paper will discuss the causative factors that influence website user satisfaction.

2. RESEARCH METHOD

In this research, we obtained data by distributing surveys using the sampling technique outlined in subsection 2.2. Following data collection, we analyze the data using hypothesis testing and multi-linear regression analysis, as detailed in subsection 2.3.

2.1. Research Design

The research design was developed with the objective of providing clear guidance and targets for the study. Based on the research problem and objectives, a causality research design was adopted. In causality research, the researcher aims to understand and establish causal relationships between variables. Through the research process, causal factors can be identified and their impact on User Satisfaction can be examined using questionnaire data. The design allows for the exploration of cause-and-effect relationships and understanding the consequences of Service Quality, Information Quality, and Usability Quality on User Satisfaction.

2.2. Research Variable

In this study, a questionnaire was employed as the data collection technique. Questionnaires hold significant importance in research as they serve as a means of gathering data. They are utilized in quantitative research to collect information from specific groups of individuals and analyze their responses to identify patterns and make predictions for the future.

Table 1. Variable, Indicator, and Question for Analysis

No	Variable	Indicator	Itemize of Questioner (Questions)
1	Service Quality (X1)	X11 – Fast Response	2
		X12 – Complete Data	2
2	Information Quality (X2)	X21 – Accuracy of Information	2
		X22 – Information Understanding	2
3	Usability Quality (Y1)	Y11 – User Friendly	2
		Y12 – Responsive	2
4	User Satisfaction (Y2)	Y21 – Content	2
		Y22 – Timeline	2
		Y23 – Security and Privacy	2

The respondents' answers were measured using a Likert scale [12], which involved assigning scores based on the following criteria: (a) A score of 5 was given for answer choices indicating "strongly agree" (SS), (b) A score of 4 was given for answer choices indicating "agree" (S), (c) A score of 3 was given for answer

choices indicating "neutral" (N), (d) A score of 2 was given for answer choices indicating "disagree" (TS), (e) A score of 1 was given for answer choices indicating "strongly disagree" (STS).

2.3. Research Method

Before conducting multiple regression analysis, it is important to consider several assumptions and conduct classical assumption tests. These tests include: (1) Multicollinearity test: Assess the presence of multicollinearity, it a rises when the independent variables in the regression model exhibit a strong correlation or interdependence with one another. [21], (2) Autocorrelation test: Evaluate whether there is autocorrelation, which refers to the presence of correlation among the residuals (errors) of the regression model [22], (3) Heteroscedasticity test: Determine if there is heteroscedasticity, which indicates unequal variances in the residuals across different levels of the independent variables [23], (4) Normality test: Check whether the residuals of the regression model follow a normal distribution [24], (5) Hypothesis testing: Hypothesis tests can be conducted [25] to assess the significance of coefficients and determine the relationships between independent variables and the dependent variable.

In this analysis, multiple linear regression is utilized to examine the direct influence of independent variables on the dependent variable. Additionally, the analysis also investigates whether there exists an indirect effect of the independent variables on the dependent variable through intervening variables.

