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WEBSITE QUALITY MEASUREMENT OF DIPA MAKASSAR UNIVERSITY

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Abstract

This research was conducted to find out the gap value between student's actual perception and ideal expectations of the Dipa Makassar University website services quality which is measured by WebQual 4.0 Modifications quality dimensions; 1) Information Quality, 2) Service Interaction Quality, 3) User Interface Quality and 4) Usability. Data was collected using a questionnaire with simple random sampling technique. Furthermore, the collected data were analyzed using differences analysis and Importance Performance Analysis (IPA). The results of the study prove that there is a gap between students' perceptions and expectations on each website quality dimension, where the perceived value is smaller than the student's expectations. The smallest gap lies in the quality of service interactions with a conformity level of 87.56% which indicates that website services are quite successful in the quality of service interactions. The biggest gap lies in the quality of information with a conformity level of 68.80% which indicates that website services have not met student expectations, especially the quality of information.

Keywords: *Website Quality, WebQual, Importance Performance Analysis*

Abstrak

Penelitian ini dilakukan dengan tujuan untuk mengetahui perbedaan antara persepsi aktual dan harapan ideal mahasiswa terhadap kualitas layanan website Universitas Dipa Makassar yang diukur berdasarkan dimensi kualitas WebQual 4.0 Modifikasi yaitu: 1) Kualitas Informasi, 2) Kualitas Interaksi Layanan, 3) Kualitas Antarmuka Pengguna dan 4) Kegunaan. Data dikumpulkan dengan menggunakan kuesioner dengan teknik Simple Random Sampling. Selanjutnya, data yang terkumpul dianalisis dengan menggunakan teknik Analisis Perbedaan (uji beda t) dan Importance Performance Analysis (IPA). Hasil penelitian membuktikan bahwa terdapat perbedaan (gap) antara persepsi aktual dan harapan ideal mahasiswa pada masing-masing dimensi kualitas website, dimana nilai persepsi lebih kecil dibandingkan dengan harapan mahasiswa. Gap paling kecil terletak pada kualitas interaksi layanan dengan tingkat kesesuaian sebesar 87,56% yang mengindikasikan bahwa layanan website cukup berhasil pada kualitas interaksi layanan. Gap paling besar terletak pada kualitas informasi dengan tingkat kesesuaian sebesar 68,80% yang mengindikasikan bahwa layanan website yang belum memenuhi harapan mahasiswa terutama dari kualitas informasi.

Keywords: *Kualitas Website, WebQual, Importance Performance Analysis*

1. Preliminary

In the current era of technology and information, universities around the world have used the website as the main platform to interact with various stakeholders [1]. The university's official website reflects the university's academic activities and is the face of the university in cyberspace [2], [3]. The need for universities to have reliable, effective, and attractive official websites is increasing because online technology is an important part of the educational process [4].

Universities use websites for various purposes, which include the distribution of information to the public, facilitating the delivery of online learning for students, promotion of education and research programs [5]. Therefore, universities need to build quality websites to support academic activities at universities [6]. Websites are windows that show how a university operates [7].

Along with the times, STMIK Dipanegara Makassar finally changed its form to Dipa Makassar University in 2021. Dipa Makassar University is a university that concentrates on the field of Information Technology and Information Technology-based Business located in Makassar, South Sulawesi. Dipa Makassar University is under the auspices of the Makassar Dipanegara Foundation.

In accordance with one of the visions of Dipa Makassar University, which is to be a pioneer in the development and renewal of useful science and technology, Dipa Makassar University strives to continue to provide the best services, especially to students. The best services are implemented in all fields, one of which is in the field of information technology by developing the official website of Dipa Makassar University which can be accessed on the www.dipanegara.ac.id page.

The Dipa Makassar University website is a web-based information service which contains information about Dipa Makassar University, ranging from information about university activities and developments in general, to academic information. The website provides several online services that can be accessed directly by students such as Online Academic, Virtual Class, Digital Library, Research Journals and Student Activity.

Since the official website of Dipa Makassar University was implemented, the quality of the website has never been measured so that the success of the website service is not yet known. In recent years, many researchers have dedicated their time and energy to research on website quality because website quality is considered a new topic in the field of software quality [8]. Evaluation of the quality of the website is very important to ensure whether the website meets the expectations and goals of users and also to find out whether there are parts of the website that need to be improved [9].

