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ANALYSIS OF INFORMATION SYSTEM QUALITY OF SERVICE ON BSI ACADEMY'S ENVIRONMENT USING WEBQUAL METHODS, IMPORTANCE PERFORMANCE ANALYSIS AND FISHBONE

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ABSTRACT

At this time there have been many academic services developed in line with the present technology. Some colleges are already applying academic information system using internet media one website. Monitoring of incoming students, the increase in the ability of the students, through the student media website can find all kinds of information related to the academic field, the quality of education in the College continues to be improved to gain the trust and satisfaction of students in this Ministry that maximum based on the perceptions and expectations of student performance. The existing problems of the used method of approach to the assessment of the quality of the website i.e. WebQual by focusing on four dimensions: Usability Quality, Information Quality, Service Interaction Quality, and User Interface Quality which then uses the technique of analysis i.e. Importance Performance Analysis (IPA). After testing the invalidated the results of the compliance levels with A total 85, 75% already approaching good service based on 100% the performance of websites and produce distribution attributes belonging to the quadrant A (Priority) i.e. site yet provide a sense of security for storing personal data and layout information in the site is not yet right and there is a GAP in all dimensions of performance and expectations of students. Resulting improvements in methods of strategy diagram ishikawa (fishbone) i.e.

Keyword: *Quality of Service Information System, WebQual, Importance Performance Analysis.*

1. INTRODUCTION

The College has an important role in nation-building in the field of education, the quality of education in the College continues to be improved to gain the trust and satisfaction of students in this Ministry. Good service is supporting aspects in providing services in all areas, including education, the most important academic services in establishments of education-related components such as students, professors, baak (administration), baku (accounting), the leadership of the College and so on.

Arifin et all (2015), his research in the analysis of the quality of services performed for Hasanudin University website knowing the difference between the actual and the ideal expectations of users (students) website.

WebQual approach used to assess the quality of a web site from the perspective of the opinion of users, as well as evaluate based on the dimensions of webqual. (Longstreet, 2010).

Management as an academic service providers not only assessing service quality, but identifying the dimensions (attributes/features) quality websites which require refinement based on quality between the perceptions and expectations of users. (Bayu et. al, 2012).

Steps to correct the alleged attributes of any such gap, first identify the cause factors that influence on the quality gap to be repaired through

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the proposed method of analsis of the fishbone. (Linus dkk, 2013).

Telkom pushed the College to improve the quality of education through the utilization of ICT, Telkom Awards Smart Campus (Tesca) successfully achieved BSI as one campus utilizing ICT. (Kelana Republika, 2014). Therefore, the analysis of the required quality of service information system to improve the quality of service expectations of the desired user.

In this study the author uses an approach i.e. WebQual webiste quality assessment by focusing on four dimensions: Usability Quality, Information Quality, Service Interaction Quality, a Quality User Interface and then use the techniques of analysis i.e. Importance Performace Analysis (IPA) in analyzing the GAP between the actual and the expectations of users and determine the distribution of attributes in a Cartesian diagram, the last step using the method of Diagram Ishikawa (Fishbone) to be able to formulate a solution from the spread of attribute contains the quadrant increase performance (priority to be fixed) for improvement of the website heading expectations at the disposal of students.

2. THE CORNERSTONE OF THE THEORY

According to Wyckof (Purnama, 2006) the quality of service as the expected level of perfection and the perfection of the top control to meet the customers ' needs. While according to Parasuraman, dkk (Purnama, 2006), quality of service is the comparison between the perceived service (the perception of) customers with the quality of service expected of the customer. If the perceived service quality is equal to or exceeds the expected quality of service, then the service is said to be qualified and satisfying. Different opinions expressed according to Zeithaml (1998), quality is defined as the degree of difference between customer expectations with customer perception against the performance of the services received.

WebQual is one method or technique is a measurement of the level of the quality of a website based on the perception of the end user. This method is the development of the widely used previous Servqual in the measurement of quality of service. Zeithaml (Yudho and Daniel, 2012). Instrument approach using WebQual perception and importance of user. (Barnes and Vidgen, 2002) as the developer of the method of WebQual has done some research using WebQual 4.0. to evaluate some good website governmental website (e-commerce) as well as Government websites (e-Government) which refers to the three core dimensions that represent the quality of a website, i.e. usability, Information Quality, and Service Interaction Quality.