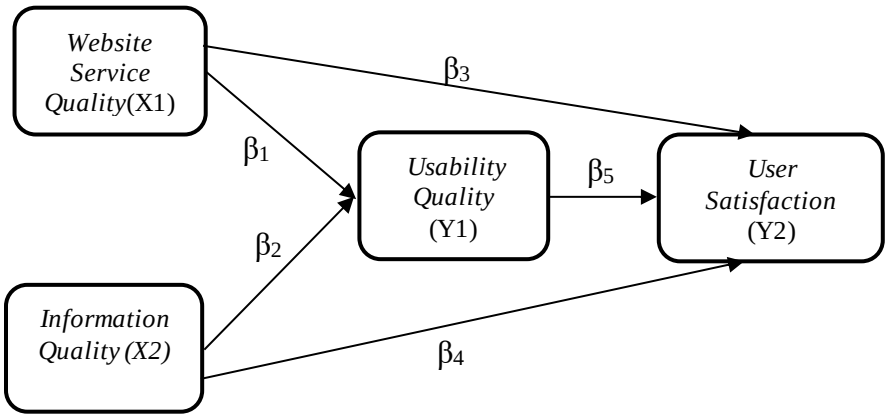

Fig. 1. Diagram Path Design Model

By incorporating insights from the previous research [19], we made adjustments and refinements to the original model depicted in Figure 1. These modifications were aimed at achieving an optimal model that better aligns with the findings and recommendations presented in the referenced journal. The revised model takes into account the relevant variables, factors, or relationships highlighted to enhance its accuracy, effectiveness, or overall performance. The steps for testing the path diagram model, incorporating the additional information provided, are as follows: (a) Develop the path diagram model: Construct a path diagram that is relevant to the field of study, based on the underlying theory, (b) Test validity and reliability: Evaluate the accuracy and consistency of the measures employed in the path diagram model by assessing their validity and reliability, (c) Calculate standardized coefficient values: Determine the standardized coefficients for each path in the structural equation model, (d) Assess assumptions: Evaluate the assumptions of multiple linear regression analysis, (e) Determine the prediction level: Utilize a formula to determine the prediction level of the structural equation model.

$$R^2 = 1 - \left(\sqrt{1 - R_1^2} * \sqrt{1 - R_2^2} * \sqrt{1 - R_3^2} * \sqrt{1 - R_4^2} * \sqrt{1 - R_5^2}\right) \quad \textbf{(1)}$$

(f) To ascertain the worth of direct and indirect impact, as well as the overall influence, when needed. To calculate the path value for direct, indirect, and total influence, (g) The equation of each path can be formulated as follows:

$$Y1 = \alpha 1 + \beta 1 X1 \quad \textbf{(2)}$$

$$Y1 = \alpha 2 + \beta 2 X2 \quad \textbf{(3)}$$

$$Y2 = \alpha 3 + \beta 3 X1 \quad \textbf{(4)}$$

$$Y2 = \alpha 4 + \beta 4 X2 \quad \textbf{(5)}$$

.

$$Y2 = \alpha 5 + \beta 5X1 \quad \textbf{(6)}$$

3. RESULTS AND DISCUSSION

3.1. Validity Testing

The validity of the study was evaluated by comparing the correlation value of each statement item with the predefined table correlation value (r table). The *r*-table value, determined at a significance level of $\alpha = 0.05$ and a sample size of $n = 81$, was found to be 0.219. During the data analysis process, it was observed that all 18 statement items exhibited positive correlation coefficients that exceeded the r table value.

Table 2. Validity Testing Results

Variable	Item	Correlation Coeff.	r-Table	Sig.	Results
Service Quality (X1)	X111	.832	.219	0.0	Valid
	X112	.766	.219	0.0	Valid
	X121	.823	.219	0.0	Valid
	X122	.752	.219	0.0	Valid
Information Quality (x2)	X211	.795	.219	0.0	Valid
	X212	.805	.219	0.0	Valid
	X221	.801	.219	0.0	Valid
	X222	.863	.219	0.0	Valid
Usability (Y1)	Y111	.874	.219	0.0	Valid
	Y112	.876	.219	0.0	Valid
	Y121	.882	.219	0.0	Valid
	Y122	.833	.219	0.0	Valid
User Satisfaction (Y2)	Y211	.807	.219	0.0	Valid
	Y212	.782	.219	0.0	Valid
	Y221	.785	.219	0.0	Valid
	Y222	.776	.219	0.0	Valid
	Y321	.842	.219	0.0	Valid
	Y322	.788	.219	0.0	Valid

Based on the validity, the following criteria were utilized for decision-making based on the test results and comparison with the critical values in the Table 2: (1) If the computed correlation coefficient (r count) is positive and greater than the critical correlation coefficient (r table), then the research variable is considered valid, (2) If the computed correlation coefficient (r count) is negative and greater than the critical correlation coefficient (r table), then the research variable is deemed invalid.