This research was conducted to measure the service quality of the Dipa Makassar University website. The main objective is to determine the level of success of website services seen from the compatibility between the perceptions and expectations of students as website users. Measurement of website quality can be done using several methods of measuring website quality, one of which is WebQual. WebQual is a method developed to measure the quality of website services based on the dimensions of usability, information quality, and service interaction quality [10], [11] and quality. user interface quality [12], [13]. The WebQual method was developed as a comprehensive website quality measurement method based on user perceptions designed to find aspects of the website that can affect user perceptions [14]. The WebQual method is still a popular method used to measure website quality [15]–[19].

To strengthen the research results, data processing is carried out using the Importance Performance Analysis (IPA) method to identify the attributes contained in each variable used in the analysis of website quality that requires quality improvement based on user perceptions and expectations [14]. Importance Performance Analysis (IPA) is a simple and useful technique to identify and map the attributes of a service that most need improvement based on its importance and performance [11], [20].

2. Research Methods

The WebQual method and the Importance Performance Analysis (IPA) technique were chosen to be used in this study. WebQual is able to translate user opinions in the form of questionnaires and science techniques are used in managing the results of the questionnaire data to generate interest and performance quadrants as material for website evaluation.

In general, this study uses a quantitative descriptive research method with a survey approach. The research procedure carried out is shown in Figure 1.

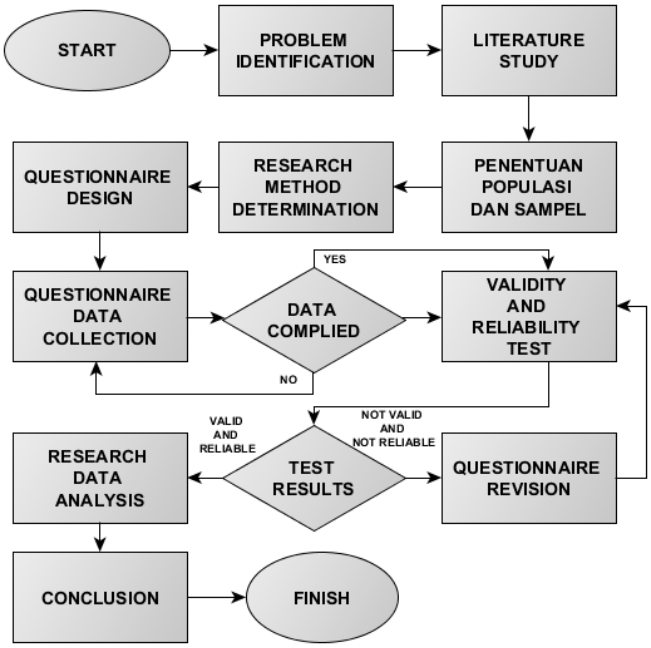

Figure 1. Research flowchart

After identifying the research problem and conducting a literature study on previous research, the next step is to determine the population and sample. The population in this study were all students of Dipa Makassar University. The number of samples is set at 150 respondents. Furthermore, the determination of the sample for each study program used a simple random sampling technique. The research carried out will adopt the Arifin research framework [12], [13] using the WebQual version 4.0 method which has been modified by adding a user interface quality dimension with three main dimensions of WebQual 4.0, namely usability, information quality, and service interaction quality. The primary data in this study came from research questionnaires distributed to respondents which can be seen in Table 1.

Table 1. Research Questionnaire [12], [13]

Variable	Source	Code	Indicator
Information Quality	WebQual 4.0	IFQ1	Provides accurate information
		IFQ2	Provides believable information
		IFQ3	Provides timely information
		IFQ4	Provides relevant information
		IFQ5	Provides easy to understand information
		IFQ6	Provides information at the right level of detail
		IFQ7	Presents the information in an appropriate format
Service Interaction Quality	WebQual 4.0	SIQ8	It feels safe to complete transactions
		SIQ9	My personal information feels secure
		SIQ10	Creates a sense of personalization

