

Website Quality Analysis Using WebQual 4.0, Customer Satisfaction Index, and Importance Performance Analysis

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Abstrak

Perkembangan teknologi saat ini berkembang pesat dalam berbagai aspek kehidupan manusia tidak terkecuali pada bidang pendidikan seperti pembuatan sistem informasi akademik. Penelitian bertujuan untuk menganalisis kualitas layanan terhadap website SISAKTI-NG berdasarkan harapan pengguna dan kinerja website. Indikator pertanyaan dalam pembuatan kuesioner mengacu pada tiga dimensi yaitu: usability, information quality dan interaction quality pada Metode WebQual 4.0 dengan menyebarkan kuesioner kepada 100 responden. Analisis kualitas website menggunakan Metode Customer Satisfaction Index untuk menganalisis kepuasan terhadap layanan SISAKTI-NG dan Metode Importance Performance Analysis untuk menganalisis kualitas layanan SISAKTI-NG serta memperoleh indikator-indikator yang membutuhkan perbaikan dan dipertahankan berdasarkan persepsi dan harapan pengguna website. Hasil menunjukkan bahwa kepuasan pengguna website SISAKTI-NG sudah "PUAS" dengan persentase 73,88%. Hasil analisis IPA terdapat 2 item pertanyaan prioritas perbaikan dan 10 item pertanyaan yang perlu dipertahankan oleh pengelola website SISAKTI-NG. Rekomendasi diberikan kepada USDI UNUD berdasarkan indikator yang memerlukan perbaikan untuk meningkatkan kualitas layanan yang masih rendah.

Kata kunci: Customer Satisfaction Index, Importance Performance Analysis, Kepuasan Pengguna, Sistem Informasi Akademik, WebQual 4.0.

Abstract

The rapid evolution of technology impacts various facets of human life, notably in education, exemplified by the development of academic information systems like SISAKTI-NG. This study endeavors to assess the SISAKTI-NG website's service quality based on user expectations and website performance. Utilizing the WebQual 4.0 Method, questionnaires were distributed to 100 respondents, focusing on three dimensions: usability, information quality, and interaction quality. The analysis employed the Customer Satisfaction Index Method to gauge satisfaction and the Importance Performance Analysis Method to identify areas for improvement and maintenance, aligning with user perceptions. Results indicate that users are "SATISFIED" with the SISAKTI-NG website, registering a 73.88% satisfaction rate. The IPA analysis highlights two priority improvement areas and ten areas necessitating maintenance by the website's managers. Recommendations are provided to USDI UNUD to enhance service quality, addressing identified areas for improvement and ensuring a higher standard of user experience on the website.

Keywords : Academic Information System, Customer Satisfaction Index, Importance Performance Analysis, User Satisfaction, WebQual 4.0.

1. Introduction

The rapid development of technology has become a significant phenomenon in the modern era. Technological advances have reached an incredible level, changing the way we live, work and interact. Since practically all organizational business operations can be conducted through the use of information technology, particularly the internet, information

technology is becoming more and more vital in this digital age. The existence of a website is one use for the internet. A website is a system that presents information in various formats, such as text, audio, and others, and is kept on a server. It is beneficial for distributing information and is displayed as hypertext. Udayana University is one of the universities that utilize the website in delivering information. One of the Udayana University websites used by students in inputting participant credit units (SKP) is SISAKTI-NG.

The process of collecting participant credit units (SKP) has undergone significant changes thanks to technological developments. Initially, SKP collection was done manually, but then it was updated by utilizing technological advances. Each campus or university has a different website to facilitate the SKP collection process. Udayana University, for example, has an official website called www.imissu.unud.ac.id, which focuses on a feature called SISAKTI. Before the SISAKTI-NG website, students input SKP through the SISAKTI-NG website, where in 2023 the SISAKTI-NG website was no longer used in SKP input and changed its name to SISAKTI-NG. SISAKTI-NG stands for Sistem Satuan Kredit Partisipan Universitas Udayana, which is part of the Udayana University IMIISU website which aims to collect SKP from each student as a graduation requirement from Udayana University.

The use of the SISAKTI-NG website is very influential in inputting SKP. If users experience discomfort in using the SISAKTI-NG website, it can result in disruption in the SKP data collection process in SISAKTI-NG, which in turn can cause delays for students in achieving graduation. Therefore, it can be said that the SISAKTI-NG website has the potential for failure. Therefore, research is needed to analyze the quality aspects of the SISAKTI-NG website to ensure user comfort and needs can be met.

