

# Evaluation of Abulyatama University Website Quality With an Importance Performance Analysis (IPA) Approach Based on Webqual 4.0

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**Abstract:** The website plays an important role in academic activities such as filling out the Study Plan Card (KRS) and academic schedules. The Abulyatama University website also serves to convey the information needed by students from the university. Given the importance of the role of the Abulyatama University website, it is necessary to carry out an evaluation, especially to find out how the quality of the website is, evaluating the quality of the Abulyatama University website by using an Importance Performance Analysis (IPA) approach based on WebQual 4.0. The author will apply the Webqual 4.0 method to find out the difference (gap) between actual perceptions and ideal user expectations as measured by the dimensions of information quality, service interaction quality, user interface quality, and usability). Each of these variables will be used to define the purpose of the assessment of a questionnaire on the object of the questionnaire. Based on the research that has been done, several conclusions have been drawn, namely; the results of the analysis of the average value of the level of expectation or importance for the average value of usability on the Abulyatama University website is 3.68, information quality is 3.70, and on service, interaction is the result of an analysis of the level of importance and level of performance, the things that are prioritized for improvement are in quadrant I. quadrant I show the attributes that are considered important by students, but the website manager of Abulyatama University has not provided it optimally or well to students. These attributes are the display according to the type of website (U1), providing reliable information (IQ1), providing fairly detailed information (IQ4), and providing relevant information on the existence of a community atmosphere (SIQ4), and (SQI4), ease of attracting interest and attention (SIQ5), and ease of communication (SIQ6). From these attributes, the manager of the Abulyatama University website must pay attention to so that consumers feel more satisfied and loyal in accessing the information on the Abulyatama University website.

**Keywords:** Evaluation, Website Quality; Abulyatama University; Importance Performance Analysis (IPA); WebQual 4.0.

## 1. Introduction

The internet affects almost every aspect of human life, such as in the world of commerce, government [1], banking and education [2]. One example of the use of the internet in education is the use of websites by universities as a means of disseminating information [3,4]. Website is a means or container for disseminating information that has an important role in the process of disseminating information so that it reaches users and can be used or enjoyed by anyone [5,6,7]. The rapid and unstoppable growth of information technology every day makes the website an inseparable part of an organization or company in terms of providing services for users [8,9]. With the various advantages offered by the website, such as providing chat rooms, email, and instant messages to get various information, entertainment, or for business purposes, the website is widely used by organizations or institutions as a means of disseminating information [10,11].

Abulyatama University is a private university that was founded in 1983. Initially, this university was in the form of a high school and was managed by the Abulyatama Foundation. Abulyatama University is located in Aceh Besar and is under the Abulyatama Aceh Foundation. In the world of education, Abulyatama University is one of the higher education institutions that in the process of disseminating information utilizes the Website as a means to facilitate conveying the latest information and also to make it easier for students to access the latest information. The website plays an important role in academic activities such as filling out the Study Plan Card (KRS) and academic schedules. The Abulyatama University website also serves to convey the information needed by students from the university. Given the important role of the Abulyatama University website, it is necessary to carry out an evaluation, especially to find out how the quality of the Abulyatama University website is seen from the gap between the perceived (actual) quality and the desired (ideal) quality and what are the quality indicators of the Abulyatama University website that have been in accordance with the

wishes of the user (end-user) as well as any indicators that still need improvement. The services of a website need to be measured to determine the level of quality of a website and measure the level of user satisfaction and also to find out the indicators contained in the website that still need improvement so as to obtain feedback.