Variable	Source	Code	Indicator
		SIQ11	Conveys a sense of community
		SIQ12	Makes it easy to communicate with the organization
		SIQ13	I feel confident that goods/services will be delivered as promised
User Interface Quality	Hasan [21]	UIQ14	Appropriate use of images
		UIQ15	Appropriate choice of fonts
		UIQ16	Appropriate choice of colours
		UIQ17	Appropriate page design
		UIQ18	Working links
		UIQ19	Quick downloading of web pages
	Sutcliffe [22]	UIQ20	Structured and consistent layout
		UIQ21	Visibility of identity and brand
Usability	WebQual 4.0	USQ22	I find the site easy to learn to operate
		USQ23	My interaction with the site is clear and understandable
		USQ24	I find the site easy to navigate
		USQ25	I find the site easy to use
		USQ26	The site conveys a sense of competency
		USQ27	The site creates a positive experience for me
		USQ28	The site has an attractive appearance

The flow of this research depends on the results of the validity and reliability tests. If the results of processing the research questionnaire are not valid and reliable, then the instrument is revised. The validity test is carried out to ensure how well an instrument is used to measure the concept that should be measured [23]. The reliability test is a test of the consistency of the instrument to measure the data [24]. To find out whether an instrument item is valid or not is to look at the probability value of the correlation coefficient [25]. For reliability testing, it can refer to the Cronbach Alpha (α) value, where a construct or variable is declared reliable if it has Cronbach Alpha (α) > 0.7 [26]. After fulfilling the results of the validity and reliability tests, then an analysis was carried out using the Importance Performance Analysis (IPA) technique to determine the gap between the level of importance (expectations) and the level of performance (perception) of each website quality variable based on the WebQual method. The test will be carried out with statistical calculations using SPSS 21 software and Microsoft Excel.

The results of the research are expected to be a reference for the developer of the official website of Dipa Makassar University to improve the quality of website services. Dimensions that have good service quality will maintain their performance and low service quality will find solutions for their development and improvement. In addition, the quality dimension that has a low service value can be a reference as well as an object of research that can be studied more specifically for further researchers who will carry out similar research.

3. Result and Discussion

Validity and reliability testing was carried out on indicators measuring perceptions and expectations of all dimensions of website quality measurement. The results of this test are presented in Table 2.

Table 2. Validity and reliability test results

Indicator	Perceptions			Expectations		
	Pearson correlation coefficient	**Sig.**	**Cronbach's alpha (α)**	**Pearson correlation coefficient**	**Sig.**	**Cronbach's alpha (α)**
IFQ1	0,852	0,000	0,919	0,697	0,000	0,801
IFQ2	0,800	0,000		0,666	0,000	
IFQ3	0,804	0,000		0,679	0,000	
IFQ4	0,845	0,000		0,703	0,000	
IFQ5	0,842	0,000		0,646	0,000	
IFQ6	0,681	0,000		0,662	0,000	
IFQ7	0,810	0,000		0,675	0,000	
SIQ8	0,769	0,000	0,827	0,689	0,000	0,760
SIQ9	0,775	0,000		0,608	0,000	
SIQ10	0,699	0,000		0,660	0,000	
SIQ11	0,674	0,000		0,707	0,000	
SIQ12	0,746	0,000		0,699	0,000	
SIQ13	0,741	0,000		0,682	0,000	
UIQ14	0,968	0,000	0,988	0,728	0,000	0,858
UIQ15	0,969	0,000		0,723	0,000	
UIQ16	0,969	0,000		0,695	0,000	
UIQ17	0,971	0,000		0,714	0,000	
UIQ18	0,971	0,000		0,695	0,000	
UIQ19	0,925	0,000		0,704	0,000	
UIQ20	0,930	0,000		0,717	0,000	
UIQ21	0,979	0,000		0,694	0,000	
USQ22	0,678	0,000	0,791	0,671	0,000	0,790
USQ23	0,696	0,000		0,616	0,000	
USQ24	0,633	0,000		0,676	0,000	
USQ25	0,628	0,000		0,652	0,000	
USQ26	0,671	0,000		0,654	0,000	
USQ27	0,678	0,000		0,688	0,000	
USQ28	0,683	0,000		0,702	0,000	