The quality of a website has a significant influence on the level of user satisfaction. The better the quality of a website, the more users will feel comfortable and happy when accessing it. The importance of measuring the quality of the SISAKTI-NG website is clear, considering that the website functions as an information resource on campus and is used to collect SKP from each Udayana University student as a graduation requirement. If the quality of the SISAKTI-NG website is inadequate, all user activities on the website will be disrupted and not run properly. Therefore, measuring the quality of the SISAKTI-NG website is an important step that needs to be taken so that the development of the website can meet the expectations of its users.

The WebQual 4.0 method offers a systematic approach to website quality evaluation by taking into account three main dimensions, namely Usability, Information Quality, and Service Interaction. Compared to previous research that using different evaluation frameworks, such as WebQual 3.0 or independently developed frameworks, WebQual 4.0 offers a more defined structure. The use of a data collection instrument in the form of a questionnaire with a Likert rating scale in WebQual 4.0 enables consistent data collection from users regarding their perceptions of website quality. Data analysis in WebQual 4.0 involves descriptive and inferential statistical techniques to interpret questionnaire results, allowing for more accurate identification of areas for improvement. As such, the use of the WebQual 4.0 method can provide a more structured and comprehensive approach to evaluating website quality compared to previous research.

Three dimensions are employed in the WebQual 4.0 method to evaluate a website's quality: usability, information quality, and interaction quality. The Customer Satisfaction Index (CSI) technique is also included in this study to gauge consumer happiness. Additionally, the Importance Performance Analysis (IPA) approach is used to determine what areas of website services need to be maintained and improved [1]. So as to produce a conclusion that the website has good quality. This approach has a number of benefits, including efficiency (not just in terms of the satisfaction index but also in terms of getting the information that has to be improved), simplicity and ease of use, as well as high scale sensitivity and reliability. The results of this study will produce an analysis of satisfaction with website services and recommendations that can be used as input or criticism and suggestions for evaluation on the development of the Udayana University SISAKTI-NG website.

2. Research Method / Proposed Method

2.1 Research Method

This research method is included in the descriptive research category using a quantitative approach. Descriptive research aims to present an in-depth understanding of

various aspects related to the phenomenon under study [2]. The quantitative technique, which is used to study populations and samples, is a research approach grounded on positivist philosophy. Because the research data in this method is numerical and is analyzed using statistics, it is referred to as a quantitative method [3].

2.2 Research Flow

The research stages contain the stages or overall description of the research conducted. The stages of the overall analysis are described in the form of a diagram of the research methodology carried out as follows.

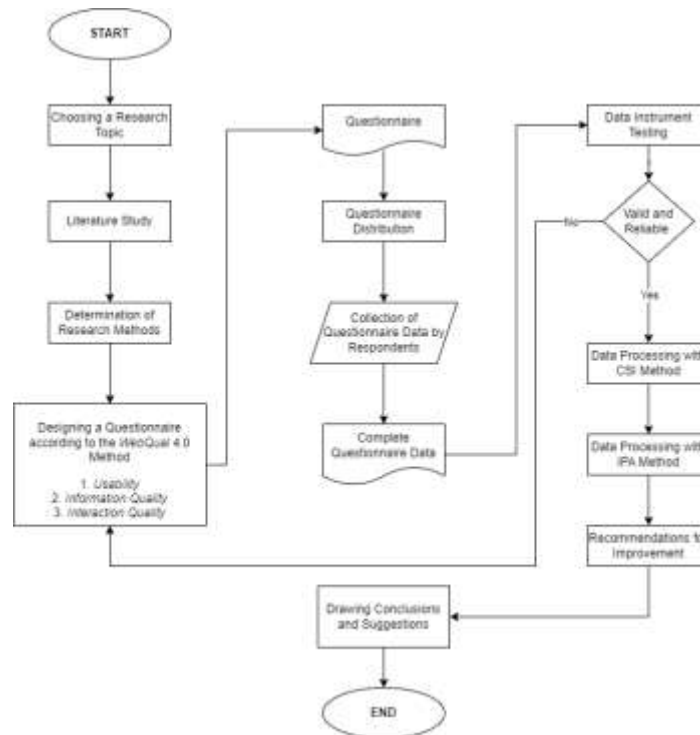


Figure 1. Research Flow.