3.2. Reliability Testing

According to the findings from the reliability test presented in the Table 3, it is evident that all variables possess reliability coefficients higher than the Cronbach's alpha value of 0.60. Usability quality exhibits the highest reliability coefficient, with a measurement of 0.832, whereas user satisfaction demonstrates the lowest reliability coefficient, registering at 0.797. These results indicate that the instruments used in the research are suitable for further analysis, and all variables demonstrate a satisfactory level of reliability.

Table 3. Reliability Testing Results

Variable	Reability Coeff.	Results
Service Quality (X1)	.817	Reliable
Information Quality (X2)	.823	Reliable
Usability Quality (Y1)	.837	Reliable
User Satisfaction (Y2)	.802	Reliable

3.3. Descriptive Analysis

Based on Table 4, the mean score for Service Quality (X1) is 4.10, indicating that respondents generally agree that website operators promptly address complaints received from website visitors in the interactive column. The average value obtained for Information Quality (X2) is 4.09, indicating that respondents generally agree with the information presented on the website https://www.malangkab.go.id/mlg/. The average score for Usability Quality (Y1) is 4.14, suggesting that respondents generally agree that the website application is user-friendly and easy to navigate. The average score for User Satisfaction (Y2) is 4,

indicating that respondents generally agree that the website contains comprehensive information about activities in Kabupaten Malang, which contributes to their satisfaction as users.

Table 4. Analysis Statistics Descriptive

Variable	Category	Average of Category	Average of Variable
Service Quality (X1)	X11 – fast respons	4.08	4.07
	X12 – complete data	4.06	
Information Quality (X2)	X21 – Accuracy of Information	4.08	4.10
	X22 – Information Understanding	4.12	
Usability Quality (Y1)	Y11 – User Friendly	4.10	4.03
	Y12 – Responsive	3.96	
User Satisfaction (Y2)	Y21 – Content	3.97	3.98
	Y22 – Timeline	4.00	
	Y23 – Security and Privacy	3.99	

3.4. Multiple Linear Regression

3.4.1. Multicollinearity Test

Based on the findings from the regression model in Table 5, we can deduce that there is no correlation or multicollinearity observed among the independent variables. This deduction is made by analyzing the VIF (Variance Inflation Factor) and tolerance values. Multicollinearity is indicated when the VIF value surpasses 10 or the tolerance value drops below 0.1. Conversely, if the VIF value is below 10 or the tolerance value is above 0.1, it suggests the absence of multicollinearity.

Table 5. Multicollinearity Testing Results

Model	Variable	Analysis	
		Tollerance	VIF
Equation 1: X1 against Y1	Service Quality (X1)	1.000	1.000
Equation 2: X2 against Y1	Information Quality (X2)	1.000	1.000
Equation 3: X1 against Y2	Website Service Quality (X1)	1.000	1.000
Equation 4: X2 against Y2	Information Quality (X2)	1.000	1.000
Equation 5: Y1 against Y2	Usability Quality (Y1)	1.000	1.000

3.4.2. Autocorrelation Test

Based on the test results provided in Table 6, it is observed that the Durbin-Watson values for models 1, 2, and 3 fall within the range of Du to 4-Du. This indicates that the second condition is satisfied, suggesting the absence of autocorrelation in the data.

Table 6. Autocorrelation Testing Results

Model	Value			Results
	Du	Durbin Watson	4-Du	
Model 1: X1 against Y1	1,674	2,144	2,346	*dis*-autocorellation
Model 2: X2 against Y1	1,674	2,340	2,346	*dis*-autocorellation
Model 3: X1 against Y2	1,674	2,171	2,346	*dis*-autocorellation
Model 4: X2 against Y2	1,674	2,214	2,346	*dis*-autocorellation
Model 5: Y1 against Y2	1,674	2,218	2,346	*dis*-autocorellation

3.4.3. Heteroscedasticity Test

Heteroscedasticity can be tested using a scatterplot by examining the relationship between the standardized predicted values (ZPRED) and the studentized residuals (SRESID). In this method, the scatterplot graph plots the predicted Y values on the Y-axis and the residuals (Y predicted - Y actual) on the X-axis.

