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From Usability to Strategy: Enhancing Higher Education Website Quality through a Data-Driven Evaluation Using WebQual 4.0 and Importance-Performance Analysis

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ABSTRACT

In the era of digital transformation, academic websites play a crucial role in facilitating communication, supporting academic functions, and promoting institutional transparency. This study assesses the quality of a faculty website at a public university in Surabaya, East Java, Indonesia, from the users' perspective. Utilizing the WebQual 4.0 framework, the research evaluates three key dimensions—usability, information quality, and interaction quality—to determine how effectively the website supports academic activities. To better prioritize areas for improvement, the study incorporates Importance-Performance Analysis (IPA), which helps identify website attributes that are both important to users and currently underperforming. The findings provide an overview of users' perceptions of website effectiveness, highlight aspects that require strategic focus, and offer direction for future enhancements. This research adds to the body of knowledge on digital service quality in higher education by presenting a combined methodological approach that emphasizes user experience. The results offer practical recommendations for university administrators, web developers, and IT teams in optimizing academic websites to better support teaching, learning, and accreditation processes. The study underscores the significance of user-centered design in improving digital services and institutional performance within the higher education context.

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1. Introduction

In the digital transformation era, institutional websites play a vital role in facilitating academic communication, administrative services, and stakeholder engagement in higher education. Empirical studies consistently demonstrate that website quality significantly influences user satisfaction, trust, and continued use—especially in academic settings [1]. University websites serve as the primary digital touchpoint for students, prospective students, faculty members, and external stakeholders, offering access to academic calendars, publication records, examination schedules, downloadable templates, and other essential academic resources.

Beyond daily academic functions, institutional websites have become instrumental in supporting higher education accreditation processes. These platforms not only present accreditation status and documentation but also act as portals for data access, enhance transparency, and streamline communication with external assessors. In Indonesia, many universities utilize systems such as SAPTO (Sistem Akreditasi Perguruan Tinggi Online) to manage and submit accreditation documentation via their institutional websites. Furthermore, websites are increasingly integrated with e-learning systems and Learning Management Systems (LMS), which support accreditation through enhanced data tracking, content delivery, and performance reporting.

Previous research has highlighted multiple frameworks to evaluate website quality. These include usability metrics such as the System Usability Scale (SUS), service quality models like SERVQUAL and E-GovQual, and more specialized frameworks such as WebQual. The WebQual model, developed by Barnes and Vidgen, has evolved into WebQual 4.0, incorporating three key dimensions: usability, information quality, and interaction quality [2]. This model has gained wide acceptance in both commercial and academic website assessments due to its robustness and focus on end-user perception.

Recent studies in Indonesian higher education have applied WebQual 4.0 to evaluate institutional websites. For instance, [3] integrated VISAWI to assess visual aesthetics alongside traditional WebQual dimensions, emphasizing the growing importance of design in digital academic services. Further combined WebQual 4.0 with Importance-Performance Analysis (IPA) to identify service gaps and improvement priorities [4]. This study focuses on evaluating the quality of a faculty website at a public university located in Surabaya, East Java, Indonesia. The faculty under study offers academic programs at undergraduate, graduate, and doctoral levels, serving a diverse academic population. The study employs the WebQual 4.0 framework to assess how the website supports academic activities from the user's perspective and identifies which quality dimensions should be prioritized for improvement.

Based on the context above, the research seeks to address the following questions:

RQ1: How do users perceive the quality of the faculty website in supporting academic activities?

RQ2: What is the priority ranking of the WebQual variables based on user evaluation?

The primary objective of this study is to assess the quality of a faculty website at a public university located in Surabaya, East Java, Indonesia, based on user perceptions. The evaluation is grounded in the WebQual 4.0 framework, which encompasses three essential dimensions: usability, information quality, and interaction quality. These dimensions reflect how effectively the website delivers functionality, provides accurate and relevant information, and facilitates user interaction. In addition to measuring website quality, this study seeks to determine the priority ranking of quality attributes through the application of the Importance-Performance Analysis (IPA) method. By identifying which aspects are considered both important and underperforming from the users' perspective, this approach aims to guide website improvement efforts in a more focused and strategic manner.