2.3 Sample

The population of active users of the Udayana University SISAKTI-NG website was recorded at 18,125 during the last six months from March 2023 to August 2023. Based on the large number of users, the number of samples or respondents is determined using the slovin formula [5].

$$n = \frac{n}{1+N(e)^2}$$

$$n = \frac{18.125}{1 + 18.125(0.1)^2}$$

$$n = 99,4513$$

Based on calculations using the slovin formula, the number of samples obtained is 99.4513 or rounded up to 100 respondents.

3. Literature Study

Literature Review in analysis contribute to enriching research discussions and set it apart from current studies. This study uses a number of pertinent research references as a point of comparison.

3.1 Website

A website contains a set of information or pages that can be accessed via the internet, available to anyone who has an online connection to the internet. Advances in website development are occurring rapidly, and websites today serve a variety of functions, including marketing, promotion, business, personal blogs, communication tools, and entertainment. In addition, websites can be accessed by anyone. However, the disadvantage of using a website is that the products displayed and the intended market tend to be more segmented [6].

3.2 Service Quality

Service quality on websites is considered very significant because it has the potential to increase user interest and satisfaction. The WebQual Method is one technique used to gauge service quality based on user satisfaction. A technique for gauging the quality of websites based on user opinions is called WebQual. One of the extensions of the ServQual approach is the WebQual method, which is used to measure service quality. Three components make up WebQual 4.0, which is used to evaluate the level of service that a website offers: usability quality, information quality, and service interaction quality [7].

3.3 WebQual 4.0

A method called WebQual uses end-user opinions to gauge the quality of websites. In order to evaluate the level of service that a website offers, WebQual 4.0 comprises three components: usability quality, information quality, and service interaction quality. The three dimensions were developed into 22 questions as follows [8].

Table 1. WebQual 4.0 Indicator.

No	Category	WebQual 4.0 Questions
1	Usability	I find the site easy to learn to operate
2		My interaction with the site is clear and understandable
3		I find the site easy to navigate
4		I find the site easy to use
5		The site has an attractive appearance
6		The design is appropriate to the of site
7		The site conveys a sense of competency
8		The site creates a positive experience for me
9	Information Quality	Provides accurate information
10		Provides believable information
11		Provides timely information
12		Provides relevant information
13		Provides easy to understand information
14		Provides information at the right level of detail
15		Present the information in an appropriate
16	Service Interacton Quality	Has a good reputation
17		It feels safe to complete transactions
18		My personal information feels secure
19		Creates a sense of personalization
20		Conveys a sense of community
21		Makes it easy to communicate with the organization
22		I feel confident that goods/services will be delivered as promised

3.4 Customer Satisfaction Index

An index is used in the Customer Satisfaction Index (CSI) approach to gauge the degree of customer satisfaction according to specific qualities. Goals for the future are determined by referring to the Customer Satisfaction Index (CSI) measurement, which is performed to ascertain customer satisfaction [1].

Table 2. CSI Value Criteria.

No	Index Number (%)	Interpretation (CSI)
1	81% - 100%	Very Satisfied
2	66% - 80.99%	Satisfied
3	51% - 65.99%	Quite Satisfied
4	35% - 50.99%	Less Satisfied
5	0% - 34.99%	Not Satisfied

A CSI can have a maximum value of 100%. Poor service performance is indicated by a CSI value of 50% or less. When a CSI number is 80% or greater, it means that customers are satisfied with the way services are performed [9].

3.5 Importance Performance Analysis

Information regarding service variables that have a significant impact on customer happiness and loyalty, as well as those that require improvement because they are not currently up to par, is provided by IPA. Through the use of a two-dimensional graph that facilitates data explanation and offers helpful recommendations, IPA integrates the measurement of importance and satisfaction levels [1].

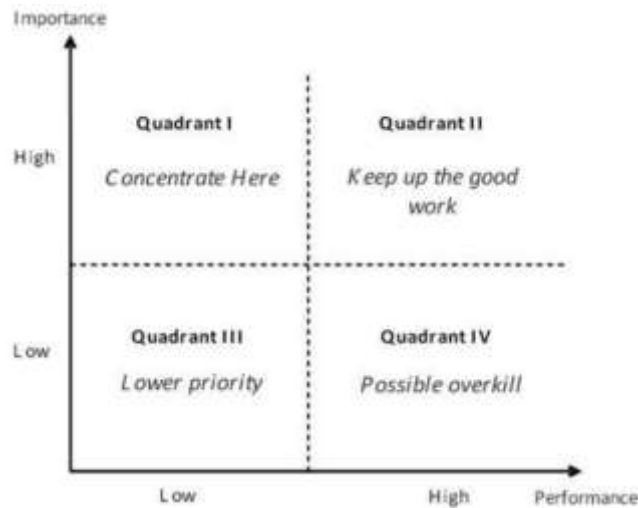


Figure 2. IPA Quadrant.