For the dimensions of information quality, it is known that the results of the data test show that all questions are valid and reliable. This is evidenced by the correlation coefficient values for each perception assessment indicator ranging from 0.681-0.852 with a reliability coefficient value of 0.919 and the correlation coefficient value for each expectation assessment indicator ranging from 0.646-0.703 with a reliability coefficient value of 0.801. For the service interaction quality dimension, it is known that the data test results show that all questions are valid and reliable. This is evidenced by the value of the correlation coefficient on each indicator of perception assessment which ranges from 0.674-0.775 with a reliability coefficient value of 0.827 and the value of the correlation coefficient on each indicator of the assessment of expectations which ranges from 0.608-0.707 with a reliability coefficient value of 0.760. For the quality dimension of the user interface, it is known that the results of the data test show that all questions are valid and reliable. This is evidenced from the value of the correlation coefficient on each indicator of perception assessment which ranges from 0.925-0.979 with a reliability coefficient value of 0.988 and the correlation coefficient value on each indicator of the assessment of expectations which ranges from 0.694-0.728 with a reliability coefficient value of 0.858. For the usability quality dimension, it is known that the data test results show that all questions are valid and reliable. This is evidenced by the value of the correlation coefficient on

each indicator of perception assessment which ranges from 0.628-0.696 with a reliability coefficient value of 0.791 and the value of the correlation coefficient on each indicator of the assessment of expectations which ranges from 0.616-0.702 with a reliability coefficient value of 0.790.

Thus it can be said that all items of the questionnaire instrument are valid and reliable because they have met the minimum requirements. Based on the results of the validity and reliability tests in Table 2, it can be concluded that the questionnaire used in this study is feasible to be used as an instrument in this study.

The Importance Performance Analysis (IPA) method was carried out in this study to determine student responses to the dimensions of information quality, service interaction quality, user interface quality and usability based on the level of perception and expectation of these quality dimensions and to find attributes of the quality dimension that have good performance, and critical points that need to be improved. In addition, the results from the IPA can be used to build a strategy for improving website management management at Dipa Makassar University.

The stages in the Importance Performance Analysis (IPA) method begin by determining the level of conformity between the level of perception and expectation of the quality of website services, then calculating the average for each attribute perceived by students, followed by calculating the average of all attributes of the level of perception and expectation that will be is the limit in a Cartesian diagram. The last is the translation of each attribute into a Cartesian diagram [12], [13]. The results of the calculation of the level of conformity and the average value of perceptions and expectations are shown in Table 3.

Table 3. The results of the calculation of the level of conformity and the average perception and expectation

Indicator	Perceptions [a]		Expectations [b]		GAP	Suitability Level (%)
	Total Score	Average	Total Score	Average		
Information Quality						
IFQ1	423	2,82	612	4,08	-1,26	69,12
IFQ2	405	2,70	621	4,14	-1,44	65,22
IFQ3	404	2,69	631	4,21	-1,51	64,03
IFQ4	425	2,83	602	4,01	-1,18	70,60
IFQ5	429	2,86	607	4,05	-1,19	70,68
IFQ6	454	3,03	610	4,07	-1,04	74,43
IFQ7	408	2,72	604	4,03	-1,31	67,55
TOTAL		2,81		4,08	-1,28	68,80
Service Interaction Quality						
SIQ8	488	3,25	594	3,96	-0,71	82,15
SIQ9	493	3,29	608	4,05	-0,77	81,09
SIQ10	542	3,61	577	3,85	-0,23	93,93
SIQ11	535	3,57	606	4,04	-0,47	88,28
SIQ12	563	3,75	632	4,21	-0,46	89,08
SIQ13	563	3,75	620	4,13	-0,38	90,81
TOTAL		3.54		4,04	-0,50	87,56
User Interface Quality						
UIQ14	466	3,11	608	4,05	-0,95	76,64
UIQ15	454	3,03	577	3,85	-0,82	78,68
UIQ16	454	3,03	596	3,97	-0,95	76,17
UIQ17	464	3,09	587	3,91	-0,82	79,05
UIQ18	464	3,09	611	4,07	-0,98	75,94
UIQ19	463	3,09	606	4,04	-0,95	76,40
UIQ20	456	3,04	598	3,99	-0,95	76,25

Indicator	Perceptions [a]		Expectations [b]		GAP	Suitability Level (%)
	Total Score	Average	Total Score	Average		
UIQ21	459	3,06	622	4,15	-1,09	73,79
TOTAL		3,07		4,00	-0,94	76,62
Usability						
USQ22	518	3,45	608	4,05	-0,60	85,20
USQ23	505	3,37	605	4,03	-0,67	83,47
USQ24	505	3,37	591	3,94	-0,57	85,45
USQ25	543	3,62	612	4,08	-0,46	88,73
USQ26	492	3,28	610	4,07	-0,79	80,66
USQ27	500	3,33	602	4,01	-0,68	83,06
USQ28	510	3,40	636	4,24	-0,84	80,19
TOTAL		3,40		4,06	-0,66	83,82
OVERALL TOTAL		3,20		4,05		79,20