This study investigates the quality of an academic website managed by a faculty at a university in Surabaya, East Java, Indonesia—an area that has received limited scholarly attention, particularly in terms of its function in supporting academic activities. The theoretical contribution of this research lies in its effort to prioritize WebQual 4.0 variables from the user's perspective, thereby identifying which aspects are most critical to enhancing website quality in the context of higher education. The expected outcomes of this study are twofold: first, to assess the overall quality of the faculty's website; and second, to provide evidence-based recommendations by identifying key areas for improvement and establishing a priority framework. These findings aim to serve as a practical guide for optimizing academic website performance to better support learning, teaching, and administrative functions.

This study holds both theoretical and practical significance. From a theoretical standpoint, it contributes to the growing body of literature on digital service quality within higher education institutions, particularly in the Indonesian context. The application of WebQual 4.0, combined with the IPA method, demonstrates a comprehensive approach to understanding user experiences and expectations related to institutional websites. The findings of this study are anticipated to provide a strong foundation for future academic research in the fields of user-centered design and digital performance evaluation, particularly within the academic sector. From a theoretical perspective, the research contributes to the growing body of knowledge on how digital platforms impact user experience and institutional effectiveness. On a practical level, the study offers valuable insights for university administrators, web developers, and IT support teams by identifying key aspects of the website that influence user satisfaction.

The user-driven evaluation approach helps pinpoint specific areas in need of improvement, allowing stakeholders to allocate time, budget, and technical resources more strategically. This not only enhances the functionality and usability of the website but also ensures that user needs are prioritized in future development efforts.

Furthermore, enhancing the quality of academic websites is essential not only for supporting daily operations—such as online registration, e-learning, and academic information dissemination—but also for advancing broader institutional goals. These include improving transparency, achieving accreditation readiness, and fostering greater engagement with students, faculty, and external stakeholders. In today's digital era, a reliable and user-friendly academic website is a crucial asset that reflects the professionalism and credibility of an institution.

1.1. WebQual 4.0 and Higher Education

WebQual 4.0, a sophisticated evolution from earlier iterations and insights from the SERVQUAL model, offers a multifaceted framework for discerning website quality. Developed by Barnes and Vidgen, it typically delineates three fundamental dimensions. The first, Usability, delves into the ease of navigation, clarity of layout, and overall user-friendliness, encompassing aspects vital for seamless interaction and efficient information retrieval. The second, Information Quality, scrutinizes the very content residing on the website, demanding accuracy, relevance, completeness, and timeliness, thereby ensuring the integrity and utility of the presented data. Finally, Service Interaction Quality assesses the nature of the interaction and service rendered by the website itself, encompassing responsiveness, personalization, and the crucial element of security. The versatility of WebQual 4.0 is evident in its widespread adoption across various sectors. For instance, in their seminal work published in Information & Management, employed WebQual 4.0 to dissect the quality of e-commerce platforms, concluding that each of its three dimensions significantly influenced both user satisfaction and their inclination to continue engaging with the site. Similarly [5] writing in the Journal of Computer Information Systems, applied this very framework to government websites, underscoring the paramount importance of information quality in elevating citizen satisfaction with digital public services. These investigations collectively affirm WebQual 4.0's capacity to furnish a holistic lens through which to comprehend and enhance website quality, irrespective of its specific purpose.