Previous research that is relevant to this research is research conducted by Monalisa and Rizky (2021). This research is a descriptive quantitative study with a WebQual dimension approach, namely usability, information quality, and service interaction which are assessed based on the perspective of level (performance) and ideal quality (importance). From this study, it was found that overall there is a negative gap between the actual quality (performance) and the ideal quality (importance) of -0.02. The highest gap value is the service interaction dimension with a value of -0.17. Thus, it can be concluded that the actual perceived quality has not been able to meet the ideal quality desired by Ruangguru.Com website users, especially from quality attributes related to service interactions on the website [12]. The second research is research conducted by Darmawan Napitupulu, et al with the title "Intra LIPI Website Quality Analysis Based on WebQual Approach and Importance Performance Analysis: Case Study in Satker X", using survey method with WebQual approach. The results of this study indicate the value of the perception test variable is 3.02378 smaller than the expectation test variable 4.7780 and the satisfaction score is negative. With the understanding that in general users are not satisfied with the quality of the Intra LIPI website. Based on the Importance Performance Analysis (IPA) analysis, it can be grouped the priority scale for improving the quality of the Intra LIPI website where quadrant I which is the highest priority scale based on the perspective of the end user (end user) consists of ease of navigation, precise in the preparation of information layout and site appearance. overall [13]. A study must have a goal so that it is clear what data or information indication will be generated from a research, therefore the researcher formulates several points below which are the objectives of the research that the author is doing, as for the objectives of this research, namely; 1) To find out the condition of the Abulyatama University website seen from the gap between the perceived quality (actual) and the desired quality (ideal), 2) To determine the quality level of the Abulyatama University website seen from the gap between the perceived quality (actual) ) and the desired (ideal) quality, and 3) To find out the indicators of the quality of the Abulyatama University website that have met expectations and indicators that need improvement.

## 2. Background and Analysis

A website that has been developed after undergoing renewal needs to be evaluated to find out whether the website can provide the required information quickly and accurately. The author will apply the Webqual 4.0 method to find out the difference (gap) between actual perceptions and ideal user expectations as measured by the dimensions of information quality, service interaction quality, user interface quality and usability. usability) [14,15]. Each of these variables will be used to define the purpose of the assessment of a questionnaire on the object of the questionnaire. In detail the framework of thought is presented in Figure 1 below.