[a]rating scale: 1 – strongly disagree to 5 – strongly agree
[b]rating scale: 1 – strongly unimportant to 5 – strongly important

Based on the results of the analysis of the level of conformity with the indicators of the information quality dimension in Table 3, it is known that the lowest conformity between perceptions and expectations is in the IFQ3 indicator (the website provides timely information) which is 64.03% and the correspondence between perceptions and expectations is the highest. is the IFQ6 indicator (the website provides detailed information) which is 74.43%. Overall, the level of conformity between students' perceptions and expectations of the quality of website service information at Dipa Makassar University is 68.80% which is included in the moderate suitability category (60% to 79%).

Based on the results of the analysis of the level of conformity with the service interaction quality dimension indicators, it is known that the lowest conformity between perceptions and expectations is on the SIQ9 indicator (users feel safe with personal information) which is 81.09% and the highest conformity between perceptions and expectations is SIQ10 indicator (the website provides space for personalization) is 93.93%. Overall, the level of conformity between student perceptions and expectations of the quality of website service interaction at Dipa Makassar University is 87.56% which is included in the high suitability category (80% to 100%).

Based on the results of the analysis of the level of conformity with the user interface quality dimension indicators, it is known that the lowest conformity between perceptions and expectations is on the UIQ21 indicator (the website reflects the university's identity) which is 73.79% and the highest conformity between perceptions and expectations is the UIQ17 indicator (the website uses the appropriate page design) which is 79.05%. Overall, the level of conformity between student perceptions and expectations of the user interface quality of the Dipa Makassar University website is 76.62% which is included in the moderate suitability category (60% to 79%).

Based on the results of the analysis of the level of conformity with the usability dimension indicator, it is known that the lowest conformity between perceptions and expectations is on the USQ28 indicator (the website has an attractive appearance) which is 80.19% and the highest conformity between perceptions and expectations is the USQ25 indicator (website is easy to use) which is 88.73%. Overall, the level of conformity between students' perceptions and expectations of the service usability dimension of the Dipa Makassar University website is 83.82% which is included in the high suitability category (80% to 100%).

Overall, based on Table 3, the dimension of service interaction quality is the dimension that has the highest suitability with a conformity level of 87.56%, this indicates that the service quality of the Dipa Makassar University website is quite successful in the aspect of service

interaction. The dimension with the lowest level of conformity is the information quality dimension of 68.80%, this indicates that the quality of information is the aspect that most needs to be improved by the website management in improving the service quality of the Dipa Makassar University website. The amount of student expectations that have been fulfilled is 79.20%, and 20.80% has not been fulfilled.

The average answer from the known perceptions and expectations is used to determine the position of placing each indicator on the Cartesian diagram based on the quality dimension. The Cartesian diagram is divided into four areas which are limited by the average value of all indicators on the level of perception on the X axis and the level of expectation on the Y axis. The following is the placement of each indicator of each dimension in the importance performance matrix (Cartesian diagram).