IPA method was first introduced by the Martilla and James in 1977 with the aim to measure the relationship between consumer perceptions and priorities improved quality of products/services that are also known as quadrant analysis (Brandt, 2000). According to Nasution and Mujahideen (2013) exposed the concept of importance and performance analysis (IPA) is derived from the concept of the servqual, the importance of the users (the customer expected) is measured in relation to what should be done by two variables, namely the perceived service (perceived service) and services that are expected (expected service).

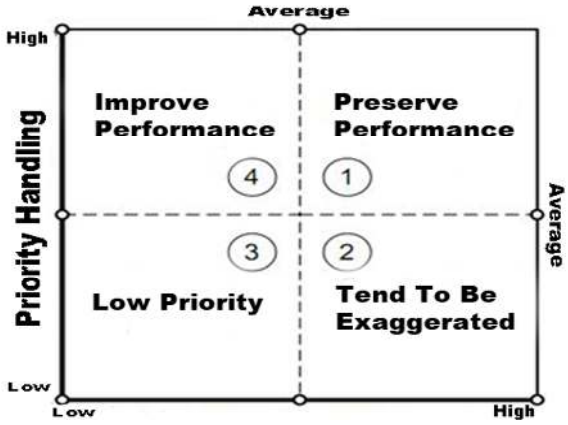

Figure 1. Division of quadrants of Importance Performance Analysis. Resources : (Brandt, 2000)

Stages in the method of Importance Performance Analysis is here, (Suprapto, 2001):

The calculation of the level of conformity (TKi) between performance level and expectations.

$$TKi = \frac{Xi}{Yi} \times 100\% \quad (1)$$

Note:

TKI = conformity Level respondents
Xi = Score performance assessment SIA
Yi = Score assessment expectations SIA

Calculation of average performance $\bar{X}$ and expectations $\bar{Y}$ of all customers:

$$\bar{X} = \frac{\sum Xi}{n} \quad \bar{Y} = \frac{\sum Yi}{n}$$

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Note :
$\bar{X}$= Average score performance levels
$\bar{Y}$= Average score level expectations
∑Xi= Total score performance levels
∑Yi= The amount of score-level expectations
n= number of respondents

$$\bar{\bar{X}}=\frac{\sum_i^N=1\ Xi}{K}, \bar{\bar{Y}}=\frac{\sum_i^N=1\ Yi}{K}$$

K = the number of attributes $\bar{\bar{X}}, \bar{\bar{Y}}$ that can affect customers. The elaboration of each attribute in the form of a Cartesian diagram is divided into four quadrants and restricted $\bar{X}, \bar{Y}$.

This analysis uses a diagram of the importance and performance of matrix, which consists of four quadrants. The following explanations for each of the quadrants (Brandt, 2000):

a. The First Quadrant, "Preserve Performance" (*high importance & high performance*)

Factors that lie in this quadrant are considered as supporting factors for consumer satisfaction so that the management shall be obliged to ensure that the performance of the institutions dikelolanya can continue to sustain the accomplishments that have been achieved.

b. The Second Quadrant, "Tend To Be Exaggerated" (*low importance & high performance*)

Factors that lie in this quadrant are considered not very important so that the management needs to allocate resources that are associated with those factors to other factors that have a higher handling priority that still need improvement, such as dikuadran.

c. The Third Quadrant, "Low Priority" (*low importance & low performance*)

Factors that lie in this quadrant has a low level of satisfaction and at once is not considered too important for consumers, so the management not too prioritize or too give attention to those factors.

d. The Fourth Quadrant, "Improve Performance" (*high importance & low performance*)

Factors that lie in this quadrant is regarded as a very important factor by the consumer but the conditions at this point has not been satisfactory so that the management is obliged to allocate adequate resources to improve the performance of a variety of factors. factors that lie in this quadrant is a priority for improved.