Within the realm of higher education, university websites function as indispensable gateways for a multitude of stakeholders, ranging from prospective and current students to faculty, staff, and the broader community. These digital portals are instrumental in disseminating vital information, streamlining administrative functions, and frequently serving as the primary conduit for online learning experiences. Consequently, the intrinsic quality of these websites directly influences an institution's standing, accessibility, and the overarching user journey. In this context, WebQual 4.0 has proven to be an invaluable analytical tool. Research consistently demonstrates that superior university websites contribute significantly to robust student recruitment, elevated student satisfaction, and optimized administrative processes. The perceived quality of the website, particularly its information and usability aspects, played a consequential role in students' decisions to pursue enrollment at a given institution, thereby emphasizing the strategic imperative of optimizing university digital presences. More recently, [6] in a study, deployed WebQual 4.0 to scrutinize the website quality of a prominent public university in Indonesia. Their conclusions underscored that all three dimensions of WebQual 4.0 critically influenced user satisfaction, with information quality emerging as the most significant driver for students seeking academic details and essential administrative support. Collectively, these studies unequivocally highlight WebQual 4.0's pivotal role in generating actionable insights for enhancing the online presence and service delivery capabilities of higher education institutions. In essence, WebQual 4.0 stands as a comprehensive and adaptable framework for assessing website quality, and its application, both broadly and specifically within the higher education sector, has consistently yielded invaluable data regarding user perceptions and satisfaction, cementing its status as an indispensable instrument for researchers and practitioners alike.

1.2. Importance Performance Analysis and WebQual 4.0

WebQual 4.0 on its own does not provide a strategic prioritization map that helps website managers identify which elements require urgent attention. To address this limitation, the Importance–Performance Analysis (IPA) method serves as a complementary approach by mapping website attributes across four quadrants based on two axes: importance and performance. This visual framework enables clear identification of attributes that fall into quadrant I (high importance, low performance), signaling urgent areas for improvement. For example [7] in their evaluation of IDX.co.id, showed that while WebQual scores suggested good performance, IPA highlighted weaknesses in navigation and credibility that needed urgent enhancement. Similarly, the study [8] on Lazada's e-commerce platform demonstrated that dimensions such as facilities, navigation, and content significantly influenced user satisfaction, with IPA identifying specific areas that required immediate managerial focus.

The synergy between WebQual 4.0 and IPA offers a holistic approach to evaluating and improving website quality. WebQual 4.0 provides quantitative metrics regarding user perceptions, while IPA facilitates

data-driven strategic decision-making through prioritization. Previous studies have demonstrated the effectiveness of this integration. For instance, [9] emphasized that combining WebQual with IPA offers better diagnostics for performance gaps across website elements. Also noted that IPA, [10] helped isolate attributes within the "high importance but low performance" quadrant, which would not be easily identifiable through WebQual alone. Likewise, [7] concluded that IPA strengthened WebQual's diagnostic power by emphasizing critical website features needing improvement. This combination allows organizations to make informed, targeted enhancements to their digital platforms, grounded in empirical user perception data.

In the context of this study, the integrated approach of WebQual 4.0 and IPA is applied to assess the quality of a faculty website at a university located in Surabaya, East Java, Indonesia. The evaluation involves measuring user perceptions across usability, information, and interaction dimensions, followed by IPA mapping to identify which website attributes should be prioritized for improvement. This research is expected to contribute theoretically to the literature on website evaluation and practically to digital managers and academic institutions seeking precise strategies to enhance the effectiveness and user satisfaction of institutional websites.

2. Research Method

This study employs a quantitative descriptive approach to evaluate the quality of a faculty website at a university in Surabaya, Indonesia, by examining users' perceptions and expectations. The main objective is to assess how the website supports academic activities and to determine which quality indicators should be prioritized for improvement. Data were collected through an online questionnaire distributed to a sample of respondents who regularly use the faculty website. The study collected 72 student users from 3 different program studies, of the selected faculty. These participants were invited to share their experiences by completing the questionnaire. The questionnaire was constructed based on the WebQual 4.0 framework, which includes three primary dimensions: Usability, Information Quality, and Service Interaction Quality. Each indicator was rated using a 5-point Likert scale, ranging from 1 ("strongly disagree") to 5 ("strongly agree"). The complete list of questionnaire items.

The questionnaire consists of 23 questions about the expectation and 23 questions about perception of the website, and was distributed digitally to efficiently reach a broader group of respondents. The researcher aimed to gather at least 72 valid entries from the responses collected to provide a sufficient basis for data analysis. This analysis focuses on identifying strengths and weaknesses across the WebQual indicators of users' experiences with the faculty website. To ensure the reliability and validity of the instrument, the data were tested using SPSS software. Pearson correlation analysis was conducted to assess the validity of each item, ensuring that all indicators were significantly related to their respective constructs. Cronbach's Alpha was used to measure internal consistency, with values above 0.70 considered acceptable. The questionnaire can be seen in Table 1.

