



Beyond Usability: Uncovering the Paradox of Website Quality and User Satisfaction in Indonesian Higher Education

Ilham Chandra Pangestu^{1*}, Murhadi², Ike Yunia Pasa³

^{1,2,3} Universitas Muhammadiyah Purworejo, Indonesia

Corresponding e-mail : ilhamchandra7@gmail.com

ARTICLE INFO

Keywords:

University website;
User satisfaction;
Website evaluation;
Website quality;
WebQual 4.0.

Article History

Received: May 16, 2026
Revised : July 06, 2026
Accepted : July 25, 2026

ABSTRACT

This study aims to examine the effects of usability quality, information quality, and service interaction quality on user satisfaction with the official website of Muhammadiyah University of Purworejo using the WebQual 4.0 framework, supported by Importance-Performance Analysis (IPA). A descriptive quantitative approach was employed, with data collected through an online questionnaire distributed to 130 active students selected using non-probability convenience sampling; 30 responses were used for validity and reliability testing, while 100 responses were analyzed in the main study. The data were processed using IBM SPSS Statistics 26 through Pearson correlation, Cronbach's Alpha, multiple linear regression, partial t-tests, coefficient of determination, and IPA. The findings reveal that usability quality has a negative and significant effect on user satisfaction ($\beta = -0.168$; $p = 0.037$), whereas information quality ($\beta = 0.284$; $p = 0.001$) and service interaction quality ($\beta = 0.533$; $p = 0.000$) have positive and significant effects, with service interaction quality emerging as the strongest predictor. The model explains 67.6% of the variance in user satisfaction. The originality of this study lies in its explanation of the negative usability effect through expectation-disconfirmation theory and the Technology Acceptance Model, as well as its integration of WebQual 4.0 regression with IPA to generate prioritized improvement strategies. The findings imply that UMPWR website managers should urgently improve interface usability, maintain strong service interaction quality, and sustain accurate and timely information provision to enhance user satisfaction.

This is an open access article under the [CC BY-SA](https://creativecommons.org/licenses/by-sa/4.0/) license



To cite this article : Pangestu, I. C., Murhadi, Pasa, I. Y. (2026). Beyond Usability: Uncovering the Paradox of Website Quality and User Satisfaction in Indonesian Higher Education. *Information Technology and Education Journal*, 4(2), 26-39. Doi. 10.61255/itej.v4i2.1245

INTRODUCTION

The use of technology has become an inseparable part of various aspects of human life, particularly in the use of information technology (Purwaningsih et al., 2023; Putra et al., 2022). In the context of educational institutions, websites have become one of the primary media used to convey information quickly and efficiently (Biantara & Dana, 2024). A website not only serves as a means of information dissemination but also as an indicator of institutional quality. Therefore, the management and development of a website must be carried out continuously in order to provide optimal service quality to users (Khoirunnisa & Sanjaya, 2023).

Muhammadiyah University of Purworejo has an official website accessible through the official UMPWR website, which serves as the main information portal for students, prospective students, and the general public. The website contains various important information, including the institutional profile, campus news and activities, academic announcements, and access to internal services such as the Academic Information System (SIA). Given its broad information coverage and high accessibility, the UMPWR website serves as an important medium in supporting information activities and user interaction with the institution.

As the use of websites increases, website quality has become a critical aspect to address. Based on existing phenomena, the UMPWR website has still received feedback from users

regarding an unattractive interface and information that is not fully up to date. These issues may affect the effectiveness of information delivery and the level of user satisfaction with the services provided by the university (Fauziah et al., 2023). Therefore, an evaluation is needed to assess the quality of the website based on user perceptions. In this study, the researchers employed the WebQual 4.0 method, which features an evaluation instrument focused on user perceptions of website quality. The WebQual 4.0 instrument is also comprehensively designed to ensure reliability and validity of the evaluation. This method measures website quality based on three main dimensions, namely usability, information quality, and service interaction quality, and analyzes their effect on user satisfaction (Safitri et al., 2024; Yulianto & Ismail, 2021).

Several previous researchers have conducted quality evaluations of websites using the WebQual 4.0 method with a multiple linear regression approach. Research by Pratama et al. (2024) demonstrated that the quality of the official website of Alma Ata University, with the variables usability, information quality, and service interaction quality, all had a positive and significant effect on user satisfaction, with an R^2 value of 73.3%. Consistently, research by Adieb et al. (2024) analyzed the effect of Shopee website quality on user satisfaction among students of Diponegoro University and concluded that all three dimensions of WebQual 4.0 had a positive and significant simultaneous effect with a contribution of 76.2%. Meanwhile, Putri et al. (2025) found that on an online learning website, information quality and service interaction quality significantly affected user satisfaction, while the usability variable did not show a significant effect. Research by Arsyad et al. (2025) analyzed the Academic Information System of Muhammadiyah University of Riau and found that all dimensions of WebQual 4.0 had a significant effect on user satisfaction of the academic system. Additionally, research by Ahoren et al. (2025) evaluated the quality of a community website using the WebQual 4.0 model, with results showing that interaction quality was the most dominant dimension with a coefficient value of $\beta = 0.401$, and the model explained 89.8% of the variation in user satisfaction.