By observing the scatterplot graph, one looks for any discernible pattern or trend in the distribution of the points. In the context of heteroscedasticity, the focus is on assessing whether the spread of the residuals changes systematically as the predicted values change.

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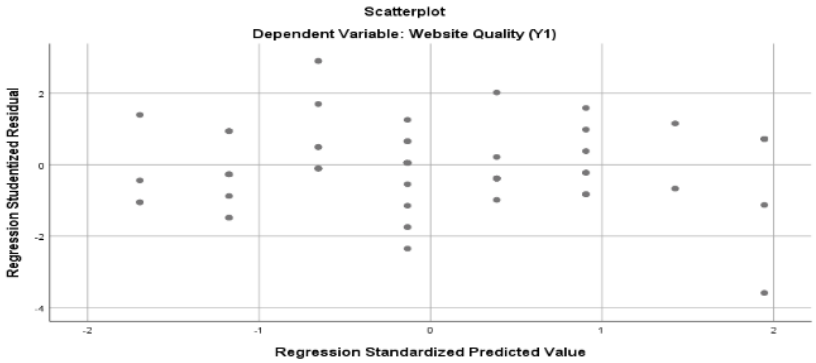
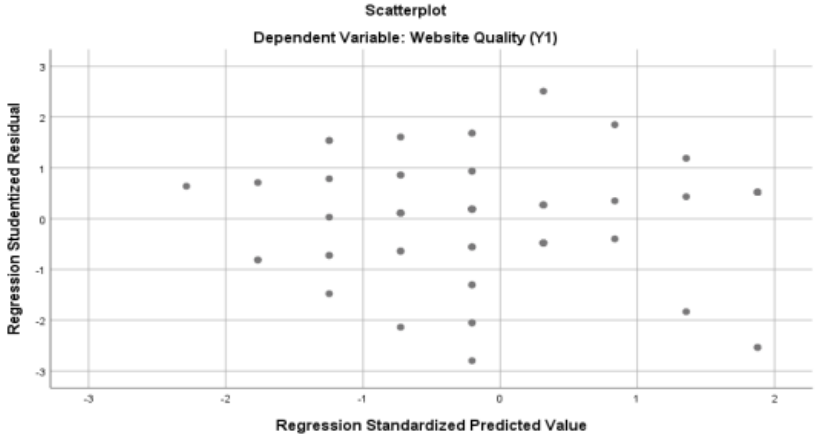
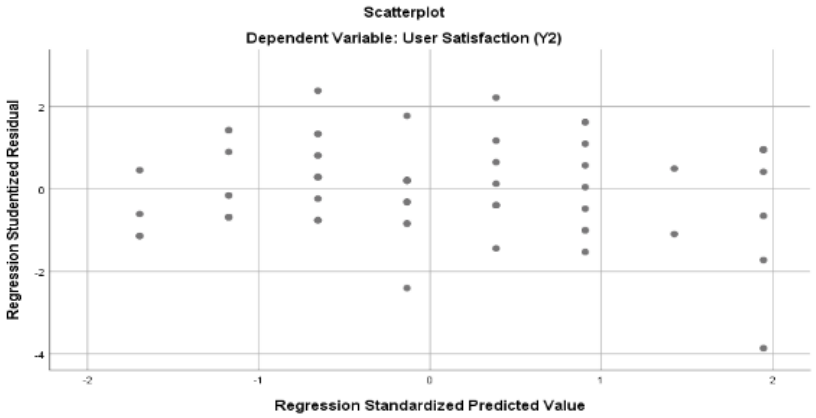