Table 1. Indicators of the Questionnaire

No.	Indicators	Dimension
U1	I find the website easy to operate.	Usability
U2	I find it easy to interact with the website to support current academic services	Usability
U3	I find it easy to navigate the menus on the website.	Usability
U4	I find the website easy to access and use for academic services	Usability
U5	I find the website visually appealing	Usability
U6	I believe the website's design is appropriate for an educational institution.	Usability
U7	I believe the website communicates competencies related to the field of education	Usability
U8	I feel the website provides a positive experience in terms of academic services.	Usability
U9	I feel the website provides accurate information in the academic service process.	Usability
U10	I feel the website provides reliable information in the academic service process	Usability
IQ11	I feel the academic service information provided by the website is timely.	Information Quality
IQ12	I feel the website provides relevant information to support academic services.	Information Quality
IQ13	I feel the website provides easily understandable information to support academic services.	Information Quality
IQ14	I feel the information provided by the website is sufficiently detailed to support academic services.	Information Quality
IQ15	I feel the information provided by the website uses an appropriate format.	Information Quality
IQ16	I feel the website has a good reputation, especially in supporting academic services.	Information Quality
SI17	I feel the website is secure enough to complete transactions in support of	Service Interaction

	academic services.	
SI18	I feel my data is safe when accessing the website.	Service Interaction
SI19	I feel the website is visually engaging and captures my attention.	Service Interaction
SI20	I feel the website fosters a sense of community.	Service Interaction
SI21	I feel the academic service communication on the website is adequate.	Service Interaction
SI22	I feel the website makes it easy to communicate between lecturers and students.	Service Interaction
SI23	Overall, I am satisfied with the performance of the website.	Service Interaction

The study then applied the Importance–Performance Analysis (IPA) method, which is effective for identifying service improvement priorities based on the gap between perceived performance and importance. This technique calculates mean scores for each indicator's importance and performance, and then plots the indicators on a Cartesian diagram divided into four quadrants:

1. Concentrate Here (high importance, low performance),
2. Keep Up the Good Work (high importance, high performance),
3. Low Priority (low importance, low performance), and
4. Possible Overkill (low importance, high performance).

The results of this analysis allow decision-makers to focus on improving areas that fall into the "Concentrate Here" quadrant. The IPA method has been widely used in web quality studies within higher education settings and has proven effective in identifying critical service gaps, as demonstrated in previous research [11], [12]. The findings from the IPA were interpreted and synthesized to generate practical recommendations, aiming to enhance the role of the website in supporting academic services at the faculty.

3. Result and Discussion

3.1. Statisctic Analysis

The survey was conducted by collecting responses from students of a university in Surabaya, Indonesia, selected randomly through **purposive sampling** using an online form. Subsequently, a **normality assumption test** will be carried out as a prerequisite for performing a **mean difference test** between **expectations** and **perceptions**. The hypothesis is defined as follows:

H_1: The data follow a normal distribution.

H_0: The data do not follow a normal distribution.

Table 2. One Sample Kolmogorov-Smirnov Test

		Perception	Expectation
N		22	22
Normal Parameters[a,b]	Mean	4.0455	4.4893
	Std. Deviation	.07364	.08431
Most Extreme Differences	Absolute	.107	.160
	Positive	.082	.120
	Negative	-.107	-.160
Test Statistic		.107	.160
Asymp. Sig. (2-tailed)		.200[c,d]	.146[c]

[a] Test distribution is Normal.
[b] Calculated from data.
[c] Lilliefors Significance Correction.
[d] This is a lower bound of the true significance

Based on the results in Table 2., using a 5% significance level, the table shows that the asymptotic significance (p-value) is less than 0.05. herefore, it can be concluded that the hypothesis test result is to reject H_1, meaning that the data do not follow a normal distribution. The Wilcoxon Signed-Rank Test serves as an alternative method to the Paired T-Test for analyzing two related samples. If the sample data meet the assumption of normal distribution, a parametric test such as the Paired T-Test can be applied. However, if the normality assumption is not met, a non-parametric approach such as the Wilcoxon Signed-Rank Test is more appropriate. Given that the normality test indicated the data do not follow a normal distribution, this study employs the non-parametric Wilcoxon test for further analysis.

