*J-INTECH (Journal of Information and Technology)*
**Accredited Sinta 4 Ministry of Higher Education, Science and Technology Republic of Indonesia SK No. 10/C/C3/DT.05.00/2025**
**E-ISSN: 2580-720X || P-ISSN: 2303-1425**

# Evaluation of the Website Quality of a Faculty of Animal Science Using WebQual 4.0 and Importance Performance Map Analysis

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***Keywords***

*IPMA; PLS-SEM; user satisfaction; WebQual; website quality*

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***Abstract***

The present study seeks to assess the quality of the Faculty of Animal Science website at the University of Papua and determine key areas requiring improvement based on user perceptions using the WebQual 4.0 method, PLS-SEM, and IPMA. Data were collected through an online questionnaire involving 110 respondents consisting of students, lecturers, and educational staff. The findings indicated that all indicators satisfied the standards for both validity and reliability, confirming their suitability for further analysis. The evaluation of the structural model indicated that user satisfaction was significantly and positively influenced by only usability ($\beta = 0.343$; $t = 2.962$; $p = 0.003$), while no significant effects were identified for information quality and service interaction quality. The $Q^2$predict value of 0.229 suggests that the model has acceptable predictive relevance, while the coefficient of determination ($R^2 = 0.293$) indicates that the model demonstrates weak to moderate explanatory power. Furthermore, usability demonstrated the largest practical contribution to user satisfaction with an $f^2$ value of 0.091, although the effect size remained within the small category. IPMA results at the construct level identified usability as the highest priority for improvement, with an importance score of 0.343 and a performance score of 59.437. At the indicator level, indicator related to ease of use and navigation, particularly indicators U1 and U3, were identified as the primary areas requiring improvement. Meanwhile, service interaction quality demonstrated relatively high performance and should be maintained, whereas information quality requires gradual enhancement. Therefore, efforts to improve website quality should prioritize usability while continuously improving information quality and service interaction quality to enhance user satisfaction.

## 1. Introduction

Rapid advancements in information and communication technology have made websites an integral component of higher education institutions, particularly in supporting the delivery of services to users. Websites serve as a tool for information dissemination, communication, and assistance with a wide range of academic and administrative responsibilities. Therefore, the existence of a website is crucial in supporting services within the higher education environment [1]. A good website must be able to present accurate, up-to-date, and high-quality information that is easily understood by users when accessing the information they need [2]. Additionally, a website must also have good accessibility and interactive features that can enhance user participation and engagement [3].

The Faculty of Animal Science at the University of Papua has utilized its official website as a means of effectively and efficiently conveying academic information and details about various faculty activities to students, faculty members, and other relevant parties. This website is expected to support the rapid, accurate, and easily accessible dissemination of information to all users. However, the mere existence of a website does not necessarily guarantee that the information services provided align with users' needs and expectations. To date, the exact quality level of the Faculty of Animal Science at the University of Papua's website based on user perceptions and aspects requiring improvement remains unclear; therefore, an assessment is required to assess the standard of the services provided [4].

As one of the most commonly applied approaches for website quality evaluation, WebQual 4.0 considers three major aspects, namely usability, information quality, and service interaction quality, which together contribute to user satisfaction [5]. As the foundation for continuous service improvement, this evaluation approach provides a summary of the website's overall quality and identifies areas for improvement [6]. Furthermore, the IPMA approach was applied in this study to identify areas requiring improvement by considering the relative importance and performance of each website service indicator [7][8].

The WebQual 4.0 method has been widely employed in previous studies to evaluate website quality. The previous study found that usability, information quality, and service interaction quality collectively exerted a significant effect on user satisfaction, although only several variables were significant when tested individually [9]. Meanwhile, other study found that although website performance generally met user expectations, several aspects identified through Importance Performance Analysis (IPA) still required improvement priority [10]. However, previous studies in the context of Indonesian university websites generally focused either on analyzing the relationships between variables using WebQual or on mapping service performance using IPA separately. Studies that combine structural relationship analysis and performance prioritization simultaneously through the integration of PLS-SEM and IPMA remain limited. As a result, previous research has not comprehensively explained both the causal relationships among variables and the strategic priorities for website improvement within a single analytical framework. In addition, research evaluating website quality at the Faculty of Animal Science, University of Papua, is still limited. Therefore, this study integrates WebQual 4.0, PLS-SEM, and IPMA to provide a comprehensive evaluation of website quality by simultaneously examining the relationships among website quality dimensions and identifying strategic improvement priorities based on importance and performance values. Based on preliminary observations, interviews, and questionnaire results, several issues were identified, including unclear navigation, unattractive interface design, and outdated information. Therefore, The present study seeks to evaluate the quality of the Faculty of Animal Science website using the WebQual 4.0 method, analyze the relationships between variables through PLS-SEM, and determine improvement priorities using IPMA.