- Quadrant I is an indicator that requires improvement because it has website performance below user expectations or has not satisfied users.
- Quadrant II is a maintenance indicator, meaning that the website performance in this quadrant meets user expectations and has to be maintained to improve in the future.
- Quadrant III is a low performance and low expectations sign. In this quadrant, it is also considered not too important by users so that it is not too prioritized to be given special attention.
- Quadrant IV is an indicator with strong performance but low user expectations for this quality. So that the condition of quadrant IV is considered excessive by users.

3.6 Related Works

I K. C. Adi Putra, etc conducted research evaluating the quality and user satisfaction of the IMISSU website at Udayana University. This study uses the Cross Sectional Method with Non-Probability Sampling technique [10]. Fatmawati, etc conducted research related to the quality of the KRS information system and user satisfaction. The research methods used are EUCS and WebQual [11]. Diana Apriliani, etc conducted research using the Webqual 4.0 Method and IPA to analyze the quality of the Detik.com website [2]. K G Sukla Mandika, etc conducted research related to user interface analysis on the participant credit unit (SKP) system at Udayana University using the usability testing method [12]. Yanto Suharto and Eko Hariadi conducted research on the quality of the Human Resources Development Agency website using the Webqual 4.0 Method.

4. Result and Discussion

4.1 Data Quality Test

4.1.1 Validity Test

With a significant threshold of 0.05, validity testing was performed with the aid of the SPSS V.26 software. The degrees of freedom (dk) = n-2 formula yields the value of the r table, with n equal to 100. This formula indicates that 0.195 should be the value of the r table. When a questionnaire's questions can provide information that the questionnaire will use to measure it, the questionnaire is considered legitimate [14].

Table 3. Performance Validity Test

Question Code	rCount	rTable	Information
X1	0,817	0,195	Valid
X2	0,809	0,195	Valid
X3	0,800	0,195	Valid
X4	0,709	0,195	Valid
X5	0,787	0,195	Valid
X6	0,798	0,195	Valid
X7	0,789	0,195	Valid
X8	0,804	0,195	Valid
X9	0,695	0,195	Valid
X10	0,706	0,195	Valid
X11	0,755	0,195	Valid
X12	0,820	0,195	Valid
X13	0,798	0,195	Valid
X14	0,817	0,195	Valid
X15	0,818	0,195	Valid
X16	0,825	0,195	Valid
X17	0,778	0,195	Valid
X18	0,771	0,195	Valid
X19	0,655	0,195	Valid
X20	0,734	0,195	Valid
X21	0,731	0,195	Valid
X22	0,809	0,195	Valid

Table 4. Importance Validity Test

Question Code	rCount	rTable	Information
Y1	0,833	0,195	Valid
Y2	0,833	0,195	Valid
Y3	0,856	0,195	Valid
Y4	0,738	0,195	Valid
Y5	0,822	0,195	Valid
Y6	0,821	0,195	Valid
Y7	0,810	0,195	Valid
Y8	0,853	0,195	Valid
Y9	0,846	0,195	Valid
Y10	0,733	0,195	Valid
Y11	0,845	0,195	Valid
Y12	0,878	0,195	Valid
Y13	0,837	0,195	Valid
Y14	0,872	0,195	Valid
Y15	0,896	0,195	Valid
Y16	0,840	0,195	Valid
Y17	0,859	0,195	Valid
Y18	0,819	0,195	Valid
Y19	0,832	0,195	Valid
Y20	0,733	0,195	Valid
Y21	0,775	0,195	Valid
Y22	0,856	0,195	Valid

4.1.2 Reliability Test

The degree to which measurement results hold true when the same measurements are made again with the same measuring equipment is known as reliability [15]. If the Cronbach's Alpha value is more than 0.60, the questionnaire is deemed dependable and consistent. The questionnaire is deemed to be unreliable and inconsistent if the Cronbach's Alpha value is less than 0.60. Using the SPSS Statistics 26 program, reliability testing yielded the following results.