Table 3. Ranks

		N	Mean Rank	Sum of Ranks
Expectation - Perception	Negative Ranks	0[a]	.00	.00
	Positive Ranks	22[b]	11.50	253.00
	Ties	0[c]	15.3	

[a] Expectation < Perception
[b] Expectation > Perception
[c] Expectation = Perception

Based on the results of the Wilcoxon Signed-Rank in Table 3., Test using SPSS for Windows version 21, the Asymp. Sig. (2-tailed) The value was found to be less than 0.05. This result indicates that the test is statistically significant at the 5% level, and therefore, the decision is to reject the null hypothesis (H_0). The hypotheses tested were as follows:

- H_0: There is no difference between expectation and perception scores.
- H_1: There is a difference between expectation and perception scores.

Thus, it can be concluded that there is a significant difference between students' expectations and their actual experiences regarding the use of the faculty's website. This finding suggests that the website is not yet fully aligned with user expectations in several key areas.

The results of this test reinforce the importance of identifying and addressing specific gaps in website performance, particularly in areas perceived as highly important by users. These discrepancies between expectations and reality may negatively impact user satisfaction and perceived service quality. Therefore, targeted improvements based on this gap analysis are essential to enhance the effectiveness of digital academic services provided by the institution.

Table 4. Statistics Test[a]

	Expectation - Perception
Z	-4.109[b]
Asymp. Sig. (2-tailed)	.000

[a] Wilcoxon Signed Ranks Test
[b] Based on negative ranks.

3.2. IPA Quadrant Analysis

Quadrant Analysis, also known as Importance-Performance Analysis (IPA), is a descriptive analytical technique used to identify key performance attributes that an organization must deliver to satisfy its service users. This technique helps prioritize areas for improvement by comparing the perceived importance of specific service attributes against their actual performance. Typically, the IPA framework is visualized using a two-dimensional Cartesian diagram divided into four quadrants, each representing a strategic priority [13] which can be seen in Figure 1. The IPA method has been widely applied in service quality assessments across various fields, including education, tourism, and e-government [14], [15].

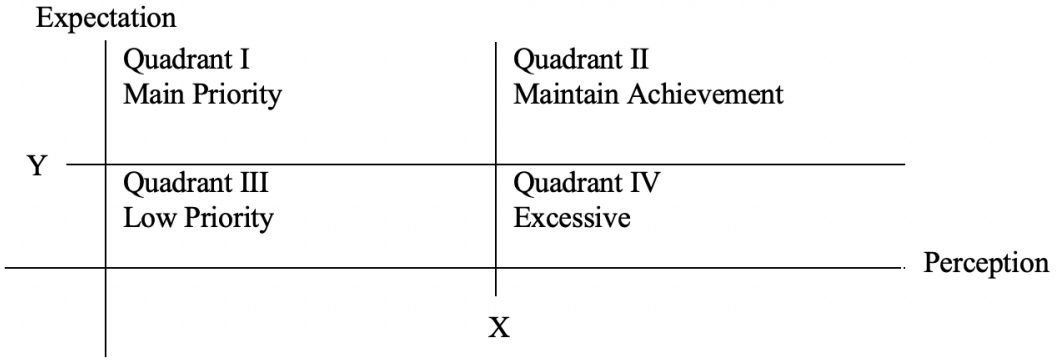

Figure 1. Cartesian Diagram

The interpretation of each quadrant in Figure 1. can be described as follows:

a. Quadrant I – Concentrate Here

This quadrant represents attributes that are perceived as highly important by users but are currently being performed poorly. These discrepancies indicate areas where user expectations are not being met, resulting in dissatisfaction. Items in this quadrant should receive immediate and focused attention for improvement [13].