According to Gani and Amalia (2015) stated that "sample paired t Test (Paired Sample t Test) is a test for a bunch of the same population, but having two or more conditions of the sampled data as a result of the existence of the treatment given to the sample group". Data needed for this test is the numerical data in the form of a ratio and interval. The formula that is used for testing t sample pairs are:

$$t=\frac{\bar{X}_{D-\mu_0}}{SD/\sqrt{n}} \quad (1)$$

$$\bar{X}_d=\frac{\sum D}{n} \quad (2)$$

$$S_d=\sqrt{\frac{1}{n-1}\left\{\sum D^2-\frac{(\sum D)^2}{n}\right\}} \quad (3)$$

Where :
D= Difference x1 dan x2 (x1-x2)
n = Number of Samples
$\bar{X}$ = Average
Sd = Standard deviation of d

The scale used in this research is the Likert Scale which uses ordinal measure, according to Sugiyono (2010) explained that "likert scale was used to measure attitudes, opinions and perceptions of a person or a group of people about social phenomena".

Table 1. The Scale Of Assessment

Description	A positive score	A Negatif score
Strongly Agree	5	1
Agree	4	2
Udecided	3	3
Disagree	2	4
Strongly Disagree	1	5

Source : Sugiyono (2010)

According to Martono ordinal Scale (2012) has all the characteristics of the scale nominal, difference, this scale has the order or rank antarkategori. The numbers are used only to determine the position in a series that sort, rather than the absolute value, but these numbers cannot be added, subtracted, multiplied or divided (not apply mathematical operations). To be analyzed further, then the necessary transformation of the ordinal scale into scale intervals. Methods used i.e. method of successive intervals.

Ishikawa diagram, or Fishbone Diagram or Cause and Effect diagram is a Matrix that shows the factors or causes that lead to an incident and how they can be categorized. This diagram was first introduced by Kaoru Ishikawa. According to Heizer and Render (2006), a causal diagram, also

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known as fishbone diagram (Fishbone chart) and is useful for demonstrating the main factors that influence on the quality and have a result on the issue we are studying. To search for a cause and a result of using the method of Fishbone researchers using 4 factors cause based on the dimensions of webqual used in quality of service the website i.e. Usability Quality, Information Quality, Service Quality and User Interface Interaction Quality, so that researchers can find the repair strategy based on factors (due to causal &).

Fish bone diagram the following quality of service information systems.

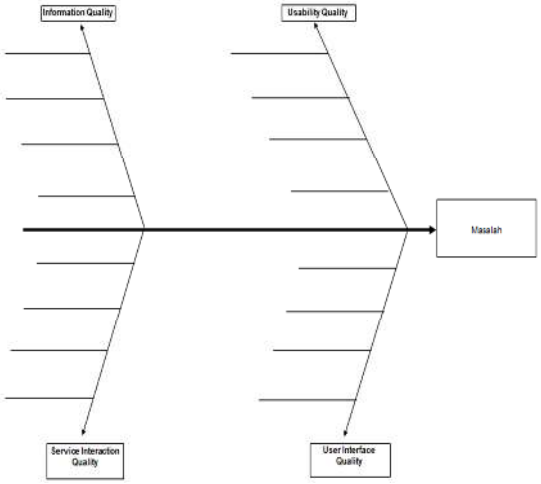

Figure 2. Fishbone Skeleton Service Quality Information System.

In this study the author uses an approach i.e. WebQual webiste quality assessment by making students expectations and perceptions questionnaire academies BSI cluster random sampling techniques, followed by engineering analysis i.e. Importance Performace Analysis (IPA) in measuring the GAP between actual and user expectations as well as mapping each indicator on kuadrannya, the last step using the method of Diagram Ishikawa (Fishbone) to be able to formulate a solution of mapping the indicator contains the quadrant A (Priority is fixed) and C (low quality of performance) in Importance Performance Analysis for website improvement leading to expectations that chill the students.

As for the frame of this research thinking as follows:

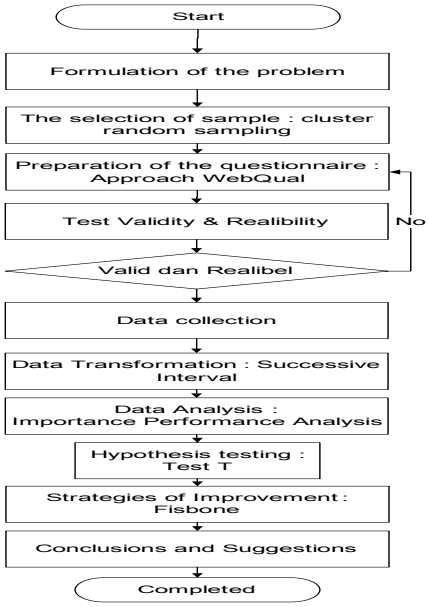

Figure 3. Research Thinking Framework
Source : Research Results (2016)