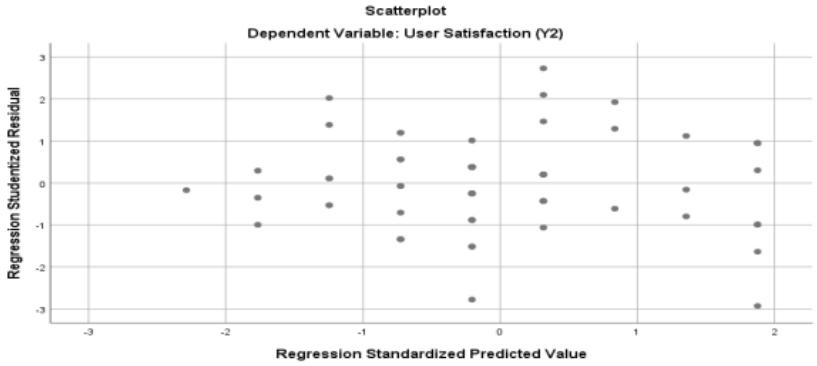
(2a) equation 2 plot



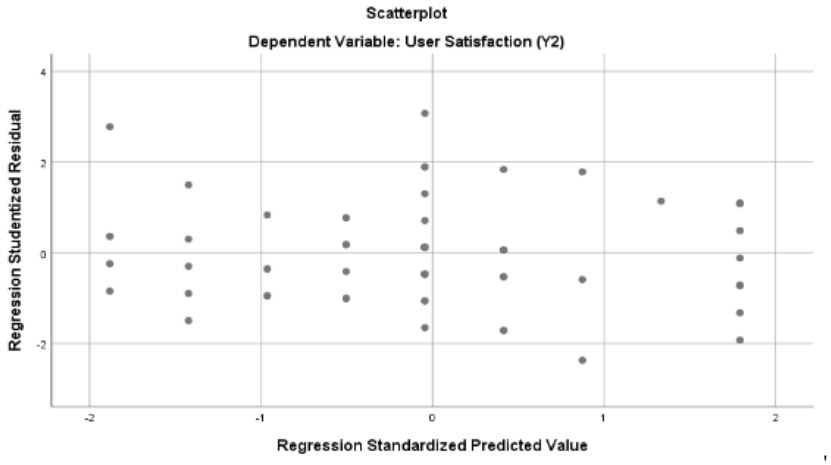
(2b) equation 3 plot



(2c) equation 4 plot



(2d) equation 5 plot



(2e) equation 6 plot
Figure 2a-2e. Diagram Path Design Model Equation 2 until 6

Based on the scatterplot in Figure 2a-2e, where the dots are distributed irregularly without a specific pattern and spread both above and below the zero value on the Y-axis, it suggests that heteroscedasticity is not present in the regression equation of this study. This indicates that the variability of the residuals does not systematically change as the predicted values change.

When the scatterplot does not exhibit a discernible pattern and the spread of the residuals appears random and relatively consistent across different levels of the predicted values, it implies that the assumption of homoscedasticity is likely met in this analysis. Homoscedasticity assumes that the variance of the residuals is constant across the range of predictor variables.

3.4.4. Normality Test

The normality test is indeed utilized to assess whether the data population follows a normal distribution. It is commonly applied to data measured on an ordinal, interval, or ratio scale. When conducting parametric analyses, such as certain statistical tests or models, it is necessary for the data to adhere to the normality assumption, meaning it is derived from a normal distribution. However, if the data is not normally distributed, or if the sample size is small and the data type is nominal or ordinal, non-parametric statistical methods are often employed.