b. Quadrant II – Keep Up the Good Work

Attributes in this quadrant are considered important and are also being performed well. These are areas of strength for the organization and should be maintained. Continued emphasis in these areas can enhance user satisfaction and reinforce a positive user experience [14].

c. Quadrant III – Low Priority

This quadrant includes attributes that are not very important to users and are also performed at a low level. Because these aspects do not significantly influence satisfaction, they are not considered critical and require little to no improvement efforts.

d. Quadrant IV – Possible Overkill

This quadrant shows attributes that are not considered important by users but are being delivered at a high level. While performance is good, these may reflect areas of over-investment where resources could be reallocated more strategically.

Based on this quadrant interpretation, the mean scores of expectation and perception for each indicator are plotted onto a Cartesian diagram, helping to visualize the distribution of performance in relation to importance. This enables institutions to prioritize resources effectively and design targeted service improvements [15].

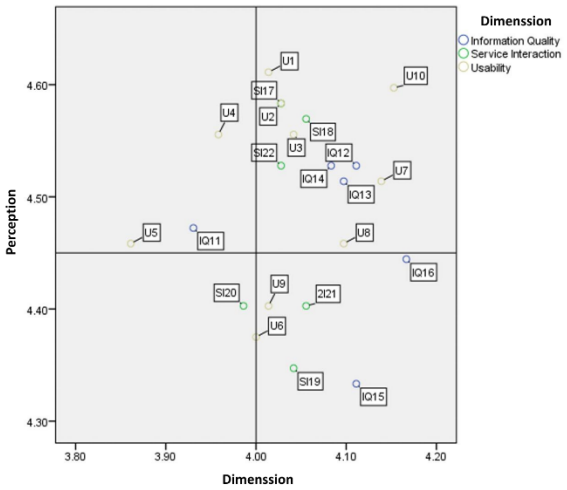

Figure 2. Cartesian Diagram Result

Based on the Cartesian diagram in Figure 2., the following findings are derived from each quadrant of the Importance-Performance Analysis (IPA):

a. Quadrant I – High Priority for Improvement

This quadrant identifies three service indicators that are considered highly important by the respondents, yet the faculty has not fulfilled them in line with user expectations, leading to dissatisfaction:

1. U5 (Usability): The website lacks a visually appealing design.
2. U4 (Usability): Ease of access and navigation for academic services is perceived as essential but insufficiently implemented.
3. IQ11 (Information Quality): The timeliness of academic service information provided on the website is inadequate.

These indicators are critical and must be prioritized by management to improve overall user satisfaction. Indicators in Quadrant I highlight the gap between expectation and performance in three key areas: website visual appeal (U5), ease of access and use for academic services (U4), and timeliness of academic service information (IQ11). The presence of these indicators in the top-left quadrant of the Cartesian diagram reveals that although these features are crucial to users, they are currently underperforming. This misalignment between user expectations and website functionality is consistent with earlier findings [16], who emphasized that usability and information timeliness are significant predictors of user satisfaction in educational websites.

b. Quadrant II – Maintain Performance
Quadrant II comprises twelve indicators that are deemed important and are already being performed effectively by the faculty. These indicators contribute significantly to user satisfaction and should be maintained or enhanced. They include:

1. U1: Ease of operating the faculty website.
2. U2: User-friendly interaction for supporting academic services.
3. U3: Simple navigation through menu features.
4. U7: Website content conveys educational competencies.
5. U8: Positive user experiences with academic services.
6. U10: Trustworthy information for academic transactions.
7. IQ12: Relevant academic information provided by the website.
8. IQ13: Clarity and comprehensibility of information.
9. IQ14: Adequate detail in supporting academic functions.
10. SI17: Security in transactions via the website.
11. SI18: Data security during website access.
12. SI22: Effective communication facilitation between lecturers and students.