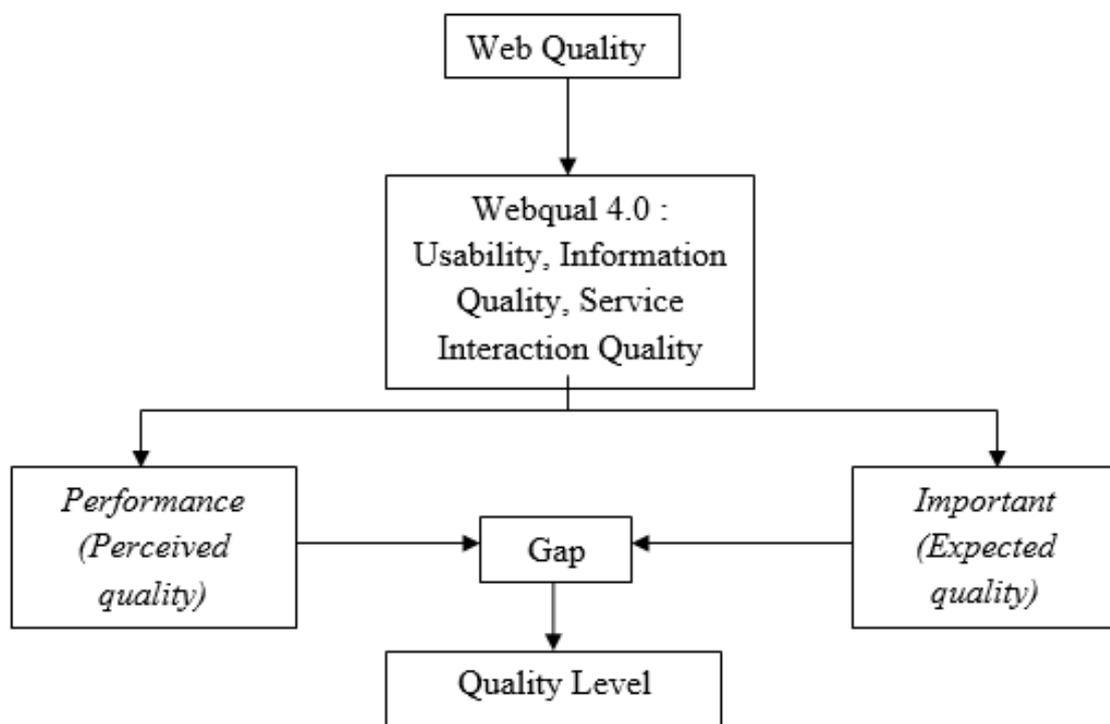


Fig 1. Research Framework

The research method used by the author is a questionnaire-based survey method distributed to respondents in this case Abulyatama University students as website users. The questionnaire compiled contains a list of questions based on Table 3.1, namely the WebQual 4.0 Instrument. In the WebQual 4.0 standard, the total number of questions is 23 questions consisting of a usability dimension (usability) 8 questions, an information quality dimension 7 questions, a service interaction quality dimension 7 questions and 1 question for an overall assessment. . However, in this study only a total of 22 questions will be included because there is 1 (one) question outside the domain of education, namely the 22nd question regarding the delivery of goods or services so that it is not included in the questionnaire. The questionnaire was built using the LSR (Likert's Summated Rating) which consists of 4 scales to assess the quality of the website, namely 1 = "Strongly Disagree", 2 = "Disagree", 3 = "Agree" and 4 = "Strongly Agree". In addition, users are also asked to rate the importance (importance) of the quality of the website, also using a 4 Likert scale consisting of 1 = "Very Not Important". 2= "Not Important", 3= "Important" and 4= "Very Important". Next Table 3.1 below is the dimensions and variables that describe the WebQual 4.0 Model [16].

Table 1. Dimensions and Variables of WebQual Instruments (Website Quality)

| Dimension                   | Variable WebQual 4.0                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Usability                   | <ol style="list-style-type: none"> <li>1. Easy to operate</li> <li>2. Interaction with the website is clear and understandable</li> <li>3. Ease of navigation</li> <li>4. Attractive appearance</li> <li>5. Display according to the type of website</li> <li>6. There is additional knowledge from website information</li> <li>7. Precise in preparing the layout of information</li> <li>8. Ease of finding website addresses</li> </ol> |
| Information Quality         | <ol style="list-style-type: none"> <li>1. Provide reliable information</li> <li>2. Provide up to date information</li> <li>3. Provide information that is easy to read and understand</li> <li>4. Provide quite detailed information</li> <li>5. Provide relevant information</li> <li>6. Provide accurate information</li> <li>7. Presenting information in an appropriate format</li> </ol>                                               |
| Service Interaction Quality | <ol style="list-style-type: none"> <li>1. Have a good reputation</li> <li>2. Provide security to complete transactions</li> <li>3. A sense of security in conveying personal data</li> <li>4. There is a community atmosphere</li> <li>5. Ease of attracting interest and attention</li> <li>6. Easy to communicate</li> <li>7. High level of confidence in the delivery of goods/services</li> </ol>                                       |
| Overall Impression          | <ol style="list-style-type: none"> <li>1. View the site as a whole.</li> </ol>                                                                                                                                                                                                                                                                                                                                                              |

In conducting research, it takes time and place for research, the authors conducted research for 3 months, starting from September to December 2018. The place of research is the University of Abulyatama Aceh. As already mentioned, the data collection technique used a questionnaire instrument consisting of a number of written questions that were used to obtain information from respondents about their perceptions of the quality of the website. The population in this study are users, namely students at the University of Abulyatama. The sampling technique used is purposive sampling where this research is not carried out by consensus but in a focused manner, namely by considering certain criteria that have been made on objects that are in accordance with the research objectives. The total population in this study, namely all active students in the Even Semester of the 2018/2019 Academic Year, was 661 people. Based on the existing population, the minimum number of samples taken can be calculated using the Slovin formula as follows:

$$\eta = \frac{N}{1 + Ne^2}$$

$$\eta = \frac{N}{1 + Ne^2} \dots \dots \dots (1)$$

Where :

$\eta$  : Sample size

N : Population size

e : Percent leeway inaccuracy (*error tolerance*)

Based on the Slovin formula, the minimum number of samples with 10% error tolerance is :

$$\begin{aligned} n &= 661 \\ &= 661 / (1 + 661 * 0.1 * 0.1) \\ &= 661 / (1 + 66.1 * 0.1) = 661 / 7.61 = 87 \\ &= 87 \text{ responden} \dots\dots\dots (2) \end{aligned}$$

Thus the number of samples in this study were 87 respondents, namely students at the University of Abulyatama with the criteria that students were active even semester 2018/2019 and accessed the university website for the last 3 (three) months (web experience). The instrument validity index in this study can be seen from the value of r in the corrected item-total correlation column, if r is positive and greater than r table, then the item is valid. The r value of the results in the corrected item total correlation column is more accurate when compared to the Pearson product moment correlation coefficient. In relation to the magnitude of this correlation figure, the item from the variable is said to be valid if it has a minimum coefficient of 0.3. This validity provision is a minimum requirement, if the correlation number calculated is greater than the critical number, then the question item is valid and significant. On the other hand, if the correlation number calculated is smaller than the critical number in the correlation table, then the question item is declared insignificant and must be aborted or corrected. Needs identification is done by collecting information from related parties which aims to find out some of the needs of each party. Identification of needs is carried out in the following way:

- 1) Conducting interviews with related parties with Abulyatama University students to find out the specification of needs and compliance with the business rules on the Abulyatama University website.
- 2) Conducting a survey, by filling out questionnaires by Abulyatama University students to find out information about some user needs and expectations of the Abulyatama University website.
- 3) Identification of needs from both parties, both companies and users, will be combined in order to achieve the right recommendations to meet user needs and expectations so as to increase user satisfaction on the Abulyatama University website.