The WebQual 4.0 method has been considered effective and widely used in previous research to evaluate website quality, including on university websites (Sutanto et al., 2021; Yang et al., 2024). However, two substantive gaps remain in the existing literature. First, prior WebQual 4.0 studies on Indonesian university websites have predominantly reported positive effects of all three dimensions on user satisfaction, yet none has theoretically explained the conditions under which usability may exert a negative influence on satisfaction — a finding that contradicts the standard expectation and demands theoretical elaboration through frameworks such as expectation-disconfirmation theory (Schiebler et al., 2025) and Technology Acceptance Model (Legramante et al., 2023). Second, existing studies have not integrated Importance-Performance Analysis (IPA) with WebQual 4.0 regression findings to produce prioritized, actionable recommendations for university website managers. Without IPA, the regression output alone cannot distinguish between dimensions that are critical but underperforming versus those that are performing well but less strategically important. This study addresses both gaps by: (1) providing a theoretically grounded explanation for the direction of the usability effect on user satisfaction using expectation-disconfirmation and platform-comparison frameworks; and (2) integrating IPA with multiple linear regression to map each WebQual 4.0 dimension against its relative importance and current performance level, thereby generating targeted improvement priorities for the UMPWR website management team.

Literature Review and Hypothesis Development

Based on the WebQual 4.0 framework developed by Barnes and Vidgen (Wardhana, 2024), website quality is assessed through three dimensions: usability, information quality, and service interaction quality. The following hypotheses are developed from the relevant theoretical and empirical literature.

H₁: Usability has a significant effect on user satisfaction.

Usability encompasses the ease of learning, clarity of navigation, aesthetic appeal, and the overall user experience of a website (Wardhana, 2024). According to the Technology Acceptance Model (TAM; Legramante et al., 2023), perceived ease of use directly influences user attitudes and satisfaction with information systems. Prior studies have generally reported a positive

relationship between usability and satisfaction (Pratama et al., 2024; Adieb et al., 2024); however, expectation-disconfirmation theory (Schiebler et al., 2025) suggests that the direction of this effect depends on whether perceived performance meets or falls below user expectations. This study therefore hypothesizes a significant effect of usability on user satisfaction, with the direction determined empirically.

H₂: Information quality has a significant effect on user satisfaction.

Information quality refers to the accuracy, relevance, timeliness, reliability, and clarity of the content presented on a website (Wardhana, 2024). Students as the primary users of a university website rely heavily on accurate and up-to-date information for academic decision-making. Consistent with prior studies (Khoirunnisa & Sanjaya, 2023; Fauziah et al., 2023), higher information quality is expected to positively affect user satisfaction.

H₃: Service interaction quality has a significant effect on user satisfaction.

Service interaction quality encompasses aspects of data security, institutional reputation, ease of interaction, service consistency, and willingness to recommend the website (Wardhana, 2024). Trust is a central construct in this dimension; research confirms that trust and information system quality significantly predict user satisfaction in website-based services (Ningrum & Abas, 2025; Sutanto et al., 2021). Accordingly, service interaction quality is expected to positively and significantly affect user satisfaction.

METHOD

This study falls under the category of descriptive research with a quantitative approach. Primary data were collected by distributing questionnaires to respondents. The questionnaire instrument was developed by adapting the *WebQual 4.0* model as a conceptual framework for measuring website quality. The following is the research flow conducted by the authors:

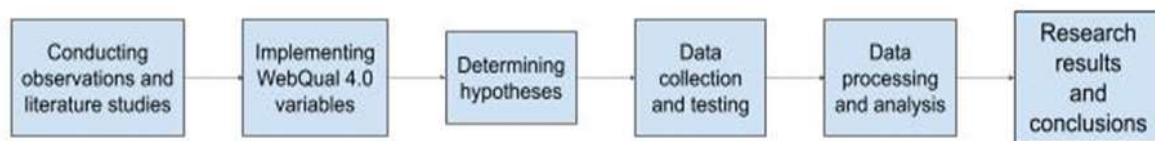


Figure 1. Research Flow

Observation and Literature Review

The initial stage of the research was conducted through observation and a literature review. This activity aimed to collect and study various references from previous research and scientific articles relevant to the problem under investigation. Through this stage, the researchers sought to identify the gap between users' actual perceptions and ideal expectations of the official website of Muhammadiyah University of Purworejo.

Application of the WebQual 4.0 Method

The latest version of the WebQual model is WebQual 4.0, developed by Barnes and Vidgen (Wardhana, 2024). WebQual 4.0 is a widely recognized instrument for assessing the quality of web sites from a user's perspective. The WebQual method has a research instrument developed using the Quality Function Development (QFD) method. Since the WebQual method was first developed in 1998, it has undergone several developments in its dimensional structure (Simanjuntak et al., 2023). The main dimensions of WebQual 4.0 include usability, information quality, and service interaction quality (Wardhana, 2024).

At this stage, the study applied the WebQual 4.0 method using four variables, namely information quality (information quality), service interaction quality (service interaction quality), usability (usability), and user satisfaction (user satisfaction) (Siregar & Kurniawati, 2023). A variable is an attribute that has varying values and can change at a given time, even when applied to the same object or individual.

Data Collection and Analysis

This study used a non-probability sampling technique with a convenience sampling approach, which involves selecting respondents based on accessibility, availability, and willingness to participate in the study (Ramadani et al., 2025). The respondents were active students who were reachable by the researchers and met the study's characteristics.

It is important to acknowledge that convenience sampling, while practical and widely used in institutional studies of this type, introduces limitations with respect to representativeness. The sample was drawn from students who were accessible and willing to participate, which may not fully reflect the views of all active students at UMPWR. Findings should therefore be interpreted with appropriate caution regarding generalizability beyond the study population. This limitation is further discussed in the Limitations subsection.