Drawing from the WebQual 4.0 framework and insights from earlier research, the following hypotheses are formulated:

H1: Usability has a positive and significant effect on user satisfaction.

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

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

## 2. Research Method

A descriptive quantitative method was employed in this study. The quantitative descriptive approach is a research method used to describe, summarize, and present data in a systematic and measurable manner. This approach was chosen to provide an overview of the various conditions, situations, and variables affecting the users who serve as the main subjects of this study. This research was conducted using data obtained from users of the Faculty of Animal Science website at the University of Papua, Manokwari, West Papua, Indonesia. Data collection was carried out from March to April 2026 through an online questionnaire distributed to website users. The process began with identifying the research problem, utilizing literature reviews related to the subject under study. This was followed by determining the respondents, designing the questionnaire, and then collecting the data. Subsequently, the collected data were analyzed, and conclusions as well as recommendations were formulated.

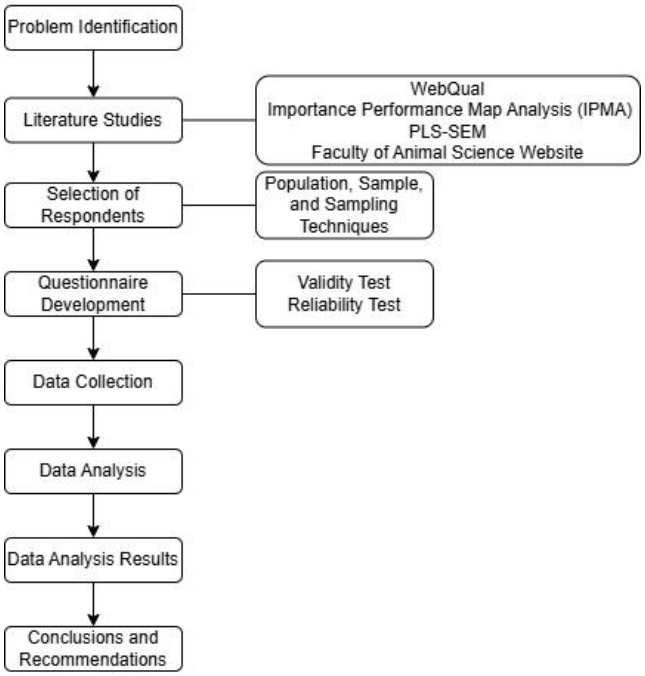


*Figure 1 Research Stages*

The research stages began with identifying issues on the Faculty of Animal Science website at the University of Papua to determine problems related to website quality and user satisfaction levels. At this stage, a literature review was conducted, supported by interviews and an initial questionnaire, to gain an understanding of user challenges, particularly regarding usability, information quality, and service interaction quality, as well as to identify causes and potential solutions. Next, respondents were selected from the entire website user population comprising students, faculty members, and staff using purposive sampling based on the criterion of users who had previously accessed and used the website at least two times. In accordance with Hair et al., the sample size was established by applying the guideline of 5–10 times the total number of research indicators. [11] . The IPMA approach was used in conjunction with the WebQual 4.0 indicators to develop a survey covering these three dimensions, employing a 1–5 Likert scale to evaluate respondents' perceptions of website quality.

After that, data was gathered by conducting a literature search and distributing surveys online using Google Forms. Subsequently, the data were analyzed through the WebQual 4.0 approach to assess website quality from the perspective of user perceptions, followed by the application of PLS-SEM to evaluate the outer and inner models for testing validity, reliability, and inter-variable relationships [12]. During the evaluation of the measurement model, indicators exhibiting outer loading values below 0.70 were taken into consideration for removal to enhance convergent validity and the reliability of the constructs, in accordance with the recommendations of Hair et al. [11] . Additionally, IPMA approach was used to prioritize areas for improvement based on the importance and performance ratings of the indicators. The study's results were subsequently used as the basis for drawing conclusions and making recommendations for constantly improving the quality of online services.

## 3. Results and Discussion

### 3.1 Respondent Characteristics

The Survey was delivered through Google Forms using the WhatsApp application and answered by 110 people, including students, lecturers, and other members of the University of Papua's Faculty of Animal Science. Table 1 below displays the respondents' characteristics.