Recommendations will be compiled based on several facts found and used as a reference to provide several solutions that can help and increase user satisfaction on the Abulyatama University website. After conducting the previous analysis, the next step is to validate the needs to find out whether the needs of the Abulyatama University website manager and users can be realized or not with existing limitations or constraints. The validation of the requirements that have been approved will produce a requirement specification which will become some recommendation information for the Abulyatama University website.

### 3. Result and Discussion

Abulyatama University is a private university located in Aceh Besar, Indonesia. Initially, this university was in the form of a high school, which was managed and founded by the Abulyatama Foundation in Banda Aceh. The foundation also manages Islamic boarding schools, kindergartens, elementary schools, junior high schools, general high schools, STMIK, College of Information and Computer Management, AKPER, Nursing Academy and University, all of which are named Abulyatama. As an effort to disseminate information on Abulyatama University, one of them uses a website facility that can be accessed with the domain: [www.abulyatama.ac.id](http://www.abulyatama.ac.id). On this website academic information, profiles, access to various application services, online registration, and contacts can be accessed by visitors and students.



Figure 2. Abulyatama University Website Display

The data is divided into three parts, namely Demographic Analysis Results, Analysis of Reliability Test Results, Validity, and Data Processing Analysis. Demographic data analysis was performed using Ms. software. Excel 2016, demographic analysis includes respondent profile data. Analysis of the results of the reliability and validity test was used with the help of SPSS 24 software. Meanwhile, the analysis of data processing was carried out using the Ms. software. Excel 2016 and IBM SPSS. Analysis of data processing includes Importance-Performance Analysis (IPA). The reliability and validity tests in this study were based on the results of the questionnaires that had been distributed to 87 respondents. Testing the validity and reliability of the Abulyatama University website trial was divided into two, because from the perspective of the respondent's assessment of their perceptions and expectations of each website. Abulyatama University they use. Each is described in tables that will display a summary of the reliability and validity tests of the perceptions and expectations of users of the Abulyatama University website. This test is carried out by comparing the calculated r numbers and r tables. if r count is greater than r table then the item is said to be valid and vice versa if r count is smaller than r table then the item is said to be invalid. r count is searched using the SPSS program, while r table is searched by looking at table r with the minimum r provision being 0.2.

Table 2. Validity results for each WebQUAL atribut attribute

| Dimension                          | Statement                                                                                                                                                     | r-count | Description |
|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-------------|
| <i>Usability</i>                   | Website is easy to learn and operate                                                                                                                          | 0,397   | Valid       |
|                                    | Interaction with the website is clear and understandable                                                                                                      | 0,382   | Valid       |
|                                    | Website has clear navigation/instructions                                                                                                                     | 0,283   | Valid       |
|                                    | Easy to use website                                                                                                                                           | 0,380   | Valid       |
|                                    | The website has an attractive appearance                                                                                                                      | 0,376   | Valid       |
|                                    | Website design according to the type (Abulyatama University website)                                                                                          | 0,378   | Valid       |
|                                    | With this website, it can improve competence with other academic websites                                                                                     | 0,425   | Valid       |
|                                    | This website provides a positive experience for me                                                                                                            | 0,479   | Valid       |
| <i>Information Quality</i>         | The website provides accurate information                                                                                                                     | 0,367   | Valid       |
|                                    | The website provides reliable information                                                                                                                     | 0,440   | Valid       |
|                                    | The website provides reliable information                                                                                                                     | 0,368   | Valid       |
|                                    | The website provides relevant information                                                                                                                     | 0,356   | Valid       |
|                                    | The website provides easy-to-understand information                                                                                                           | 0,430   | Valid       |
|                                    | The website provides detailed information                                                                                                                     | 0,328   | Valid       |
|                                    | The website provides information in an appropriate format                                                                                                     | 0,429   | Valid       |
| <i>Service Interaction Quality</i> | Have a good reputation                                                                                                                                        | 0,357   | Valid       |
|                                    | The website provides a sense of security when conducting search and filling activities (ex: contact us form input, credit card data input, check information) | 0,348   | Valid       |
|                                    | I feel my personal information is stored safely                                                                                                               | 0,510   | Valid       |
|                                    | Website provides room for user personalization                                                                                                                | 0,595   | Valid       |
|                                    | After using the website, it makes me feel part of the academic community                                                                                      | 0,481   | Valid       |
|                                    | The website makes it easy to communicate with the university                                                                                                  | 0,1     | Reliable    |