3. REVIEW STUDIES

There were The following related studies ever conducted with Quality of Service Analysis Websites using WebQual method as a measurement technique quality website, Importance Performance Analysis to analyze GAP and Fishbone in formulating improvement strategies the researchers used as a comparison review previous studies, as follows:

1). Subject : Measuring Web site quality improvements: a case study of the forum on strategic management knowladge exchange. Barnes, Stuart J dan Richard Vidgen. (2002). Problem : Knowing the quality of a website, before and after redesign. Method : WebQual. Result : The findings not only show the strengths and weaknesses of the site, but also a different impressions of the member countries.

2). Subject : The Impact of Website Quality on Online Purchase Intention of Organic Food in Malaysia: A WebQual Model Approach. Hasanov, Jasur dan Haliyana Khalid. 2015. Problem : Knowing the influence of the quality of the website on the attractiveness of the consumer in buying organic food online. Method : WebQual. Result : That the quality of the website has a direct impact on the attractiveness of online health meal purchases, on the other hand demographic factors do not affect in the slightest on the attractiveness of online purchases.

3). Subject : Website Service Quality Analysis Method Hasanuddin University WebQual 4.0

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Modification. Arifin et all (2015). Problem : Knowing the difference between the actual perception and ideal expectations of users (students UNHAS) website. Method : WebQua, Importance Performance Analysis, Cartesian diagram. Result : That there is a difference (GAP) between the actual and expected ideal perception of students on each dimension of quality of website services

4). Subject : Website Service Quality Evaluation Method Using PUSDIKLAT BPK WebQual Modifikasian and Importance Performance Analysis. Wicaksono, Bayu Luhur., Susanto, Adi., Winarno, Wing Wahyu. 2012. Problem : Evaluating the extent to which the services of the user's perception of quality of service that diraksakan actual level of expectations (ideal), so known features or attributes that must be repaired. Method : WebQual Modification, Importance Performance Analysis. Result : Integrating the gap the correlation between users' expectations about the quality of services provided PUSDIKLAT website BPK to object Government Website.

4. RESEARCH METHODS

The methods used in this research is quantitative descriptive method. The purpose of this descriptive study to make the description, picture or painting in a systematic, factual, and accurate about the facts, properties and relationships between phenomena investigated (Nazarite, 2003). According to Sugiyono (2012) explains that, "in the study of quantitative data analysis using statistical data. Statistics that are used can be either descriptive statistics from inferensial/inductive. Statistics inferensial statistics can be parametric and non parametric statistics. "

Methods of Data Collection

1) Questionnaire

A number of written questions appropriate engineering approach WebQual used to obtain information from respondents about the things that are known or perceived. This questionnaire is intended to obtain information, in writing, of the respondents (devoted student Surroundings Academy ICS) related to the research objectives.

2) Interview

The author does a question and answer to one of the Staff BTI BSI namely Mr. Grace Tri Yunandar, m. Kom related academic information systems as well as brainstorming in determining causal in fishbone.

a. Instument Research

Design of the measurement model based on research (Barnes and Vidgen, 2002), WebQual approach which has been modified from previous research has four 30 dimension and attribute measurement quality service website. These attributes can be seen below:

Table 2. Attribute Usability Quality

#	Attribute	Code
1	Easy to operate	USQ1
2	Interaction with the website clear and understandable .	USQ2
3	For ease of navigation.	USQ3
4	Ease of finding the address of a website.	USQ4
5	Look attractive	USQ5
6	In drafting the layout information.	USQ6
7	The display in accordance with the type of academic website.	USQ7
8	The presence of the addition of knowledge from information website.	USQ8

Table 3. Attribute Information Quality

#	Attribute	Code
1	Provide enough information pronounced.	IFQ1
2	Provide reliable information.	IFQ2
3	Provide the information up to date.	IFQ3
4	Provide the relevant information.	IFQ4
5	Provide information that is easy to read and understand.	IFQ5
6	Provide enough information detail.	IFQ6
7	Presents information in an appropriate format.	IFQ7