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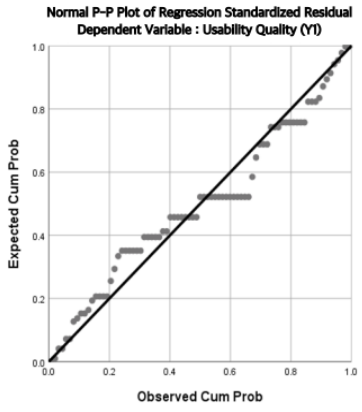
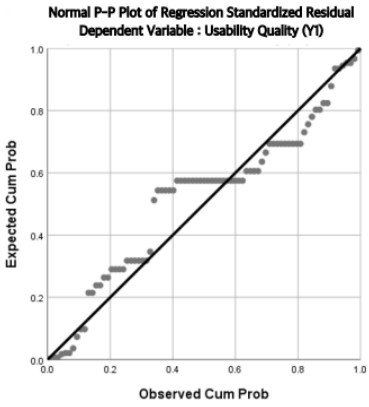
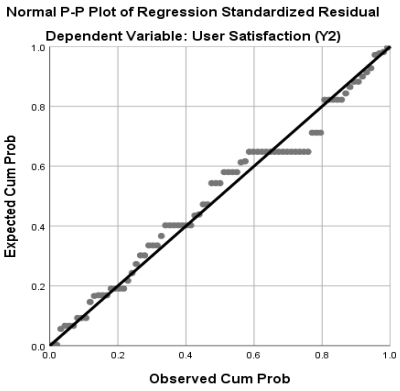


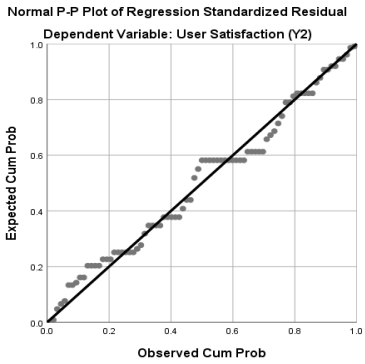
(3a) equation 2 PP-Plot



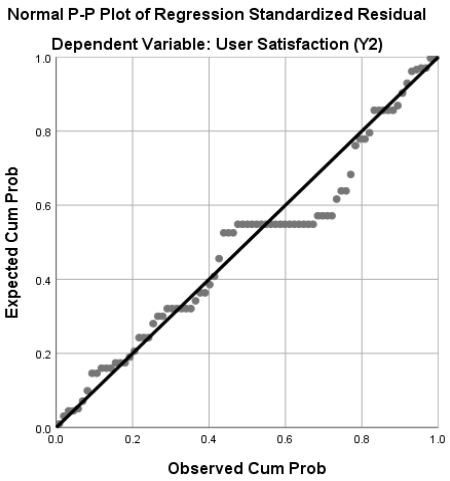
(3b) equation 3 PP-Plot



(3c) equation 4 PP-Plot



(3d) equation 5 PP-Plot



(3e) equation 6 PP-Plot

Figure. 3a-3e. Normality Test using Equation 2-6

The data presented in Figures 3a-3e demonstrates the distribution of points around the diagonal line and their tendency to approach it. This suggests that the variables analyzed, such as service quality, stem information management, and information quality, have an impact on user satisfaction through usability quality, which follows a normal distribution pattern.

3.4.5. Path Analysis using Multiple Linear Regression

1. Model Analysis

To establish the soundness of the path analysis model, it is necessary to undertake certain procedures., it is crucial to conduct appropriate testing. Two indicators that should be considered are the total coefficient of determination (Rm2).

The interpretation of the coefficient of determination (Rm^2) in path analysis is similar to the interpretation of the coefficient of determination (R^2) in regression analysis.

$$
\begin{aligned}
R^2 \text{ (model)} &= 1 - \left(\sqrt{1 - R_1^2} * \sqrt{1 - R_2^2} * \sqrt{1 - R_3^2} * \sqrt{1 - R_4^2} * \sqrt{1 - R_5^2}\right) \\
&= 1 - \left(\sqrt{1 - .416} * \sqrt{1 - .622} * \sqrt{1 - .573} * \sqrt{1 - .708} * \sqrt{1 - 0{,}667}\right) \\
&= 1 - (.764 * .615 * .653 * .540 * .577) \\
&= 1 - .100 \\
&= 0.9
\end{aligned}
$$

2. Path Analysis

The primary objective of path analysis in this study is to ascertain both the direct and indirect impacts of the independent variables on the dependent variable. It aims to identify the specific paths through which a particular variable influences other variables. The influence of these paths is assessed by examining the coefficient values and significance levels. Figure 4 presents the path model used in this analysis.