To maintain satisfaction levels, the current performance of these indicators should be preserved, and further optimization should be pursued where feasible. Conversely, Quadrant II represents areas where user expectations are met or even exceeded. These twelve indicators demonstrate the faculty's competence in delivering accessible, secure, and reliable online academic services. Features such as data security (SI18), system usability (U1, U2, U3), and quality of academic information (IQ12–IQ14) reflect positively on the institution’s digital strategy. These findings reinforce prior studies that emphasize the importance of maintaining consistent service quality in digital platforms to ensure user loyalty and satisfaction [16], [17].

c. Quadrant III – Low Priority
This quadrant contains a single indicator that respondents did not consider highly important. However, the faculty has adequately implemented it:

1. SI20 (Service Interaction): The sense of community or inclusiveness offered by the website.

Although well-executed, this indicator does not significantly influence satisfaction and thus does not require immediate attention. Quadrant III includes one low-priority indicator (SI20) related to the sense of community. Although students do not place high value on this aspect, its successful implementation shows the institution's broader digital inclusion efforts. This aligns with the WebQual model, which acknowledges that not all dimensions are weighted equally by all users and that perceived value may vary across services.

d. Quadrant IV – Possible Overinvestment
Quadrant IV includes six indicators that are not considered important by respondents, but the faculty has delivered them effectively. These may represent areas of overperformance where resources could be reallocated. The indicators are:

1. U6: Alignment of website design with educational norms.
2. U9: Accuracy of academic service information.
3. IQ15: Appropriateness of content formatting.
4. IQ16: Website reputation in supporting academic services.
5. SI19: Attractiveness and attention-grabbing presentation of content.
6. SI21: Quality of academic service communication via the website.

Quadrant IV, on the other hand, shows indicators that are not considered highly important by users but have been well executed by the faculty. These include aspects such as design conformity (U6), information format (IQ15), and communication style (SI21). Although well-managed, the institution may consider reallocating resources to higher-priority features identified in Quadrant I. Overinvestment in less valued services may not yield proportional improvements in satisfaction.

3.3. RQ1: How do users perceive the quality of the faculty website in supporting academic activities?

The results of this study offer significant insights into the quality of website services as perceived by students at a faculty within a university in Surabaya, Indonesia. Based on the Importance-Performance Analysis (IPA), several critical indicators have been identified that influence user satisfaction and should guide strategic improvements in digital academic services.

Users perceive the faculty website as functionally useful and somewhat user-friendly, particularly in delivering basic information and academic services such as announcements, schedules, and academic regulations. The results of the WebQual 4.0 and Importance Performance Analysis (IPA) revealed that while some dimensions, such as usability and service interaction quality, were rated relatively high, others, including information quality and visual appeal, did not fully meet user expectations. This indicates that although the website serves its basic academic functions, there is a perceived gap in quality, especially in the delivery of clear, relevant, and visually engaging academic content.

The IPA mapping also showed that several key attributes fell into Quadrant II (Concentrate Here), suggesting that users consider those features important, yet they are currently underperforming. These include ease of finding academic information, responsiveness of links, and accessibility of digital academic services. Therefore, while the website is functional, users expect a higher standard of performance and interaction to better support teaching, learning, and administrative processes.

3.4. RQ2: What is the priority ranking of the WebQual variables based on user evaluation?

Based on the user evaluations analyzed through the Importance Performance Analysis (IPA), the perception of WebQual variables reveals a clear prioritization for strategic improvement of the faculty website. Among the three main WebQual dimensions—**usability**, **information quality**, and **interaction quality**—the variables that fall into the "Concentrate Here" quadrant (Quadrant II) are those considered **most important by users but currently underperforming**. This indicates that users expect better performance in these areas, making them the **highest priority for improvement**.

Specifically, **information quality** emerges as a critical factor. Users find that the accuracy, relevance, and timeliness of academic content presented on the website are lacking. Similarly, the **usability aspect**, such as intuitive navigation, ease of finding academic resources, and logical page structure, requires attention. In addition, elements of **interaction quality**, including system responsiveness and the presence of helpful error messages or feedback mechanisms, are also seen as insufficient, further emphasizing the need for improvement in user support features.