Table 4. Attribute Service Interaction Quality

#	Atribut	Kode
1	Have a good reputation	SIQ1
2	Get security to complete the transaction.	SIQ2
3	In conveying a sense of security of personal data.	SIQ3
4	Ease to attract the interest and attention.	SIQ4
5	The existence of a community atmosphere.	SIQ5
6	Ease in providing input (feed back).	SIQ6
7	A high level of trust over information submitted website.	SIQ7

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Table 5. Attibute Service Interaction Quality

#	Attribute	Code
1	The website uses images appropriately.	UIQ1
2	Website using fonts (fonts).	UIQ2
3	Website using the appropriate color.	UIQ3
4	Website design using the appropriate page.	UIQ4
5	Links on the website works just fine.	UIQ5
6	Download speed on a Web page.	UIQ6
7	The website has a structured layout and consistent	UIQ7
8	The website reflects the University's identity	UIQ8

b. Testing Validity & Reliability

Test validity and Reliability is used to find out how big a level of truth of the process of collecting data that has been retrieved from the filling questionnaire by respondents, when it does not meet the standard realibel is valid and then data collection process will be repeated again and realibel is valid and fully tested until fulfilled.

c. Selection Sample Data

The sample selection techniques used in this research Cluster Random Sampling because it analyzes data from respondents in a population that has a population very much so that selected only a few populations and sampling only. Total active students = Academy of BSI 35985 Surroundings, with precision = 10% determination of the amount of sampling uses the Slovin's formula:

$$n=\frac{N}{1+Ne^2}$$
$$n=\frac{35985}{1+N(0.1)^2} \quad (1)$$
$$n=99{,}8.$$

Respondents used in this study was accomplished as much as 100 to 25 respondents from each Academy are:

Table 6. The Data Of The Respondents

Campus Name	Number
AMIC BSI	20
ASM BSI	20
AKOM BSI	20
AMK BSI	20

d. Data Transformation

Prior to the next stage of the analysis, the data transformation is required to add heft to the value of the scale likert scaling method using interval into Successive intervals.

e. Data Analysis (IPA)

The data collected is then calculated an average based on the perceptions and expectations of each variable so that it will produce a mean value and level of compliance as well as the result of processing the data using SPSS, served into the Cartesian diagram with 4 quadrants of all varibel.

f. Hypothesis Testing (TestT)

To answer the truth results from analysis of Importance Performance Analysis at once to answer the hypothesis of any dimension, then used the t test between the perceptions and expectations of the user to know GAP academic information system quality of service.

$H_0 : \mu_1 = \mu_2$

$H_1 : \mu_1 \neq \mu_2$ (1)

g. Strategies Of Improvments (Fishbone)

The results of data analysis, processing, and then look for a result and a cause of attribute contains the quadrant A (Priority) in the spread of attribute Importance Performance Analysis. To search for a cause and a result of using the method of Fishbone researchers using 4 factors cause based on the dimensions of webqual used in quality of service the website i.e. Usability Quality, Information Quality, Service Quality and User Interface Interaction Quality, so that researchers can find the repair strategy based on factors (due to causal &).

5. RESULTS RESEARCH AND THE DISCUSSION

a. Reliability and validity of test results

Test the validity of done by comparing the value of r r value count table. If the value of count > r r table then the item is valid. In this study the number of samples (N) used to testing 30 respondents (Umar, 2003) with a level of significance of 0.05, then based on the value of r table obtained 0361. Test results can be known that each has questions item r r > count table (0361) and is positive. Thus the question stated valid grain.

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Tabel 7. The Actual Perception Of The Reliability Test Results

Cronbach's Aplha	N of Items
.961	30

Source: Research data processed SPSS, 2016.

Tabel 8. Reliability Test Results Of The Perception Of Hope

Cronbach's Aplha	N of Items
.961	30

Source: Research data processed SPSS, 2016.

Reliability test results of the above can be seen the value of the Crobach's Alpha obtained actual perception is perception and expectation is 0961 0966 > 0.6 Cronbach's coefficient Alpha can be said that a reliable instrument/realibel (Ghozali, 2005).

b. Results Transformation Data (Successive Interval)

Questionnaire results obtained from the answers of the respondents then repaired the weighting value into the scale intervals, the following result:

1) Results Transformation Data (Actual Value)

Tabel 9. Results Transformation Data (Actual)

Scale	F	PF	PK	Z	Limit Z	SV	Score
1	43	0.014	0.014	-2.188	0.036	-2.541	1
2	188	0.063	0.077	-1.426	0.144	-1.723	1.82
3	801	0.267	0.34	-0.402	0.368	-0.838	2.7
4	1392	0.464	0.81	0.871	0.273	0.205	3.75
5	576	0.192	1			1.422	4.96

Source: Results Primary Data Processing, 2016.