Table 5. Reliability Test

Instrument Reliability	Cronbach's Alpha	Information
Performance	0,968	Reliable
Importance	0,977	Reliable

4.2 Customer Satisfaction Index (CSI)

CSI measurement is carried out to determine customer satisfaction and is used as a reference in determining future goals [2]. A CSI can have a maximum value of 100%. Poor service performance is indicated by a CSI value of 50% or less. When a CSI number is 80% or greater, it means that customers are happy with the way services are performed [9].

Table 6. CSI Calculation.

No	MIS	Weight Factor (WF)	MSS	Weight Score (WS)
1	3.93	4.49	3.74	16.79
2	3.95	4.51	3.76	16.96
3	3.93	4.49	3.64	16.34
4	4.02	4.59	3.78	17.35
5	3.64	4.16	3.15	13.10
6	4.03	4.60	3.87	17.81
7	3.81	4.35	3.43	14.92
8	4.04	4.61	3.71	17.12
9	3.99	4.56	3.67	16.71
10	4.1	4.68	3.79	17.75
11	3.93	4.49	3.39	15.22
12	4.05	4.63	3.64	16.84
13	4.16	4.75	4.00	19.00
14	3.95	4.51	3.60	16.24
15	4.06	4.64	3.71	17.20
16	3.86	4.41	3.58	15.78
17	3.95	4.51	3.76	16.96
18	4.04	4.61	3.81	17.58
19	4.06	4.64	3.95	18.32
20	4.02	4.59	3.85	17.68
21	3.88	4.43	3.51	15.55
22	4.16	4.75	3.83	18.20
Total	87.56	100	81.17	
Average	3.98		3.69	
Weight Total				369.41
CSI				73.88

The CSI value of the SISAKTI-NG website is 73.88%, so users can be said to be "SATISFIED" with the content and content provided by the SISAKTI-NG UNUD website.

4.3 Conformance Analysis

An aspect of IPA is conformity level analysis. When the percentages from the expected and performance levels are compared, conformity level analysis is the outcome. The appropriateness level analysis results are used to assess if the performance of the website aligns with users' expectations or areas of interest. The level of conformance is determined using the following formula [16].

Table 7. Conformance Analysis

No	Xi (Performance)	Yi (Importance)	Conformity Level	%
1	3.74	3.93	0.95	95%
2	3.76	3.95	0.95	95%
3	3.64	3.93	0.93	93%
4	3.78	4.02	0.94	94%
5	3.15	3.64	0.87	87%
6	3.87	4.03	0.96	96%
7	3.43	3.81	0.90	90%
8	3.71	4.04	0.92	92%
9	3.67	3.99	0.92	92%
10	3.79	4.1	0.92	92%
11	3.39	3.93	0.86	86%
12	3.64	4.05	0.90	90%
13	4	4.16	0.96	96%
14	3.6	3.95	0.91	91%
15	3.71	4.06	0.91	91%
16	3.58	3.86	0.93	93%
17	3.76	3.95	0.95	95%
18	3.81	4.04	0.94	94%
19	3.95	4.06	0.97	97%
20	3.85	4.02	0.96	96%
21	3.51	3.88	0.90	90%
22	3.83	4.16	0.92	92%
Average			0.93	93%

The results of the average value obtained from the calculation of the level of conformity state that the performance of the SISAKTI-NG UNUD website currently perceived by users still does not meet user expectations but is quite good because the level of website performance is close to 100%.

4.4 GAP Analysis

Gap analysis is the calculation of the difference between the average performance value and the average importance value. The purpose of calculating the gap value is to find out whether the web service has met user expectations or not [5].

Table 8. GAP Analysis

No	Xi (Performance)	Yi (Importance)	GAP
1	3.74	3.93	-0.19
2	3.76	3.95	-0.19
3	3.64	3.93	-0.29
4	3.78	4.02	-0.24
5	3.15	3.64	-0.49
6	3.87	4.03	-0.16
7	3.43	3.81	-0.38
8	3.71	4.04	-0.33
9	3.67	3.99	-0.32
10	3.79	4.1	-0.31
11	3.39	3.93	-0.54
12	3.64	4.05	-0.41
13	4	4.16	-0.16
14	3.6	3.95	-0.35
15	3.71	4.06	-0.35
16	3.58	3.86	-0.28
17	3.76	3.95	-0.19
18	3.81	4.04	-0.23
19	3.95	4.06	-0.11
20	3.85	4.02	-0.17
21	3.51	3.88	-0.37
22	3.83	4.16	-0.33
Average	3.689393939	3.98	-0.29

There are 22 question indicators that have a negative value with the highest value of - 0.54 in question indicator 11 "The SISAKTI-NG website provides timely / up to date information". This shows that the SISAKTI-NG website has not provided timely / up to date information to users when accessing the SISAKTI-NG website.