Meanwhile, variables located in the "Keep Up the Good Work" quadrant (Quadrant I) are perceived as both important and currently performing well. These include aspects such as **website accessibility and loading speed**, which users have evaluated positively. Maintaining the performance of these variables is essential to preserve user satisfaction.

On the other hand, some variables are placed in the "Low Priority" quadrant (Quadrant III), suggesting that these aspects are not considered crucial by users and currently do not exhibit significant performance issues. Features that fall into the "Possible Overkill" quadrant (Quadrant IV) indicate areas where performance is high, but user-perceived importance is low, potentially signaling the overuse of resources on less impactful features.

Furthermore, the results of the Wilcoxon Signed-Rank Test show a statistically significant difference between expectation and reality, confirming that users perceive a meaningful gap in service quality. This finding underscores the need for continual evaluation of digital academic services and supports the use of non-parametric statistical techniques in education technology research, particularly when assumptions of normality are violated [18]. In summary, the **priority ranking based on user evaluation places the highest emphasis on improving information quality and usability**. These improvements are expected to enhance user satisfaction and support academic activities more effectively. Addressing these gaps can guide the faculty in optimizing the website's role in academic support and contribute to institutional goals such as **study program development and accreditation success**.

Student satisfaction can be significantly improved by addressing the underperforming high-priority indicators in Quadrants I and II. These include enhancing the website's visual design, simplifying access and usage for academic services, and ensuring timely delivery of information. Integration of emerging technologies such as the metaverse can further enhance academic service experiences—for example, through interactive virtual consultation rooms, 3D real-time academic information centers or libraries, and virtual campus maps. Moreover, the visual and functional aspects of the website can be upgraded through a modern, responsive design with consistent color schemes, intuitive navigation, personalized student dashboards, and AI-based chatbots for real-time assistance. The inclusion of short videos, dynamic news formats, and interface options such as dark/light mode themes may also improve usability and appeal.

4. Conclusion

Based on the quadrant analysis, several insights can be drawn regarding the quality of the academic website at a faculty of a university in Surabaya, Indonesia.

Quadrant I revealed three critical indicators that were perceived as highly important by students but were underperforming, namely: the visual appeal of the website (U5), ease of access and use for academic services (U4), and the timeliness of academic service information (IQ11). These gaps indicate significant dissatisfaction and should be prioritized for immediate improvement.

Quadrant II consisted of twelve indicators that are both important and well-executed, contributing positively to user satisfaction. These include ease of website operation, effective navigation and interaction, reliability of information, data security, and smooth communication between lecturers and students. Maintaining and continuously optimizing these elements is essential for sustaining and enhancing user satisfaction.

Quadrant III contained only one indicator—sense of community (SI20)—which, while not deemed highly important, has been adequately delivered. As such, it requires no immediate attention. Quadrant IV included six indicators that were well-executed but not considered critical by users, such as educationally aligned design, relevant information, proper content formatting, academic service communication, and institutional reputation. These indicators may be deprioritized in future user experience enhancements.

This study highlights the critical role of aligning website performance with user expectations to enhance student satisfaction in the academic environment. The application of the WebQual 4.0 framework combined with the Importance Performance Analysis (IPA) has successfully identified priority areas for improvement, particularly in terms of usability and timeliness of academic information. The significant discrepancy found between students' expectations and their actual experience underscores the need for strategic enhancements in key areas such as visual appeal, ease of use, and real-time academic service information. Meanwhile, indicators in Quadrant II should be consistently maintained and optimized to preserve the high level of satisfaction already achieved. By implementing targeted strategies based on the IPA findings, the faculty can systematically improve the quality and functionality of its website. These improvements will not only enhance the digital academic experience for students but also contribute to the overall academic effectiveness of study programs. Furthermore, a responsive, user-centered website can strengthen the institution's digital service standards and play a supportive role in achieving better outcomes in institutional and program-level accreditation processes. In conclusion, a strategic approach to website service quality—guided by data-driven analysis—can serve as a catalyst for academic innovation, increased student engagement, and stronger program accountability in higher education

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