*Table 1 Respondent Characteristics*

| Description | Category | Number | Percentage(%) |
|---|---|---|---|
| Gender | Male | 73 | 66.4 |
| | Female | 37 | 33.6 |
| Age | 18-22 Years | 54 | 49.1 |
| | 23-27 Years | 34 | 30.9 |
| | 28-32 Years | 6 | 5.5 |
| | 33-40 Years | 0 | 0 |
| | >41 Years | 16 | 14.5 |
| Status | Student | 90 | 81.8 |
| | Lecturer | 18 | 16.4 |
| | Educational Staff | 2 | 1.8 |
| Program | Bachelor of Animal Science program | 76 | 69.1 |
| | Bachelor of Nutrition and Livestock Feed Technology program | 16 | 14.5 |
| | Diploma in Animal Health program | 13 | 11.8 |
| | Diploma in Livestock Farming program | 5 | 4.5 |

Referring to Table 1 to Table 1, 66. 4% of the respondents were male, whereas 33. 6% were female. By age, respondents were dominated by the 18–22 age group (49.1%), followed by those aged 23–27 (30.9%), those over 41 (14.5%), and those aged 28–32 (5.5%); there were no respondents in the 33–40 age range. In terms of status, Most respondents were students (81.8%), succeeded by lecturers (16.4%) and educational staff (1.8%). Based on academic programs, respondents were predominantly from the Bachelor of Animal Science program (69.1%), followed by the Bachelor of Nutrition and Livestock Feed Technology program (14.5%), the Diploma in Animal Health program (11.8%), and the Diploma in Livestock Farming program (4.5%). Overall, the characteristics of the respondents indicate a predominance of young students, particularly from the Bachelor of Animal Science program, as the primary users of the Faculty of Animal Science, University of Papua, website.

The PLS-SEM method was utilized in this research. First, the measurement model (outer model) was assessed to verify the reliability and validity of the indicators that represent each construct. Subsequently, the structural model (inner model) was employed to examine the strength of the relationships between variables, evaluate the model's predictive capability, and determine the significance of the relationships among the study constructs [13].

## 3.2 Outer Model

In a PLS-SEM analysis, the initial step involves examining the outer model [14]. This stage aims to evaluate the level of validity, which is the extent to which indicators accurately reflect the constructs being measured, as well as reliability, which is the consistency of the measurement findings. The SmartPLS program version 4.1.1.8 was used in this study to perform the analysis process and produce parameter estimates and measurement model test findings. The measurement model evaluation's findings are shown in the figure below.

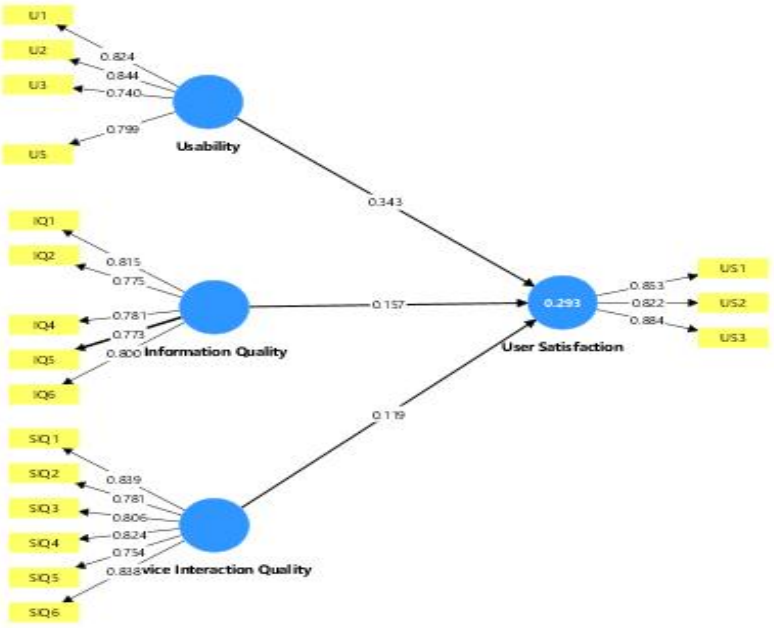


*Figure 2 Outer Model*

According to the outer model described above, every indicator representing each construct has an outer loading exceeding 0. 70. This demonstrates that each indicator is deemed capable of accurately representing the measured concept, as it meets the criteria for convergent validity [15]. Consequently, any indicator in this study model can be utilized in the subsequent analysis phase.

## 3.3 Validity Test

This research assessed validity by utilizing both convergent validity and discriminant validity tests. Convergent validity is evaluated through the AVE value, which should be no less than 0. 50, supported by outer loading values of at least 0. 70. These values demonstrate the degree of contribution of the indicators to the construct [12]. These criteria were utilized to confirm that the indicators effectively represent the research construct. The findings of the convergent validity assessment based on respondent data are displayed in Table 2.