Data processing and analysis in this study were performed using IBM SPSS Statistics. The use of SPSS facilitates the execution of validity tests, reliability tests, multiple linear regression analysis, and hypothesis testing accurately and systematically. In this study, the questionnaire used ordinal data with a Likert scale measurement, where each respondent's answer was assigned a score: Strongly Agree (SA) = 5, Agree (A) = 4, Neutral (N) = 3, Disagree (D) = 2, and Strongly Disagree (SD) = 1 (Adipratama, 2025).

Data were collected by distributing online questionnaires; the obtained data were then processed and analyzed using IBM SPSS Statistics 26. In collecting questionnaire data, the researchers formulated a set of items based on the WebQual 4.0 standard. A list of 25 items can be seen in table 1 below.

Table 1. Research Instrument

Variable	Code	Question
Usability Quality (X ₁)	X1.1	The UMPWR website is easy to learn and operate
	X1.2	Interaction with the UMPWR website is clear and understandable
	X1.3	The UMPWR website has clear navigation
	X1.4	The UMPWR website has an attractive appearance
	X1.5	The UMPWR website provides clear guidance
	X1.6	The UMPWR website provides a positive experience
	X1.7	The UMPWR website looks and feels professional, trustworthy, and well-managed
Information Quality (X ₂)	X2.1	The UMPWR website provides accurate information
	X2.2	The UMPWR website provides reliable information
	X2.3	The UMPWR website provides easily understandable information
	X2.4	The UMPWR website provides relevant information
	X2.5	The UMPWR website provides detailed information
	X2.6	The UMPWR website provides timely information
	X2.7	The UMPWR website presents information in a clearly formatted and well-organized manner
Service Interaction Quality (X ₃)	X3.1	The UMPWR website has a good reputation
	X3.2	The UMPWR website properly safeguards personal data/information
	X3.3	The UMPWR website provides a comfortable experience for submitting personal data
	X3.4	The UMPWR website makes it easy to interact with university staff
	X3.5	The UMPWR website provides consistent and accurate service information
	X3.6	The UMPWR website is worth recommending to others
User Satisfaction (Y)	Y1	The UMPWR website fulfills information needs
	Y2	The UMPWR website is efficient to use
	Y3	The UMPWR website is effective to use

Y4 The UMPWR website is enjoyable to use

Y5 Overall, the UMPWR website is satisfying

The research instrument used in this study was developed based on the WebQual 4.0 method developed by Stuart J. Barnes and Richard Vidgen, and with reference to several books and previous research journals relevant to measuring website quality using the WebQual 4.0 method (Wardhana, 2024).

This study involved 130 active student respondents obtained using a non-probability sampling technique with a convenience sampling approach. Of the total, 30 respondents were used for instrument validity and reliability testing, while the remaining 100 respondents were used in the main testing phase. The following describes respondent characteristics based on age, usage intensity, and last use of the website :

Table 2. Research Respondents by Age

Age	Number of Respondent	Percentage (%)
18	2	1.5
19	12	9.2
20	22	16.9
21	37	28.5
22	35	26.9
23	16	12.3
24	6	4.6
Total	130	100

Based on table 2, it can be seen that respondents ranged in age: 18 years (2 respondents, 1.5%), 19 years (12 respondents, 9.2%), 20 years (22 respondents, 16.9%), 21 years (37 respondents, 28.5%), 22 years (35 respondents, 26.9%), 23 years (16 respondents, 12.3%), and 24 years and above (6 respondents, 4.6%).

Table 3. Research Respondents by Usage Intensity

No	Usage Intensity	Frequency	Percentage (%)
1	Once per day	5	3.8
2	1–3 times per week	27	20.8
3	3–5 times per week	11	8.5
4	1–3 times per month	40	30.8
5	Once every 3 months	24	18.5
6	Once per semester	23	17.7
Total		130	100

Based on table 3, the majority of respondents used the UMPWR website 1–3 times per month, accounting for 30.8%. This indicates that most respondents were still fairly active in accessing the website, even if not on a daily basis. Meanwhile, only 3.8% of respondents used the website everyday.

Table 4. Research Respondents by Last Usage

No	Last Website Use	Frequency	Percentage(%)
1	Today	14	10.8
2	Within the past week	39	30.0
3	Within the past month	33	25.4
4	Start of the current even semester	31	23.8
5	Last odd semester	13	10.0
Total		130	100

In the last usage category, most respondents reported last accessing the website within the past week, at 30.0%, followed by within the past month at 25.4%. These results indicate that the UMPWR website is still frequently used by students and other users as an information and academic service medium.

Ethical Considerations

This study adhered to standard ethical principles for research involving human

participants. Participation was entirely voluntary; no respondent was coerced or incentivized to complete the questionnaire. Informed consent was obtained from all respondents prior to questionnaire completion, with participants clearly informed of the study's academic purpose, the voluntary nature of their involvement, and their right to withdraw at any time without consequence. All respondent identities were kept strictly confidential and anonymized throughout the data collection, analysis, and reporting process. The data collected were used exclusively for academic research purposes and were not shared with any third party. As this study constituted a low-risk observational survey conducted within a university academic context and did not involve vulnerable populations or sensitive interventions, formal ethics committee approval was not required under the applicable institutional guidelines; however, the study was conducted in full accordance with responsible research conduct standards.

RESULTS AND DISCUSSION

Results

Instrument Validity Test

The next stage in this study was the instrument validity test, aimed at assessing the degree of accuracy and precision of the instrument in producing conclusions. The validity test was conducted using IBM SPSS Statistics through an analysis of the relationship between the r-table value and the r-count value (Pearson correlation). The results of the validity test from 30 respondents are presented in table 5.