Source: Primary Data Processed (2019)

Based on Table 2 above, it can be explained that based on the output above, it is known that the calculated r number for items 1 to 20 shows that the question is valid because the calculated r value is greater than 0.2, while question no 21 is reliable (0.1) because the number is less than 0.2. This reliability test is carried out by comparing the cronbach alpha number with the provision that the minimum cronbach alpha value is 0.6. This means that if the Cronbach alpha value obtained from the SPSS calculation is greater than 0.6 then it can be concluded that the questionnaire is reliable, on the other hand, if the Cronbach Alpha is smaller than 0.6 then it is concluded that it is not reliable.

Table 3. Reliability results for each WebQUAL attribute

| Reliability Statistics |            |
|------------------------|------------|
| Cronbach's Alpha       | N of Items |
| ,922                   | 21         |

Based on the results of the reliability test above, it is known that the Cronbach alpha number is 0.922. so that number (0.922) is greater than the minimum value of cronbach alpha 0.6. therefore it can be concluded that the research instrument used to measure the variables can be said to be reliable or reliable. Results of Importance Performance Analysis (Abulyatama University).

Table 4. The average value of the assessment of the level of importance and the level of performance on the usability attributes of the Abulyatama University website

| Dimension                | Statement                                                                 | Code | Interest | Performance |
|--------------------------|---------------------------------------------------------------------------|------|----------|-------------|
| <b>Usability</b>         | Website is easy to learn and operate                                      | U1   | 3.98     | 3.69        |
|                          | Interaction with the website is clear and understandable                  | U2   | 3.53     | 3.70        |
|                          | Website has clear navigation/instructions                                 | U3   | 3.78     | 3.72        |
|                          | Easy to use website                                                       | U4   | 3.94     | 3.77        |
|                          | The website has an attractive appearance                                  | U5   | 4.1      | 3.47        |
|                          | Website design according to the type (Abulyatama University website)      | U6   | 4.07     | 3.69        |
|                          | With this website, it can improve competence with other academic websites | U7   | 4.45     | 3.71        |
|                          | This website provides a positive experience for me                        | U8   | 3.94     | 3.68        |
| <i>Usability Average</i> |                                                                           |      | 3.97     | 3.68        |

Source: Primary Data Processed (2019)

Based on Table 4 above, it is explained that the average value of the level of expectation or importance for usability is 3.97, and the average value for the level of performance is 3.68..

Table 5. The average value of the assessment of the level of importance and the level of performance on the information quality attribute of the Abulyatama University website

| Dimension                          | Statement                                                 | Code | Interest | Performance |
|------------------------------------|-----------------------------------------------------------|------|----------|-------------|
| <b>Information quality</b>         | The website provides accurate information                 | IQ1  | 4.15     | 3.64        |
|                                    | The website provides reliable information                 | IQ2  | 4.24     | 3.83        |
|                                    | The website provides reliable information                 | IQ3  | 4.17     | 3.79        |
|                                    | The website provides relevant information                 | IQ4  | 4.16     | 3.69        |
|                                    | The website provides easy-to-understand information       | IQ5  | 4.11     | 3.59        |
|                                    | The website provides detailed information                 | IQ5  | 3.59     | 3.69        |
|                                    | The website provides information in an appropriate format | IQ6  | 4.15     | 3.64        |
| <i>Average information quality</i> |                                                           |      | 4.07     | 3.70        |

Source: Primary Data Processed (2019)

Based on Table 5 above, it is explained that the average value of the level of expectation or importance for information quality is 4.07, and the average value for the level of performance is 3.70.