*Table 2 Validity Test Results*

| Variable | Indicator | Loading Factor (>0.7) | Average Variance Extracted (AVE) (>0.5) |
|---|---|---|---|
| Usability | U1 | 0.824 | 0.623 |
| | U2 | 0.844 | |
| | U3 | 0.740 | |
| | U5 | 0.799 | |
| Information Quality | IQ1 | 0.815 | 0.652 |
| | IQ2 | 0.775 | |
| | IQ4 | 0.781 | |
| | IQ5 | 0.773 | |
| | IQ6 | 0.800 | |
| Service Interaction Quality | SIQ1 | 0.839 | 0.645 |
| | SIQ2 | 0.781 | |
| | SIQ3 | 0.806 | |
| | SIQ4 | 0.824 | |
| | SIQ5 | 0.754 | |
| | SIQ6 | 0.838 | |
| User Satisfaction | US1 | 0.853 | 0.728 |
| | US2 | 0.822 | |
| | US3 | 0.884 | |

As presented in Table 2, all variables satisfied the convergent validity requirements and were consequently regarded as appropriate for further analysis, given that all AVE values were above the minimum standard of 0.50. Nevertheless, several indicators, namely U4, U6, and IQ3, were removed during the measurement model (outer model) evaluation because their outer loading values fell below the suggested limit of 0. 70, indicating that their contributions to representing the constructs were insufficient. Specifically, indicator U4 measured the ease of website navigation, U6 reflected the visual appearance and attractiveness of the website interface, while IQ3 measured the clarity and accuracy of the information presented. The removal of these indicators suggests that these aspects were not adequately represented in respondents' perceptions within the final measurement model. Consequently, although the remaining indicators were considered sufficient to represent the constructs, certain aspects of usability and information quality may not have been captured comprehensively. The removal of these indicators was aimed at enhancing the quality of the outer model, particularly in terms of convergent validity and construct reliability. This result aligns with the previous work, who recommended that indicators with outer loading values lower than 0. 70 could be eliminated if they do not adequately represent the construct, and if their removal improves the AVE and composite reliability [12].

The HTMT was subsequently utilized to evaluate discriminant validity. A construct shows discriminant validity when the HTMT value is lower than the suggested limit. An HTMT value below 0. 90 signifies sufficient discriminant validity, whereas a more stringent limit of 0.85 may be applied for conceptually similar constructs [11]. These criteria indicate that the constructs are empirically distinguishable and do not conceptually overlap in measuring different variables. The results of the HTMT test for every construct studied in this research can be found in Table 3.

*Table 3 HTMT Ratio*

| | IQ | SIQ | U | US |
|---|---|---|---|---|
| Information Quality | | | | |
| Service Interaction Quality | 0.680 | | | |
| Usability | 0.725 | 0.681 | | |
| User Satisfaction | 0.509 | 0.477 | 0.612 | |

The HTMT analysis results presented in Table 3 demonstrate that all correlations between constructs are lower than the suggested limit. In particular, the HTMT values for Information Quality and Service Interaction Quality, Information Quality and Usability, and Service Interaction Quality and Usability are 0.680, 0.725, and 0.681, respectively. Meanwhile, the HTMT values for Information Quality and User Satisfaction, Service Interaction Quality and User Satisfaction, and Usability and User Satisfaction are 0.509, 0.477, and 0.612, respectively. Since all HTMT values in this study are below the stricter cutoff of 0.85, the constructs can be considered empirically different and have satisfied the requirements for discriminant validity [11].

## 3.4 Reliability Test

Subsequently, a reliability test was carried out to evaluate the internal consistency of the research instrument. The assessment of reliability was based on two key indicators, namely Composite Reliability (CR) and Cronbach's Alpha. A construct is considered reliable if both measures are greater than 0.70.

*Table 4 Reliability Test Results*

| Variable | Cronbach's Alpha (> 0.7) | Composite Reliability (>0.7) |
|---|---|---|
| Information Quality | 0.850 | 0.892 |
| Service Interaction Quality | 0.893 | 0.918 |
| Usability | 0.817 | 0.879 |
| User Satisfaction | 0.813 | 0.889 |

As shown in Table 4, all variables in this analysis achieved Composite Reliability and Cronbach's Alpha values greater than the required threshold of 0.70. These findings suggest that all variables satisfy the reliability standards, implying that the instrument used effectively reflects the research constructs and has strong internal consistency. This is consistent with previous research, which found that a Cronbach's Alpha and Composite Reliability value of 0.70 or higher demonstrates a high degree of reliability in measuring study constructs [16].

## 3.5 Inner Model

The purpose of evaluating the structural model is to investigate the relationships among latent variables and to assess both the direction and strength of the influence between the constructs of the study. The SmartPLS software's bootstrapping procedure, a non-parametric statistical approach that uses resampling to assess significance and estimate path coefficients, was used to perform hypothesis testing [12] . The VIF, which identifies potential multicollinearity among independent variables, and the R-square (R2) value, which gauges the capacity of independent variables to explain the dependent variable user satisfaction were two of the main parameters used to evaluate the structural model. Furthermore, the influence of each WebQual dimension on user satisfaction is revealed through hypothesis testing, which is based on the p-values of the path coefficients that are obtained. This includes usability, information quality, and service interaction quality.