Table 5. Instrument Validity Test Results

Variable	Code	r-table	Pearson Correlation	Result
Usability Quality (X ₁)	X1.1	0.361	0.799	Valid
	X1.2	0.361	0.659	Valid
	X1.3	0.361	0.790	Valid
	X1.4	0.361	0.815	Valid
	X1.5	0.361	0.789	Valid
	X1.6	0.361	0.726	Valid
	X1.7	0.361	0.637	Valid
Information Quality (X ₂)	X2.1	0.361	0.707	Valid
	X2.2	0.361	0.822	Valid
	X2.3	0.361	0.788	Valid
	X2.4	0.361	0.623	Valid
	X2.5	0.361	0.864	Valid
	X2.6	0.361	0.510	Valid
	X2.7	0.361	0.629	Valid
Service Interaction Quality (X ₃)	X3.1	0.361	0.771	Valid
	X3.2	0.361	0.779	Valid
	X3.3	0.361	0.721	Valid
	X3.4	0.361	0.814	Valid
	X3.5	0.361	0.831	Valid
	X3.6	0.361	0.764	Valid
User Satisfaction (Y)	Y1	0.361	0.732	Valid
	Y2	0.361	0.664	Valid
	Y3	0.361	0.748	Valid
	Y4	0.361	0.788	Valid
	Y5	0.361	0.744	Valid

Each instrument item has an r-count value (Pearson correlation) greater than the r-table value, or a significance value less than 0.05. The validity test results indicate that each instrument item is valid at a 5% error probability level (Yulianto & Ismail, 2021).

Instrument Reliability Test

Another stage following the development and validity testing of the instrument is the

procedure for measuring the consistency, stability, or reliability of a research instrument (questionnaire) to produce the same data even when applied repeatedly to different subjects. This test ensures that the measurement tool is trustworthy, often using the Cronbach's Alpha method. If the Cronbach's Alpha value > 0.60 , the instrument is considered reliable (Zukanah et al., 2024).

Table 6. Instrument Reliability Test Results

Dimension	Cronbach' Alpha	Result
Usability Quality (X_1)	0.858	Reliable
Information Quality (X_2)	0.832	Reliable
Service Interaction Quality (X_3)	0.872	Reliable
User Satisfaction (Y)	0.786	Reliable

Table 6 shows that each dimension of the instrument has a Cronbach's Alpha value greater than 0.60; therefore, the reliability test results indicate that the research instrument is reliable.

Multiple Linear Regression Test

Multiple linear regression is an analysis that describes the relationship between the dependent variable and more than one independent variable (Purwaningsih et al., 2023). Multiple linear regression was used to determine whether the variables usability quality, information quality, and service interaction quality have an effect on the user satisfaction variable; the results of the multiple linear regression test can be seen in table 7.

Table 7. Multiple Linear Regression Test Results

No	Variable	B	t	Sig.	F	Description
1	Constanta	2.684	2.114	0.029	66.787	-
2	<i>Usability Quality (X_1)</i>	-0.168	-2.114	0.037		Negative and Significant
3	<i>Information Quality (X_2)</i>	0.284	3.476	0.001		Positive and Significant
4	<i>Service Interaction Quality (X_3)</i>	0.533	7.929	0.000		Positive and Significant

Based on the results of the multiple linear regression analysis, the following regression equation was obtained:

$$Y = 2.684 - 0.168 X_1 + 0.284 X_2 + 0.533 X_3$$

With the following interpretation:

- 1) Usability Quality has a value of $b = -0.168$, meaning that usability quality (X_1) has a negative and significant effect on user satisfaction (Y). This result indicates that for every 1-unit increase in usability quality (X_1), user satisfaction (Y) will decrease by 0.168, with a significance value of 0.037 (< 0.05), indicating that the effect is statistically significant.
- 2) Information Quality has a value of $b = 0.284$, meaning that information quality (X_2) has a positive and significant effect on user satisfaction (Y). This result indicates that the better the information quality presented, the higher the user satisfaction will also be, with a significance value of 0.001 (< 0.05).
- 3) Service Interaction Quality has a value of $b = 0.533$, meaning that service interaction quality (X_3) has a positive and significant effect on user satisfaction (Y). This result indicates that the better the service interaction quality provided, the higher the user satisfaction will also be, with a significance value of 0.000 (< 0.05).

Partial t-Test

The t-test was conducted to determine the partial effect of each independent variable on the dependent variable. Based on table 7, it is known that the usability quality (X_1) variable obtained a t-count value of -2.114 with a significance value of $0.037 < 0.05$; the information quality (X_2) variable obtained a t-count value of 3.476 with a significance value of $0.001 < 0.05$; and the service interaction quality (X_3) variable obtained a t-count value of 7.929 with a

significance value of $0.000 < 0.05$. This indicates that all independent variables, namely usability quality (X_1), information quality (X_2), and service interaction quality (X_3), partially have a significant effect on user satisfaction (Y).

Coefficient of Determination Test (R^2)

The results of the coefficient of determination test in this study can be seen in table 8:

Table 8. Coefficient of Determination Test Results

<i>Model</i>	<i>R</i>	<i>R Square</i>	<i>Adjusted R Square</i>
1	0.822	0.676	0.666

Based on the table above, the R^2 value of 0.676 was obtained, meaning that the variables usability quality (X_1), information quality (X_2), and service interaction quality (X_3) together are able to explain the variation in user satisfaction (Y) by 67.6%, while the remaining 32.4% is explained by other variables not included in this research model.