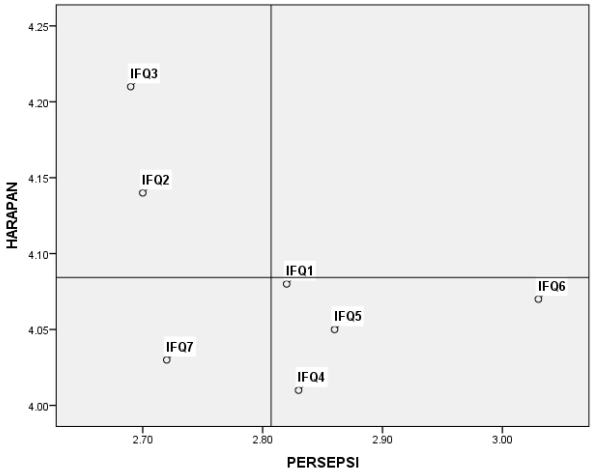

Figure 2. Cartesian Diagram of Information Quality

Based on the Cartesian diagram in Figure 2, it can be seen the location of each indicator on the information quality dimension. Of the seven indicators in the dimension of information quality, there are two indicators that are in quadrant I, namely IFQ3 (the website provides timely information) and IFQ2 (the website provides reliable information). The indicators that are in quadrant I are considered very important by students because they have a high expectation value, but the performance of these indicators is still low seen from the low perceived value. Thus, the indicators in quadrant I are the main priority for further improvement efforts. The IFQ7 indicator (the website presents information in the right format) has a low value of perception and expectation so it is located in quadrant III, which indicates that this indicator is not considered very important by students. The management of the website manager should limit resources for this indicator. In quadrant IV, the indicators IFQ1 (the website provides accurate information), IFQ4 (the website provides relevant information), IFQ5 (the website provides information that is easy to understand), and IFQ6 (the website provides information that is easy to understand), have a low expectation value, but the indicator is considered to have a good performance seen from the high perceived value.

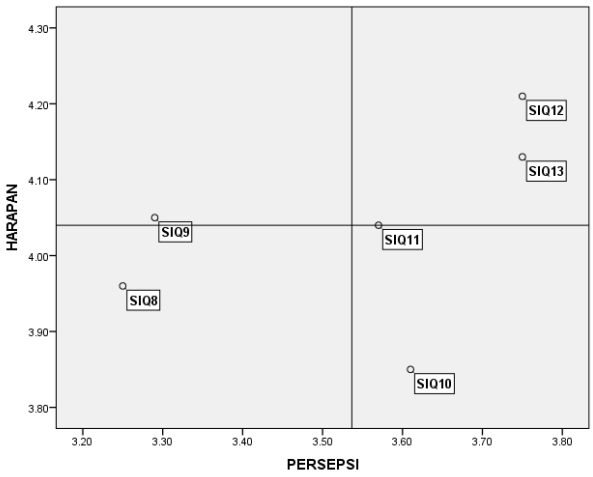

Figure 3. Cartesian Diagram of Service Interaction Quality

In Figure 3, it can be seen that there is a SIQ9 indicator (users feel safe with their personal information) in quadrant I which indicates that the SIQ9 indicator is considered very important by students because it has a high expectation value, but the performance of this indicator is still low seen from the low perceived value. Thus, the indicators in quadrant I are the main priority for further improvement efforts. Indicators SIQ12 (the website makes it easy to communicate with organizations) and SIQ13 (users feel confident that the service received is as promised) are in quadrant II which indicates that these two indicators are considered very important for students and at the same time, these services are considered has a good level of performance and has been implemented well, so the management of the website manager must maintain the performance of the SIQ12 and SIQ13 indicators. The SIQ8 indicator (users feel safe when making transactions) has a low perception and expectation value so it is located in quadrant III, which indicates that this indicator is not considered very important by students. The management of the website manager should limit resources for this indicator. In quadrant IV, the indicators SIQ10 (the website provides space for personalization) and SIQ11 (the website provides space for the community) have low expectation values, but these indicators are considered to have good performance seen from the high perceived value.

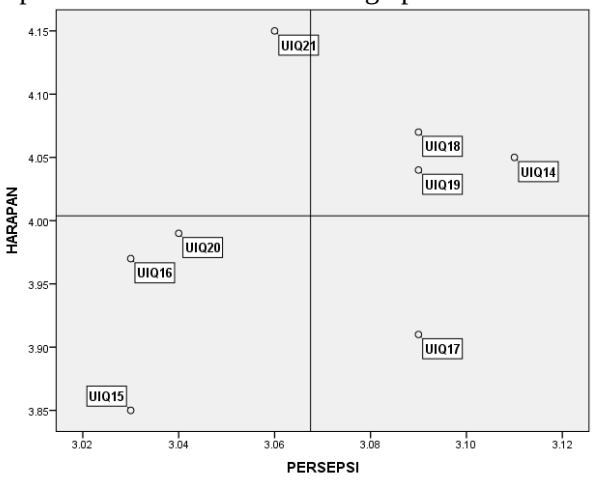

Figure 4. Cartesian Diagram of User Interface Quality

Next in Figure 4, the indicators that are in quadrant I are considered very important by students because they have high expectations, but the performance of these indicators is still low seen from the low perceived value. Thus, the indicators in this quadrant are a top priority for further improvement efforts. The UIQ21 indicators (the website reflects the university's