## 3.6 Multicollinearity Test (VIF)

An evaluation of multicollinearity was conducted to ensure that the independent variables in the research model exhibited no indications of multicollinearity. The VIF value was used in this test, where a construct is deemed to be free of multicollinearity if its VIF value is less than 5.

*Table 5 Multicollinearity (VIF)*

| | Information Quality | Service Interaction Quality | Usability | User Satisfaction |
|---|---|---|---|---|
| Information Quality | | | | 1.842 |
| Service Interaction Quality | | | | 1.770 |
| Usability | | | | 1.822 |
| User Satisfaction | | | | |

Referring to Table 5, The VIF values for all variables were less than the suggested limit of 5, which shows that there is no multicollinearity among the independent variables in the research model. Specifically, the VIF values for the Information Quality construct regarding User Satisfaction are 1.842, Service Interaction Quality are 1.770, and Usability are 1.822. All these values are within the suggested limits; thus, it can be concluded that each independent variable, including usability, information quality, and service interaction quality, independently helps explain the dependent variable, which is user satisfaction. Thus, the structural model used is free from multicollinearity issues and suitable for further analysis, in accordance with the criteria outlined by Hair et al., who state that a VIF value below 5 indicates the absence of multicollinearity issues in the PLS-SEM model [12].

## 3.7 R-Square and Predictive Relevance Test

The coefficient of determination ($R^2$) was used to evaluate how much the independent variables in the research model explain the variation in the dependent variable. The $R^2$ value can range from 0 to 1, with a higher value signifying a stronger ability of the model to explain the data. Additionally, the predictive relevance was assessed through the $Q^2$predict value obtained via the PLSpredict process. A $Q^2$predict value that exceeds zero suggests that the model has predictive validity. In this study, usability, information quality, and service interaction quality were assessed together to explain user satisfaction.

*Table 6 R-Square and Predictive Relevance Test*

| Variable | R-square | R-square adjusted | $Q^2$predict |
|---|---|---|---|
| **User Satisfaction** | 0.293 | 0.273 | 0.229 |

According to Table 6, the R-square ($R^2$) value of 0.293 indicates that usability, information quality, and service interaction quality explain 29.3% of the variance in user satisfaction. An adjusted R-square value of 0.273, being relatively close to the $R^2$ value, suggests that the model demonstrates adequate stability and does not indicate the presence of overfitting. Overall, the model demonstrates weak to moderate explanatory power, suggesting that there are still other variables outside the model that influence user satisfaction. Furthermore, the $Q^2$predict value of 0.229, which exceeds zero, suggests that the model has sufficient predictive significance in clarifying user satisfaction. These results are in line with the findings of Hair et al, who stated that $R^2$ reflects the explanatory capability of the structural model, while $Q^2$predict values above zero indicate predictive relevance of the model [11].

### 3.8 F-Square Test

F-square ($f^2$) is used to evaluate the strength of the impact that an independent variable has on the dependent variable. An $f^2$ value of 0. 02 represents a small effect, 0. 15 denotes a medium effect, and 0. 35 signifies a large effect on the endogenous construct [17].

*Table 7 F-square Test*

| | User Satisfaction |
|---|---|
| Information Quality | 0.019 |
| Service Interaction Quality | 0.011 |
| Usability | 0.091 |

According to Table 7, The $f^2$ value of Information Quality on User Satisfaction is 0. 019, which suggests that the effect of Information Quality on the dependent construct is minimal, since this value is lower than the 0. 02 benchmark established by Cohen [17] . Similarly, Service Interaction Quality shows an $f^2$ value of 0.011, which also indicates a negligible effect on User Satisfaction. Meanwhile, Usability has an $f^2$ value of 0.091, indicating a small impact on the endogenous construct because the value falls within the range of 0.02 to 0.15. These findings suggest that Usability provides the greatest contribution in explaining User Satisfaction compared to the other exogenous variables, although the magnitude of its effect remains relatively small.

### 3.9 Hypothesis Testing

The purpose of hypothesis testing in this research was to evaluate the statistical significance of the relationships among the variables in the proposed model, specifically the impacts of usability, information quality, and service interaction quality on user satisfaction. In order to carry out the testing, the path coefficients, t-statistics, and p-values produced by the bootstrapping procedure were analyzed using the SmartPLS software version 4.1.1.8. Since the hypotheses had previously specified the direction of the relationships among the variables, the analysis utilized a one-tailed test. If the value of the t-statistic exceeds 1.645 at a 5% significance level ($\alpha = 0.05$), it is considered to have a significant and positive impact. If the t-statistic score is below 1.645 [18], the link is considered unimportant. Table 8 presents the complete findings of the hypothesis testing conducted in this study.