Importance-Performance Analysis

Table 9. Importance-Performance Analysis Results

Dimension	Performance (P)	Importance (I)	Quadrant	Strategic Implication
Usability Quality (X_1)	2.97	0.85	III	Corrective Priority (negative $\beta = -0.168$)
Information Quality (X_2)	3.56	1.44	IV	Possible Overkill — sustain without excess investment
Service Interaction Quality (X_3)	3.42	2.71	I	Keep Up the Good Work — maintain current quality
<i>Mean (axis intersection)</i>	<i>3.32</i>	<i>1.67</i>	<i>Note: Importance derived from β normalized to 1–5 scale</i>	

Discussion

Effect of Usability on User Satisfaction

The research results indicate that usability quality (X_1) has a negative and significant effect on user satisfaction (Y), with a regression coefficient of $b = -0.168$ and a significance value of $0.037 < 0.05$. This finding is consistent with Hypothesis H_1 that usability has a significant relationship with user satisfaction, although the direction of the effect is negative.

This counter-intuitive finding that higher usability scores are associated with lower user satisfaction can be rigorously explained through two complementary theoretical frameworks. First, expectation-disconfirmation theory (Schiebler et al., 2025) proposes that user satisfaction is determined not by performance alone, but by the gap between perceived performance and prior expectations. Students at UMPWR regularly interact with digital platforms that set a high usability benchmark: the Academic Information System (SIA/SIAKAD) used for academic administration, and Google-based services integrated into campus workflows. These platforms offer streamlined navigation, responsive interfaces, and consistent user experiences. When students access the UMPWR official website, its interface design, navigation structure, and visual presentation are evaluated relative to these higher-quality digital touchpoints. The result is negative disconfirmation: the website's usability, though functional, falls below the performance standard established by the other platforms students habitually use, generating dissatisfaction even when absolute usability scores are moderate (mean = 2.97 out of 5.00). Second, the Technology Acceptance Model (TAM; Legramante et al., 2023) distinguishes between perceived ease of use and perceived usefulness. When usability features such as visual design or navigational aids are perceived as insufficient relative to task demands, they directly undermine perceived ease of use the TAM antecedent most closely linked to dissatisfaction.

It is critically important to interpret this finding within its proper context. The negative usability coefficient is a contextual and model-specific result reflecting the UMPWR website's specific user environment, where students' digital expectations are shaped by high-quality concurrent platforms. This finding should not be generalized to mean that usability universally reduces satisfaction; the broader and well-established literature consistently shows that higher usability leads to greater satisfaction when user expectations are properly met (Pratama et al., 2024; Adieb et al., 2024). Rather, the negative direction observed here represents a possible suppression or disconfirmation effect operating within this specific institutional context: a high-expectation user base evaluating a website that has not kept pace with the usability standards set by other platforms in their daily digital environment. Future research across other institutions and contexts is needed to determine whether this pattern is reproducible or unique to UMPWR.

A similar phenomenon was also found by Safitri et al. (2024), who evaluated a university website using WebQual 4.0, in which the usability dimension is not always directly proportional to user satisfaction when information quality and service interaction do not support it. Consistently, Yulianto & Ismail (2021) found that the usability aspect, which users considered adequate, did not become the dominant satisfaction differentiator compared to information content quality.

Therefore, the managers of the UMPWR website need to conduct a thorough evaluation of the user interface, particularly in terms of visual appearance, navigation clarity, and overall user experience. Design updates that follow modern trends and standards need to be carried out periodically so that the website remains relevant and comfortable to use for students as the primary users.

Effect of Information Quality on User Satisfaction

Information quality (X_2) was proven to have a positive and significant effect on user satisfaction (Y), with a regression coefficient of $b = 0.284$ and a significance value of $0.001 < 0.05$. This means that the higher the quality of information presented by the UMPWR website, the higher the user satisfaction experienced. This finding supports H_2 and is consistent with various previous studies.

Information quality encompasses the dimensions of accuracy, trustworthiness, relevance, ease of understanding, timeliness, and structured presentation format (Wardhana, 2024). Students as the primary users of the university website require information that is not only accurate, but also regularly updated given the dynamic nature of academic activities. Accurate and relevant information directly supports students' academic decision-making, making information quality a critical factor in shaping user satisfaction.

This result is aligned with the findings of Khoirunnisa & Sanjaya (2023), who concluded that information quality is the primary dimension influencing user satisfaction of the university digital library website. Similarly, research by Fauziah et al. (2023) on an e-learning website concluded that accurate and easily understood information quality significantly increases user satisfaction. With a coefficient value of 0.284, every 1-unit increase in information quality is followed by a 0.284 increase in user satisfaction, demonstrating a meaningful and substantial contribution.

The recommendation that can be provided is that the managers of the UMPWR website need to ensure that information is updated regularly and on a scheduled basis, particularly regarding academic announcements, lecture schedules, and campus news. In addition, presenting information in an easily readable format, such as using infographics and clear content categorization, can improve readability and overall user satisfaction.

Effect of Service Interaction Quality on User Satisfaction

Service interaction quality (X_3) is the variable with the most dominant effect on user satisfaction (Y), with a regression coefficient of $b = 0.533$ and a significance value of $0.000 < 0.05$. This means that for every 1-unit increase in service interaction quality, user satisfaction increases by 0.533. This finding supports H_3 and demonstrates that service interaction quality is the most determining factor for user satisfaction of the UMPWR website.

The service interaction quality dimension encompasses aspects of personal data security,

the website reputation, ease of interaction with the institution, service consistency, and willingness to recommend the website to others (Wardhana, 2024). These aspects are closely related to user trust (trust) toward the system. In recent research, trust and information system quality have been proven to affect user satisfaction and acceptance of website-based services and digital information systems (Ningrum & Abas, 2025).