4.5 Importance Performance Analysis (IPA)

IPA assessment is used to map the average value of performance and importance attributes using a quadrant diagram. Mapping the results of respondents is used to determine the level of service on the website that needs to be improved.

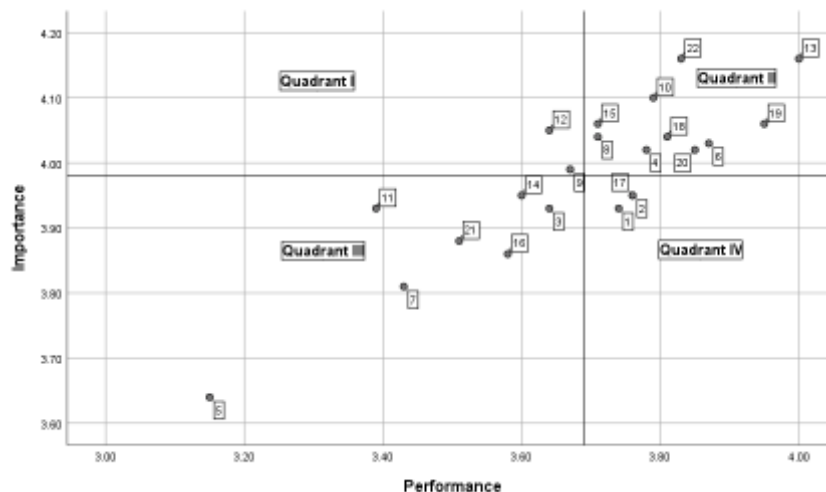


Figure 3. IPA Quadrant

Figure 3. is a Cartesian diagram that contains the results of calculation data on the performance and importance level questionnaire. The numbers 1 to 22 indicate the question

attributes in the questionnaire. The results of the quadrant analysis on IPA contained in Figure 3. as follows.

- a. Quadrant I is an indicator that requires improvement because it has website performance below user expectations or has not satisfied users. Indicators that are in Quadrant I are indicators with numbers 9 and 12.
- b. Quadrant II is an indication that needs to be kept up to date, as the website performance meets user expectations there and needs to be kept up to date to improve going forward. The question indicators in Quadrant II are numbers 4, 6, 8, 10, 13, 15, 18, 19, 20, and 22.
- c. Quadrant III is a low performance and low expectations sign. In this quadrant, it is also considered not too important by users so that it is not too prioritized to be given special attention. The question indicators in Quadrant III are numbers 3, 5, 7, 11, 14, 16, and 21.
- d. Quadrant IV is an indicator with strong performance but low user expectations for this quality. So that the condition of quadrant IV is considered excessive by users. Indicator questions that are in Quadrant IV are numbers 1, 2, and 17.

4.6 Recommendations

Proposed recommendations for improvement in improving the quality of service of the SISAkti-NG UNUD website are suggested to be provided with accurate information including the suitability of SKP points in the SKP guidebook with SKP points contained on the SISAkti-NG UNUD website and provided information that is relevant or useful to what is needed by users of the SISAkti-NG UNUD website including the detailing of SKP points on the SISAkti-NG UNUD website so that users are not mistaken in inputting SKP categories on the SISAkti-NG UNUD website and the search feature can present data that matches the search results.

5. Conclusion

Based on the results and discussion obtained in this study, the following conclusions can be drawn.

- a. a. According to the analysis of the SISAkti-NG UNUD website's performance satisfaction, which focused on the three WebQual 4.0 dimensions using the CSI (CSI) method, the overall satisfaction rating for students using the SISAkti-NG UNUD website is 73.88%, falling into the "SATISFIED" category.
- b. In accordance with the findings of the IPA quadrant-based study of service quality. The traits found in Quadrant I of the IPA cartesian diagram, which includes questions 9 and 12, are the ones that should be improved the most. As for the attributes that must be maintained, their quality is located in Quadrant II in the IPA cartesian diagram including questions number 4, 6, 8, 10, 13, 15, 18, 19, 20, and 22.
- c. Based on the results that have been obtained, there are two question items that require improvement, namely the SISAkti-NG website provides accurate information and the SISAkti-NG website provides information that is relevant / useful to what is needed by users.

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