Table 6. The average value of the assessment of the level of importance and the level of performance on the service interaction attributes of the Abulyatama University website

| Dimension                          | Statement                                                                                                                                                     | Code | Interest | Performance |
|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------|-------------|
| <b>Service Interaction Quality</b> | Have a good reputation                                                                                                                                        | SIQ1 | 3.91     | 3.71        |
|                                    | The website provides a sense of security when conducting search and filling activities (ex: contact us form input, credit card data input, check information) | SIQ2 | 3.76     | 3.79        |
|                                    | I feel my personal information is stored safely                                                                                                               | SIQ3 | 3.73     | 3.83        |
|                                    | Website provides room for user personalization                                                                                                                | SIQ4 | 4.19     | 3.66        |
|                                    | After using the website, it makes me feel part of the academic community                                                                                      | SIQ5 | 4.07     | 3.63        |
|                                    | The website makes it easy to communicate with the university                                                                                                  | SIQ6 | 3.99     | 3.62        |
|                                    | <i>Average service interaction</i>                                                                                                                            |      |          | 3.94        |

Source: Primary Data Processed (2019)

Based on Table 6 above, it is explained that the average value of the level of expectation or importance for service interaction is 3.94, and the average value for the level of performance is 3.71. Based on the results of the average Importance Performance Analysis on the Abulyatama University website, it can be seen that:

Table 7. The average value of the assessment of the level of importance and the level of performance on the service interaction attributes of the Abulyatama University website

| No | Dimension                   | Interest | Performance |
|----|-----------------------------|----------|-------------|
| 1  | Usability                   | 3.97     | 3.68        |
| 2  | Information quality         | 4.07     | 3.70        |
| 3  | Service Interaction Quality | 3.94     | 3.71        |

Source: Primary Data Processed (2019)

Cartesian diagram is used to see the position of 21 attributes obtained based on the level of importance and performance of the number of students who access Abulyatama University. The results of the Cartesian diagram consist of 4 quadrants, namely quadrant A (top priority), quadrant B (maintain achievement), quadrant C (low priority), quadrant D (excessive) which are shown in Figure 3, Figure 4 and Figure 5.