identity) are included in quadrant I. The UIQ14 indicators (the website uses the right image), UIQ18 (links on the website work well), and UIQ19 (download speed on website pages) are located in quadrant II, indicating that this indicator is considered very important for students and at the same time, this service is considered to have a good level of performance and has been implemented well, so the management of the website manager must maintain the performance of these three indicators. Quadrant III has a low level of perception and expectation which indicates that the indicators in it are not too important for students. Based on the results of data analysis, there are three indicators in quadrant III, namely UIQ15 (website using appropriate fonts), UIQ16 (website using appropriate colors), and UIQ20 (website having a structured and consistent layout). In quadrant IV, the UIQ17 indicator (the website uses an appropriate page design) has a low expectation value, but the service is considered to have good performance based on the level of perception that is rated high.

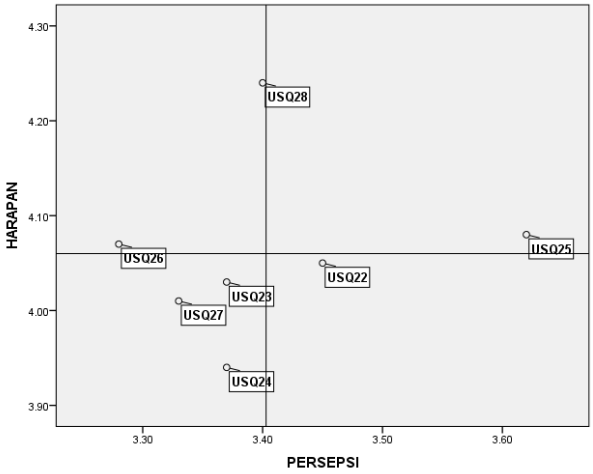

Figure 5. Cartesian Diagram of Usability

Furthermore, in Figure 5, in quadrant I, the indicators USQ26 (the website contains competency values) and USQ28 (the website has an attractive appearance) are considered very important by students because they have high expectation values, but the performance of these indicators is still low seen from the low perceived value. Thus, the USQ26 and USQ28 indicators are a top priority for further improvement efforts. In quadrant II, the USQ25 indicator (the website is easy to use) is considered very important for students and at the same time, this service is considered to have a good level of performance and has been implemented well, so the management of the website manager must maintain the performance of these indicators. In quadrant III, the indicators USQ23 (user interaction with the website is clear and understandable), USQ24 (the website is easy to navigate), and USQ27 (the website creates a positive experience for users) are considered to have low values of perceptions and expectations, which indicates that this indicator is not considered too important by students. The management of the website manager should limit resources for this indicator. In quadrant IV, the USQ22 indicator (users can easily learn to use the website) reflects a low level of expectation and a high level of perception.

The results of the mapping on the Cartesian diagram using the Importance Performance Analysis (IPA) technique can be used as feedback for the management of the website manager to develop strategies to improve the quality of the Dipa Makassar University website. The following are suggestions that can be given.

1. The management of the Dipa Makassar University website needs to maintain the achievements that have been achieved, in this case, namely the quality of Usability (usability), which generally the level of implementation is in accordance with student expectations.

2. The management of the website manager must focus on the information quality of the Dipa Makassar University website because the quality dimension is considered very important by students, but has a low level of performance. Thus, the quality of information on the Dipa Makassar University website is a top priority for further improvement efforts.

4. Conclusion

1. The results showed that the level of service quality of the Dipa Makassar University website was not in line with student expectations. This is evident from the difference in average between perceptions and expectations of students on each dimension of the website.
2. The results showed that all gaps were negative, where perceptions were smaller than students' expectations. The smallest gap lies in the service interaction quality dimension, which indicates that the Dipa Makassar University website service is quite successful in service interaction quality. The biggest gap lies in the dimension of information quality which indicates that the website services of Dipa Makassar University have not met student expectations, especially from the quality of information.
3. For the website management of Dipa Makassar University, the results of this study can be used as a reference to improve the quality of website services by focusing on the indicators that are in quadrant I in the Importance Performance Matrix.
4. It is hoped that further research will lead to an evaluation of the information quality of the website.
5. Research with the same topic and study is recommended to further develop the research variables used with a larger number of samples and research respondents not only come from students, but also involve lecturers and employees as well as general website visitors.

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