*Table 8 Hypothesis testing*

| Variable | Original sample (O) | Sample mean (M) | Standard deviation (STDEV) | T statistics (\|O/STDEV\|) | P values | Description |
|---|---|---|---|---|---|---|
| Information Quality -> User Satisfaction | 0.157 | 0.167 | 0.113 | 1.396 | 0.163 | Rejected |
| Service Interaction Quality -> User Satisfaction | 0.119 | 0.124 | 0.128 | 0.933 | 0.351 | Rejected |
| Usability -> User Satisfaction | 0.343 | 0.341 | 0.116 | 2.962 | 0.003 | Accepted |

As shown in Table 8, the effect of Information Quality on User Satisfaction has a t-statistic of 1.396, a p-value of 0.163, and a positive path coefficient of 0.157. Consequently, this effect is not considered significant, leading to the rejection of the hypothesis. The influence of Service Interaction Quality on User Satisfaction is represented by a t-statistic of 0.933, a p-value of 0.351, and a path coefficient of 0.119, which is also not significant, resulting in the rejection of the hypothesis. Conversely, the impact of Usability on User Satisfaction is characterized by a t-statistic of 2.962, a p-value of 0.003, and a positive path coefficient of 0.343, demonstrating a positive and significant effect; therefore, the hypothesis is accepted. The results of this study

are consistent with the previous findings, which demonstrated that usability significantly affects user satisfaction, whereas not all dimensions of WebQual significantly influence user satisfaction [19].

However, the findings of this study differ from the previous results, who concluded that usability, information quality, and service interaction quality simultaneously affected user satisfaction [9]. These differences may be caused by variations in respondent characteristics and website usage context. In this study, users particularly students may prioritize ease of access, navigation, and usability over information content and interaction services. Furthermore, the $R^2$ value of 0.293 demonstration weak to moderate explanatory power, indicating that user satisfaction may also be affected by other variables beyond the current model, such as trust, perceived usefulness, or user experience.

The IPMA results also reveal that usability is the primary priority for improvement because it has high importance but relatively low performance. This result is largely in agreement with the previous work, who found that website attributes related to user convenience and accessibility became major priorities for improvement[10]. However, the priority indicators identified in this study, particularly U1 and U3, reflect the contextual conditions of the Faculty of Animal Science website, where users are more concerned with navigation convenience, ease of use, and accessibility of academic information. These findings indicate that improvement priorities may vary depending on institutional characteristics, user needs, and the functional objectives of the website being evaluated.

### 3.10 Importance Performance Map Analysis (IPMA)

The sophisticated analysis known as IPMA is utilized inside the PLS-SEM methodology to provide strategic suggestions for enhancing system performance, in this instance, the website of the Faculty of Animal Science. This research integrates two main dimensions: significance, which is based on overall effects values, and performance, which is assessed using the average scores of constructs or indicators. Based on their degrees of influence and performance, the location of concepts like usability, information quality, and service interaction quality is represented in four quadrants, with importance plotted on the horizontal axis (X) and performance on the vertical axis (Y) [20] . This analysis allows for the identification of elements that should be retained because of their superior performance and impact, as well as elements that should be given priority for improvement because of their significance but subpar performance. IPMA can be carried out at the construct and indicator levels to give a more complete picture; hence, by integrating descriptive and inferential analysis, this approach is a valuable tool for data-driven decision-making to improve website quality [21].

The IPMA at the construct level aims to identify the variables that contribute most significantly to user satisfaction and to gauge the performance magnitude of each variable in the research model. This approach not only shows the extent to which a variable affects the dependent variable but also provides a strategic foundation for decision-making. In this study, the IPMA results were utilized to determine improvement priorities in the dimensions of usability, information quality, and service interaction quality, particularly for variables with high importance but suboptimal performance, so that the website administrators of the Faculty of Animal Science at the University of Papua can allocate resources more effectively and strategically.

*Table 9 Results of the analysis of importance and performance values at the variable level*

| Variable | Importance Construct | Performance Construct |
|---|---|---|
| Information Quality | 0.157 | 60.723 |
| Service Interaction Quality | 0.119 | 65.826 |
| Usability | 0.343 | 59.437 |
| Average | 0.206 | 61.995 |

Referring to Table 9, the average score for the importance dimension was 0.206, while the mean value for the performance dimension was 61.995. In the IPMA interpretation, variables with values above the mean are

categorized as having a high level of importance or performance, while values below the mean indicate a relatively lower level. This result aligns with the previous research, which states that the mean value can be used as a cutoff point for classifying importance and performance levels in mapping-based analysis [19].

Moreover, these values of importance and performance serve as the foundation for categorizing variables into four strategic quadrants. Quadrant I (top left) signifies variables that have low importance but high performance, which may lead to an excessive allocation of resources. Quadrant II (top right) includes variables that possess both high importance and high performance, and therefore, should be preserved. Quadrant III (bottom left) reflects variables with low importance and low performance, categorizing them as low priority. In contrast, Quadrant IV (bottom right) highlights variables with high importance but low performance, necessitating significant focus and prioritization in efforts to enhance website quality.