According to Sutanto et al. (2021) in their research on a university website, they also found that service interaction quality is the WebQual 4.0 dimension most influential on user satisfaction, particularly regarding transaction security and data privacy. This is reinforced by research on a government service website, which proved that service interaction quality together with other dimensions significantly contributes to user satisfaction in accessing web-based services (Hasanah & Semestanti, 2024). This indicates that students highly prioritize the security and privacy aspects of their personal information when using an educational institution website.

Based on these findings, the managers of the UMPWR website are advised to strengthen the user data security system, improve the responsiveness of interaction services such as contact and feedback features, and ensure the consistency and reliability of the services provided. The implementation of standardized security protocols (HTTPS, data encryption) should also be optimized to increase user trust in the website.

Importance-Performance Analysis (IPA)

To enrich the analytical contribution of this study beyond regression findings, an Importance-Performance Analysis (IPA) was conducted following the approach introduced by Martilla and James (Simanjuntak et al., 2023) and subsequently applied in WebQual 4.0 studies (Safitri et al., 2024). IPA maps each quality dimension on a two-dimensional grid where the horizontal axis represents Performance (mean score from respondents, scale 1–5) and the vertical axis represents Importance (derived from the absolute standardized regression coefficient for each dimension, normalized to a 1–5 scale). The intersection of mean Performance (3.32) and mean Importance (1.67) defines four strategic quadrants.

The IPA results are summarized in table 9. Service Interaction Quality (X_3) falls in Quadrant I (Keep Up the Good Work): it has the highest importance ($I = 2.71$) and above-average performance ($P = 3.42$), meaning current efforts in this dimension are well-placed and should be maintained. Information Quality (X_2) falls in Quadrant IV (Possible Overkill): it has high performance ($P = 3.56$, the highest among all dimensions) but relatively lower importance ($I = 1.44$), suggesting that resources directed to further improving information quality may yield diminishing returns. Most critically, Usability Quality (X_1) falls in Quadrant III (Low Priority by traditional IPA classification); however, its negative regression coefficient ($\beta = -0.168$) reinterprets this finding: rather than being genuinely unimportant, usability actively suppresses satisfaction when it falls below user expectations. This makes usability a priority for corrective intervention, not neglect a nuance that IPA alone would miss without the regression analysis.

The integration of IPA with regression analysis therefore provides a richer diagnostic picture than either method alone: regression identifies which dimensions have statistically significant effects on satisfaction and in which direction, while IPA contextualizes those effects against actual performance levels to produce prioritized recommendations. For the UMPWR website management team, the combined findings suggest three clear action priorities: (1) urgently address usability deficits particularly interface design, navigation clarity, and visual modernity to reverse the negative effect on satisfaction; (2) maintain and consolidate current service interaction quality practices, as this dimension both performs adequately and carries the highest explanatory weight; and (3) sustain information quality without disproportionate resource allocation beyond what is needed to keep content accurate and timely.

Limitations

This study has several limitations that should be acknowledged. First, the use of convenience sampling may produce a non-representative sample, as respondents were selected based on accessibility rather than random selection, which limits the generalizability of the findings to the broader student population. Second, the cross-sectional design of this study captures user perceptions at a single point in time, which precludes causal inference and limits

the ability to observe changes in user satisfaction over time. Third, the study is restricted to a single institution (UMPWR), and findings may not be directly transferable to other university websites, particularly those with different institutional characteristics or user demographics. Fourth, the absence of qualitative data means that the quantitative findings particularly the counter-intuitive negative effect of usability on user satisfaction cannot be fully contextualized through direct user accounts or behavioral observations.

Future Research Directions

Future research could address these limitations in several ways. Longitudinal studies tracking user satisfaction before and after website redesign would allow causal inference and provide more actionable insights for website management. Multi-institution comparative studies across Muhammadiyah universities would strengthen the external validity of WebQual 4.0 findings in this specific educational network context. Additionally, mixed-methods designs incorporating user interviews or focus group discussions would provide qualitative depth to contextualize the negative usability coefficient found in this study a finding that warrants further theoretical exploration using frameworks such as expectation-disconfirmation theory or Technology Acceptance Model. Researchers may also consider incorporating Importance-Performance Analysis (IPA) alongside WebQual 4.0 to map each quality dimension against user priorities, thereby providing more targeted recommendations for website improvement.

CONCLUSION

This study makes three principal contributions to the literature on university website quality evaluation. First, it provides a theoretically grounded explanation for the paradox of a negative usability effect on user satisfaction a finding documented through WebQual 4.0 at UMPWR ($\beta = -0.168$; $p = 0.037$) and interpreted through expectation-disconfirmation theory and TAM as a contextual disconfirmation effect. Students accustomed to high-quality platforms such as SIAKAD and Google-based services hold elevated usability expectations that the UMPWR website currently fails to meet, suppressing satisfaction even when absolute usability scores are moderate. This underscores that usability must be assessed relative to users' broader digital experience, not in isolation, and that this finding is specific to this context rather than a universal relationship.

Second, this study demonstrates the practical value of integrating IPA with WebQual 4.0 regression analysis to generate prioritized, actionable recommendations. The IPA results confirm that service interaction quality ($\beta = 0.533$; $p = 0.000$) is both the most important and the best-performing dimension and should be sustained, while usability represents a corrective priority despite its low IPA importance score. Information quality ($\beta = 0.284$; $p = 0.001$), while performing well, requires calibrated rather than disproportionate resource allocation. Together, the three dimensions account for 67.6% of the variance in user satisfaction ($R^2 = 0.676$).