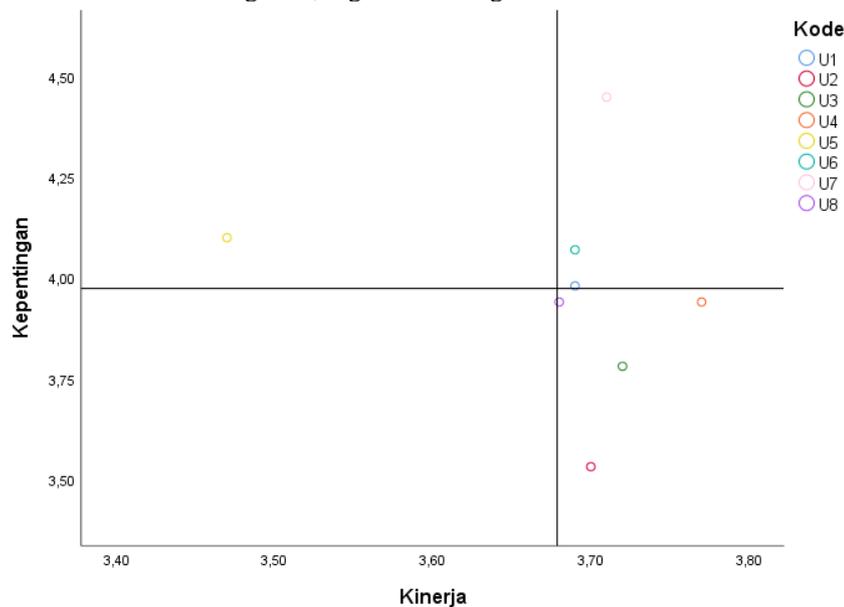


Fig 3. Results of the Cartesian Usability diagram

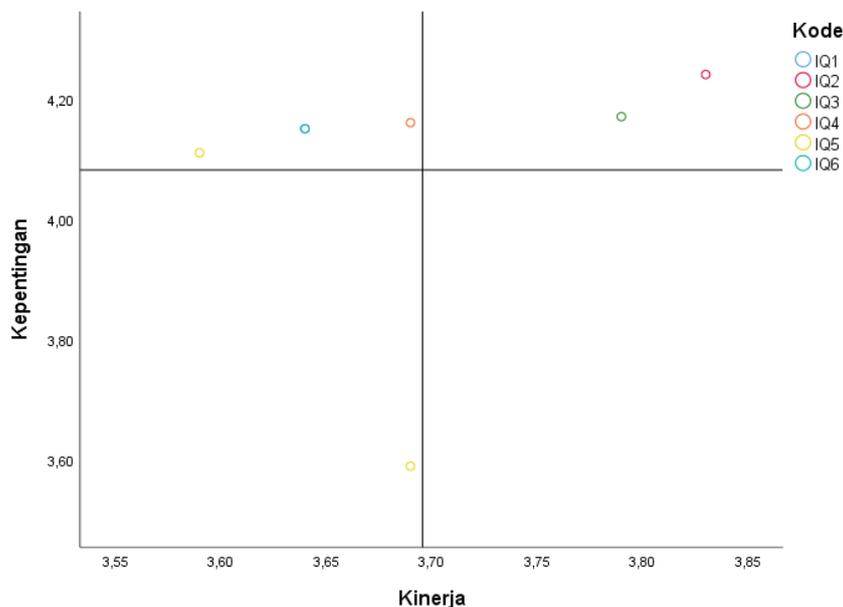


Fig 4. Result of Cartesian diagram Information quality

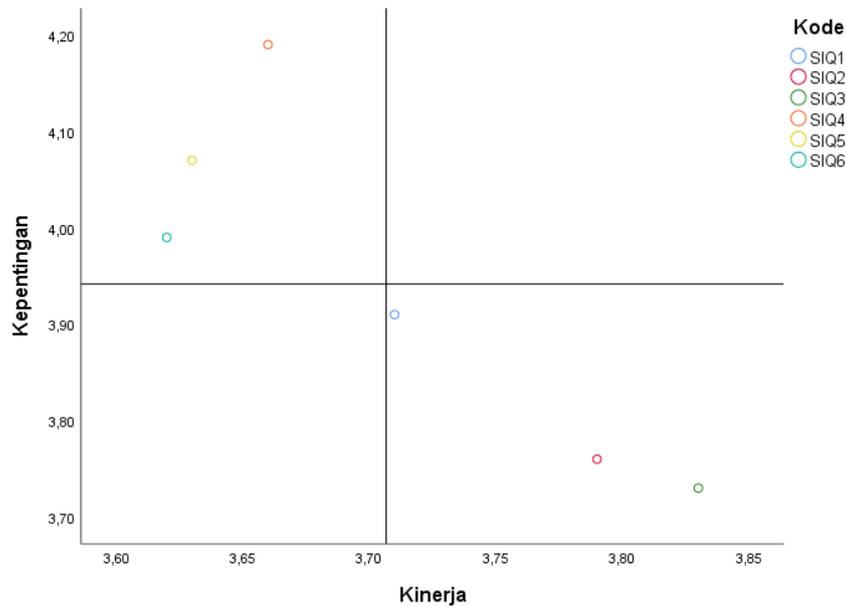


Fig 5. The results of the Cartesian diagram of Service Interaction Quality

## 5. Conclusion

Based on the research that has been done, it produces conclusions that answer the research objectives. Then some conclusions can be formulated as follows:

- 1) 1) The characteristics of the Abulyatama University website respondents are the majority of women 52% and men 48%. While the majority of respondent faculties are economics faculty 37% and engineering 32%, with an age range of 17-25 and an average of 1 (one) visit a week to the Abulyatama University website by 49% and visits 2 times a week by 23%.
- 2) 2) The results of the analysis of the average value of the level of expectation or importance for the average value of usability on the Abulyatama University website is 3.68, information quality is 3.70, and service interaction is 3.71.
- 3) 3) Based on Cartesian Usability, there are quadrant I, namely U5, Quadrant II, namely: U1, U6 and U7, quadrant III has no attributes, and 4 attributes are in quadrant IV, namely: U2, U3, U4, and U8.
- 4) 4) Based on Cartesian Information Quality, it is found in quadrant I, namely IQ1, IQ4 and IQ5, Quadrant II, namely: IQ2 and IQ3, quadrant III has 1 attribute, IQ5 and 1 attribute that is in quadrant IV, namely IQ7.
- 5) 5) Based on Cartesian Service Interaction Quality, there are quadrant I, namely SQI4, SIQ5, and SIQ6, Quadrant II and Quadrant III have no attributes, and there are 3 attributes, namely SIQ1, SIQ2, and SIQ3.

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