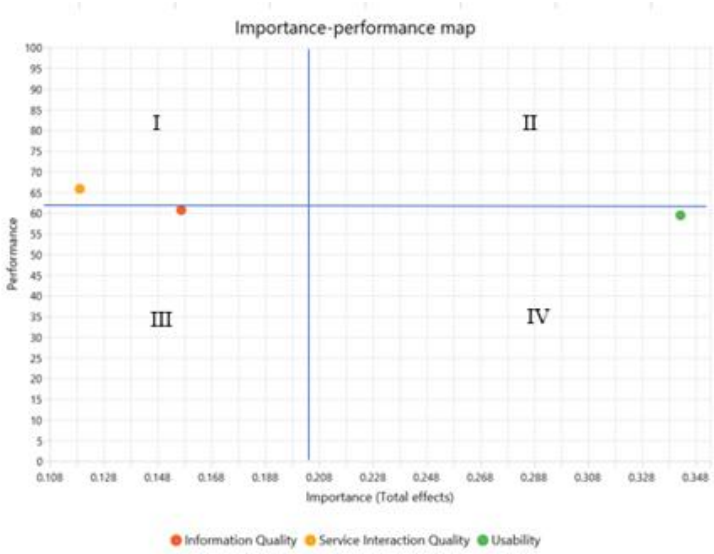


*Figure 3 IPMA Construct Results*

The results of the IPMA, which plots the three main variables of usability, information quality, and service interaction quality against the variable of user satisfaction based on importance and performance values, are divided into four strategic quadrants, as presented in Figure 3. The results indicate that usability is positioned in Quadrant IV (high importance, low performance), which means that this factor has the biggest impact on user satisfaction but that its performance is still poor, giving it the highest importance for improvement, especially in terms of navigation, interface design, and access speed [12]. Meanwhile, Quadrant I (low importance, high performance) represents the quality of service interaction, suggesting that its performance is already high and should be sustained. Regarding the quality of the information, It is categorized in Quadrant III (low importance, low performance), which means that its impact and performance are still poor and need to be improved, especially in terms of the completeness, timeliness, and presentation of the data. In general, measures to enhance website quality should prioritize usability as the main focus without disregarding other aspects.

In order to identify particular elements within each construct that have a significant effect on user satisfaction, Importance-Performance Map Analysis (IPMA) was carried out at the indicator level. This method, which simultaneously assesses the significance and performance of each indicator, provides a foundation for identifying more specific improvement priorities. Indicators with high importance but low performance are considered the primary priorities for quality improvement. To identify areas requiring enhancement, such as navigation convenience, information clarity, and service responsiveness, this study evaluated within the dimensions of usability, information quality, and service interaction quality. As a result, IPMA at the indicator level provides a more granular and practical understanding for the managers of the

Faculty of Animal Science website at the University of Papua in developing effective and efficient strategies to improve website service quality.

*Table 10 Results of the analysis of importance and performance values at the indicator level*

| Variable | Indicator | Importance Construct | Performance Construct |
|---|---|---|---|
| Information Quality | IQ1 | 0.044 | 68.636 |
| | IQ2 | 0.046 | 60.606 |
| | IQ4 | 0.035 | 59.394 |
| | IQ5 | 0.031 | 56.970 |
| | IQ6 | 0.042 | 57.273 |
| Service Interaction Quality | SIQ1 | 0.027 | 67.500 |
| | SIQ2 | 0.022 | 65.682 |
| | SIQ3 | 0.027 | 67.500 |
| | SIQ4 | 0.027 | 64.545 |
| | SIQ5 | 0.023 | 65.909 |
| | SIQ6 | 0.021 | 62.955 |
| Usability | U1 | 0.102 | 51.212 |
| | U2 | 0.134 | 66.591 |
| | U3 | 0.094 | 52.727 |
| | U5 | 0.095 | 65.909 |
| Average | | 0.051 | 62.227 |

Referring to Table 10, the mean value for the importance indicator is 0.051, while the average value for the performance indicator is 62.227. These mean values are then used as the basis for visualizing the IPMA at the indicator level [13], utilizing horizontal and vertical lines as the boundaries for dividing the quadrants. This mapping aims to identify the relative position of each indicator within each construct namely, usability, information quality, and service interaction quality based on their levels of importance and performance in influencing user satisfaction. Through this approach, it is possible to identify the indicators that should be prioritized for improvement, particularly those with high importance but low performance, so that they can become the primary focus in efforts to enhance website quality.