Third, this study offers concrete management implications for university website administrators: urgently redesign the interface to meet contemporary usability standards; maintain a structured content management schedule for accurate and timely information; and strengthen data security protocols, contact responsiveness, and service consistency to sustain the trust-based advantages that currently drive satisfaction. Future research should employ longitudinal designs, multi-institution comparisons, and qualitative methods to further validate and contextualize these findings.

ACKNOWLEDGMENTS

The authors express their gratitude to Muhammadiyah University of Purworejo for its support of adequate facilities and academic environment, enabling this research to be conducted successfully. The authors also convey their appreciation to all parties who have assisted in the data collection process and the preparation of this study.

AUTHOR CONTRIBUTION STATEMENT

ICP contributed to the conceptualization of the study, research design, data collection, data analysis, interpretation of findings, and initial manuscript drafting. M contributed to the supervision of the research process, methodological validation, critical review of the manuscript, and refinement of the discussion and conclusion sections. IYP contributed to literature review development, instrument preparation, data verification, manuscript editing, and final revision. All authors have read and approved the final version of the manuscript and agreed to be accountable for all aspects of the work.

AI DISCLOSURE STATEMENT

The authors declare that artificial intelligence-based tools were used only to support language refinement, grammar checking, academic phrasing, and structural improvement of the manuscript. The AI tools were not used to generate research data, conduct statistical analysis, manipulate results, or replace the authors' intellectual contribution. All ideas, analyses, interpretations, findings, and conclusions remain the full responsibility of the authors. The authors carefully reviewed, verified, and edited all AI-assisted content to ensure accuracy, originality, and compliance with academic integrity standards.

REFERENCES

- Adieb, M. R. A., Sugiharto, A., & Satriyo Adhy, S. (2024). Analisis Pengaruh Kualitas Website Shopee Terhadap Kepuasan Pengguna Berdasarkan Metode WebQual 4.0 (Studi Kasus : Mahasiswa Pengguna Shopee di Universitas Diponegoro). *JURNAL MASYARAKAT INFORMATIKA*, 15(1), 39–55. <https://doi.org/10.14710/jmasif.15.1.59737>
- Adipratama, P. Y. (2025). Analisis Kualitas Website barat.jakarta.go.id Pada Kantor Sudin Kominfotik Walikota Jakarta Barat Menggunakan Metode Webqual 4.0. *Jurnal Komputer Antartika*, 3(3), 79–86. <https://doi.org/10.70052/jka.v3i3.915>
- Ahoren, A. A., Suhendra, C. D., & Baisa, L. Y. (2025). Evaluasi Pengaruh Kualitas Website Kampung Kopo terhadap Kepuasan Pengguna Menggunakan Model WebQual 4.0. *Journal of Applied Computer Science and Technology*, 6(2), 107–114. <https://doi.org/10.52158/tftzct83>
- Arsyad, I., Rahmawita, M., Marsal, A., & Fronita, M. (2025). Analisa Kualitas Layanan Sistem Akademik Mahasiswa Terhadap Kepuasan Pengguna Menggunakan Metode Webqual 4.0. *JOISIE (Journal of Information Systems and Informatics Engineering)*, 9(1), 228. <https://doi.org/10.35145/joisie.v9i1.5029>
- Biantara, I. G. D. O., & Dana, I. M. K. (2024). Analisis Kualitas Sistem Informasi Akademik (Educampus) Politeknik Internasional Bali Menggunakan Metode Webqual 4.0. *INSPIRE : Journal of Culinary, Hospitality, Digital & Creative Arts and Event*, 2(1), 43–55. <https://doi.org/10.46837/inspire.v2i1.49>
- Fahlevi, M. R. (2022). Pengaruh Usability terhadap Kepuasan Pengguna pada E-Campus Universitas Nadhlatul Ulama Indonesia (UNUSIA). *Jurnal Publikasi Ilmu Komputer Dan Multimedia*, 1(3), 220–229. <https://doi.org/10.55606/jupikom.v1i3.560>
- Fauziah, D. A., Muliawan, A., & Dimyati, M. (2023). Measuring Quality of E-learning Websites Using WebQual 4.0 Method in Higher Education (Case Study : Institute Technology and Science Mandala). *INSIDE - Jurnal Sistem Informatika Cerdas*, 1(2), 54–61. <https://doi.org/10.31967/inside.v1i2.882>
- Hasanah, R. L., & Semestanti, P. (2024). Pengaruh Kualitas Terhadap Kepuasan Pengguna Website OSS Kementerian Investasi Menggunakan Metode Webqual 4.0. *JUSIFOR : Jurnal Sistem Informasi Dan Informatika*, 3(1), 28–37. <https://doi.org/10.33379/jusifor.v3i1.3925>
- Islami, C. D., & Kusumahadi, K. (2023). Pengaruh Kualitas Website Terhadap Kepuasan Pengguna (Studi Pada E-Commerce Zalora Indonesia di Kota Bandung). *Al Qalam*, 17(1), 490–490. <https://doi.org/10.35931/aq.v17i1.1729>
- Khoirunnisa, N., & Sanjaya, M. R. (2023). Analisis Kepuasan Mahasiswa Fasilkom Terhadap Kualitas Website Digital Library Menggunakan Webqual 4.0. *Indonesian Journal of Computer Science*, 12(6). <https://doi.org/10.33022/ijcs.v12i6.3494>