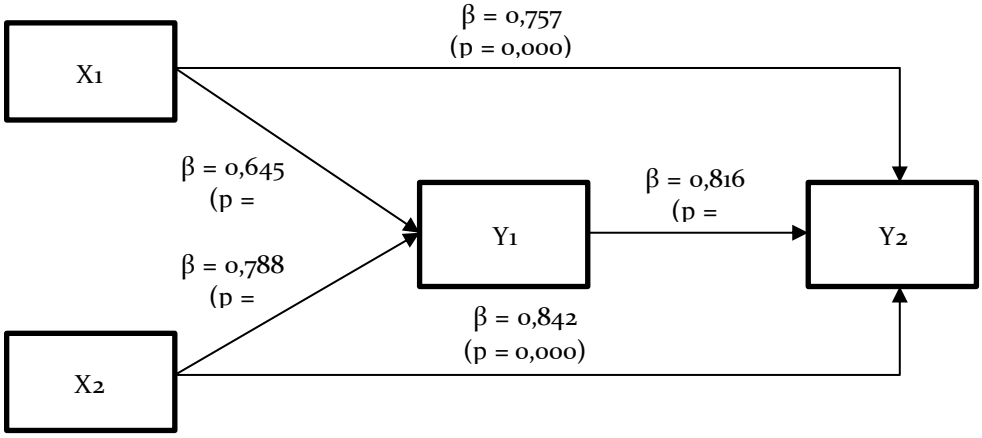


Figure 4. Path Diagram Results

Table 7 presents the findings regarding the impact of service quality and information quality on user satisfaction through usability quality.

Table 7. Summary of Path Analysis Findings

No	Variable	Direct Effect	*p*-value	Indirect Effect	Total Effect	Results
1	*Service Quality* (X1) to *Usability Quality* (Y1)	0,645	0,000	-	-	Significance
2	*Information Quality* (X2) to *Usability Quality* (Y1)	0,788	0,000			Significance
3	*Service Quality* (X1) to *User Satisfaction* (Y2)	0,757	0,000			Significance
4	*Information Quality* (X2) to *User Satisfaction* (Y2)	0,842	0,000			Significance
5	*Usability Quality* (Y1) to *User Satisfaction* (Y2)	0,816	0,000			Significance
6	*Service Quality* (X1) to *User Satisfaction* (Y2) by *Usability Quality* (Y1)	-	-	0,645 X 0,816 = 0,526	0,526 + 0,757= 1,283	Not Significance
7	*Information Quality* (X2) to *User Satisfaction* (Y2) by *Usability Quality* (Y1)	-	-	0,788 X 0,816 = 0,643	0,643 + 0,842 = 1,485	Not significance

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4. CONCLUSION

Based on the results of this paper, the researchers employed a total of seven methods to investigate the relationship between service quality, information quality, usability quality, and user satisfaction. Out of these seven methods, five yielded statistically significant results, indicating a significant influence of service quality and information quality on user satisfaction through usability quality. This means that improvements in service quality and information quality led to enhanced usability quality, which in turn positively impacted user satisfaction. On the other hand, two of the methods employed did not produce statistically significant results, suggesting that the relationship between service quality, information quality, usability quality, and user satisfaction was not supported in those particular instances. These methods might have involved different samples, data collection techniques, or statistical analyses that yielded inconclusive or non-representative findings. The significant results from the five methods indicate a robust relationship between service quality, information quality, usability quality, and user satisfaction. However, the lack of significant results from the remaining two methods suggests that the relationship may not hold universally and could be influenced by specific contextual factors or methodological differences.

The study has limitations due to using different methods, a limited sample, and context-specific findings. Non-significant results from some methods suggest the relationship between factors may not be universal. Future research should replicate the study with larger samples, consistent methods, diverse contexts, and consider additional factors for a better understanding of user satisfaction in website service and improving of quality information.

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