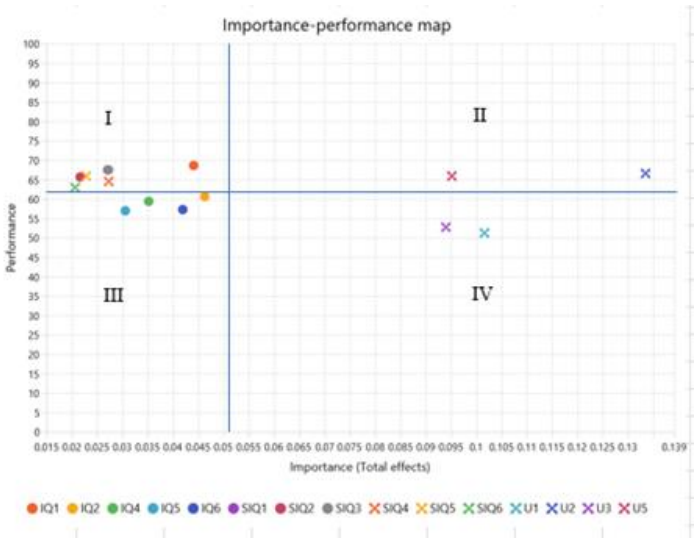


*Figure 4 IPMA Results for Indicators*

As shown in Figure 4, the results of the IPMA at the indicator level show that each indicator within the constructs of usability, information quality, and service interaction quality is distributed across four strategic

quadrants, providing a direction for prioritizing improvements to user satisfaction. Indicators in Quadrant I (low importance – high performance) include most of the service interaction quality (SIQ2–SIQ6) and IQ1, which demonstrate good performance but have a low contribution and thus can be maintained. Quadrant II (high importance – high performance) includes usability indicators (U2 and U5) that hold a vital role in improving user satisfaction and require consistent maintenance. Quadrant III (low importance – low performance) includes information quality indicators (IQ2, IQ4, IQ5, IQ6) as well as several usability indicators, which show low contribution and performance and thus require gradual improvement. Meanwhile, Quadrant IV (high importance – low performance) includes indicators U1 and U3 as well as several service interaction quality indicators, which exhibit high impact but insufficient performance, thereby becoming the primary priorities for improvement, especially regarding user friendliness, navigation, and service interaction. Overall, the IPMA results serve as the basis for determining website development priorities, with a primary focus on indicators in Quadrant IV while maintaining the performance of indicators in Quadrants I and II.

Among the indicators in Quadrant IV, U1 and U3 emerged as the most critical priorities because they demonstrated relatively high importance but low performance scores. Indicator U1 reflects the ease of website use and navigation, while U3 relates to the clarity of interaction and accessibility of website features. The low performance of these indicators suggests that users still experience difficulties in accessing information efficiently and interacting with the website interface. Therefore, several improvements are recommended for the website administrators of the Faculty of Animal Science at the University of Papua, including simplifying the website navigation structure, reorganizing the menu structure, optimizing mobile responsiveness, improving page loading speed, and enhancing the website interface design to facilitate easier access to academic information. In addition, implementing clearer categorization of academic services and providing a search feature may further improve user convenience and overall website usability.

## 4. Conclusions and Future Works

This research utilized the WebQual 4.0 methodology to evaluate the usability, information quality, and service interaction quality of the Faculty of Animal Science website at the University of Papua. The study also integrated the PLS-SEM approach and IPMA to examine the impact of these dimensions on user satisfaction. The results show that all instruments satisfied the criteria for validity and reliability. However, usability was the only variable that had a positive and significant effect on user satisfaction, while information quality and service interaction quality did not have significant effects on user satisfaction. The model's explanatory power falls within the weak to moderate category, with an R-squared ($R^2$) value of 0.293, indicating that user satisfaction may also be affected by other variables beyond the current research model. Furthermore, the $Q^2$predict value of 0.229 indicates that the model has predictive relevance, while the $f^2$ analysis reveals that usability contributes the most to user satisfaction compared with the other variables, although the effect size remains within the small category. In theory, this study contributes to the development of research on website quality evaluation through the integration of WebQual 4.0, PLS-SEM, and IPMA in the context of higher education websites, specifically at the Faculty of Animal Science, University of Papua. The study's limitations include the relatively low $R^2$ value, the limited number of variables included in the model, the narrow research scope focusing on a single institutional website, and the potential for respondent subjectivity bias. In addition, the respondent profile was dominated by male students from the Bachelor of Animal Science program, which might restrict the applicability of the results to different user categories, such as lecturers and educational staff.

Accordingly, future studies should include additional factors, such as user experience, trust, and perceived usefulness, to improve the model's explanatory capability. Future study should also involve a more balanced composition of respondents across gender, study programs, and user groups to obtain more representative findings. Furthermore, the application of mixed-method approaches and qualitative analysis is recommended to obtain more comprehensive insights into user experiences, particularly concerning usability indicators that demonstrate high importance but low performance, such as ease of navigation and website interaction.

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