- Legramante, D., Azevedo, A., & Lopes, I. C. (2023). Integration of the technology acceptance model and the information systems success model in the analysis of Moodle's satisfaction and continuity of use. *Campus-Wide Information Systems*, 40(5). <https://doi.org/10.1108/ijilt-12-2022-0231>
- Nanjundan, P., Ramachandran, M., Raja, C., & Sivaji, C. (2024). Classification of the Architecture Using IBM SPSS Statistics. *Aeronautical and Aerospace Engineering*, 1(3), 35–42. <https://doi.org/10.46632/aae/1/3/5>
- Ningrum, A. W., & Abas, N. I. (2025). Analisis Model Kerangka TAM-ISSM terhadap Kepuasan Pengguna serta Dampaknya pada Citizen Trust dan Continuance Use Intention. *COSTING: Journal of Economic, Business and Accounting*, 8(5), 716–733. <https://doi.org/10.31539/qw5j2e53>
- Pratama, C., Dzakiyullah, N. R., Ratnasari, A., & Harahap, A. A. (2025). Analisis Kualitas Website Universitas Alma Ata Menggunakan Pendekatan WebQual 4.0. *Jurnal Tekno Kompak*, 19(1), 121. <https://doi.org/10.33365/jtk.v19i1.4502>
- Purwaningsih, R., Shobrina, S. F., Rumita, R., Nurlaila, D., & Winata, P. (2023). Pengaruh kualitas website terhadap tingkat kepuasan pelanggan menggunakan metode linier regresi berganda. *J@TI UNDIP JURNAL TEKNIK INDUSTRI*, 18(2), 130–139. <https://doi.org/10.14710/jati.18.2.130-139>
- Putra, K. A. D., Suhartika, I. P., Haryanti, N. P. P., & Pramestisari, N. A. S. (2022). Analisis Pengaruh Kualitas Web Perpustakaan Universitas Udayana Terhadap Kepuasan Pengguna Menggunakan Webqual 4.0. *Pustakaloka*, 14(2), 146–162. <https://doi.org/10.21154/pustakaloka.v14i2.5032>
- Putri, A. D., Setiawan, T. A., & Kurniawan, I. (2025). Analisis Kepuasan Pengguna Website Pembelajaran Daring Menggunakan Metode WebQual 4.0. *Indonesian Journal Computer Science*, 4(2), 108–117. <https://doi.org/10.31294/ijcs.v4i2.9970>
- Ramadani, U. P., Muthmainnah, R., Ulhilma, N., Wazabirah, A., Hidayatullah, R., & Harmonedi, H. (2025). Strategi Penentuan Populasi dan Sampel dalam Penelitian Pendidikan: Antara Validitas dan Representativitas. *Jurnal QOSIM Jurnal Pendidikan Sosial & Humaniora*, 3(2), 574–585. <https://doi.org/10.61104/jq.v3i2.1021>
- Safitri, A., Kusumawati, N. D., & Nilasari, A. (2024). From Usability to Strategy: Enhancing Higher Education Website Quality through a Data-Driven Evaluation Using WebQual 4.0 and Importance-Performance Analysis. *JURNAL TEKNOLOGI DAN OPEN SOURCE*, 7(2), 266–276. <https://doi.org/10.36378/jtos.v7i2.3858>
- Schiebler, T., Lee, N., & Brodbeck, F. C. (2025). Expectancy-disconfirmation and consumer satisfaction: A meta-analysis. *Journal of the Academy of Marketing Science*, 53. <https://doi.org/10.1007/s11747-024-01078-x>
- Simanjuntak, T., Wijaya, B., Agustinasari, E., Yusri, & Li, Q. (2023). The Use of Webqual 4.0 and Importance Performance Analysis (IPA) Method for Sriwijaya State Polytechnic International Office Website Quality. *Advances in Social Science, Education and Humanities Research/Advances in Social Science, Education and Humanities Research*, 76–84. https://doi.org/10.2991/978-2-38476-026-8_10
- Siregar, T., & Kurniawati, I. (2023). Analisis Kualitas Layanan Website LPPM Universitas Kristen Indonesia Menggunakan Teknik Pengukuran WebQual 4.0. *JIKO (Jurnal Informatika Dan Komputer)*, 7(1), 88. <https://doi.org/10.26798/jiko.v7i1.718>
- Sutanto, N. H., Kusrini, K., & Nasiri, A. (2021). University Service Website Quality Measurement with WebQual 4,0 (Case Study: Faculty of Business and Economics Islamic University of Indonesia). *Jurnal Riset Informatika*, 3(3), 225–232. <https://doi.org/10.34288/jri.v3i3.231>
- Wardhana, A. (2024). *Service Quality & E-Service Quality In The Digital Edge (Indonesia)*. CV. Eureka Media Aksara.
- Yang, E. D., Baisa, L. Y., & Sanglise, M. (2024). Evaluasi kualitas website e-learning UNIPA menggunakan metode Webqual 4.0. *AITI*, 21(2), 285–297. <https://doi.org/10.24246/aiti.v21i2.285-297>

- Yulianto, D., & Ismail, T. (2021). Analisis Website Program Kreativitas Mahasiswa (PKM Center) Universitas Ahmad Dahlan Menggunakan WebQual 4.0. *Matrik Jurnal Manajemen Teknik Informatika Dan Rekayasa Komputer*, 20(2), 325–334. <https://doi.org/10.30812/matrik.v20i2.1098>
- Zukanah, Z., Abdul, S. R., & Sayfulloh, A. (2024). Metode WebQual 4.0 untuk Analisis Evaluasi Kualitas Website Sistem Informasi Akademik Institut Ilmu Al-Qur'an Jakarta. *Remik: Riset Dan E-Jurnal Manajemen Informatika Komputer*, 8(3), 810–817. <https://doi.org/10.33395/remik.v8i3.13825>