2) Results Transformation Data (Expectation Value)

Tabel 10. Results Transformation Data (Hope)

Scale	F	PF	PK	Z	Limit Z	SV	Score
1	8	0	0	-2.79	0.008	-3.09	1
2	49	0.02	0.02	-2.07	0.046	-2.33	1.751
3	411	0.14	0.16	-1.01	0.239	-1.41	2.677
4	1061	0.35	0.51	0.024	0.399	-0.45	3.634
5	1471	0.49	1			0.813	4.898

Source: Results Primary Data Processing, 2016.

c. Results Data Analysis (*Importance Performance Analysis*)

1) Calculation result (Tki) and the average Actual levels and expectations

The result of the transformation of the data obtained from the questionnaire respondents, then count to determine the level of compliance and the average actual and expectation among respondents, the following calculation results:

Table 11. The Results Of Calculation Of Tki And The Actual Average Expectations

Attribute	Performance(Xi)		Expectations (Yi)		Tki (%)
	Score Total	Mean ($\bar{X}$i)	Score Total	Mean ($\bar{Y}$i)	
USQ1	366.66	3.67	413.87	4.14	88.59
USQ2	346.74	3.47	406.32	4.06	85.34
USQ3	346.52	3.47	400.57	4.01	86.51
USQ4	417.67	4.18	437.94	4.38	95.37
USQ5	333.46	3.33	403.28	4.03	82.69
USQ6	353.76	3.54	410.73	4.11	86.13

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Attribute	Performance(Xi)		Expectations (Yi)		Tki (%)
	Score Total	Mean ($\bar{X}$i)	Score Total	Mean ($\bar{Y}$i)	
USQ7	376.88	3.77	419.61	4.20	89.82
USQ8	373.93	3.74	420.74	4.21	88.87
IFQ1	337.47	3.37	403.13	4.03	83.71
IFQ2	369.49	3.69	413.91	4.14	89.27
IFQ3	338.60	3.39	399.33	3.99	84.79
IFQ4	353.90	3.54	402.18	4.02	87.99
IFQ5	361.55	3.62	412.98	4.13	87.55
IFQ6	346.36	3.46	405.35	4.05	85.45
IFQ7	360.10	3.60	408.17	4.08	88.22
SIQ1	360.08	3.60	400.16	4.00	89.98
SIQ2	349.02	3.49	412.57	4.13	84.60
SIQ3	345.35	3.45	412.64	4.13	83.69
SIQ4	325.14	3.25	393.32	3.93	82.67
SIQ5	306.31	3.06	380.94	3.81	80.41
SIQ6	333.28	3.33	389.16	3.89	85.64
SIQ7	362.76	3.63	411.89	4.12	88.07
UIQ1	368.07	3.68	412.64	4.19	89.20
UIQ2	378.82	3.79	419.28	4.16	90.35
UIQ3	370.05	3.70	416.33	4.06	88.88
UIQ4	355.61	3.56	405.77	4.01	87.64
UIQ5	310.36	3.10	401.31	4.08	77.34
UIQ6	329.77	3.30	408.09	4.16	80.81
UIQ7	363.49	3.63	415.75	4.17	87.43
UIQ8	381.10	3.81	417.39	4.14	91.31
Sum	10622.32	106.22	12255.35	122.57	86.67
Rata2	$\bar{\bar{X}}$	3.54	$\bar{\bar{Y}}$	4.09	

Source: Results Data Processing Ipa, 2016.

The results showed the level of conformity (Tki) Total 86.67% compliance level of value less than 100%, then it can be said that the quality of services have yet to match expectations.

Attributes that have the lowest value indicates the service performance has not been satisfactory in the attribute UIQ5 the link our site as one of the features in information systems with the highest level of Conformance (Tki) 77.34% and second-order attribute SIQ5 on the site yet menciptaka suansana community with the highest level of Conformance (Tki) IE 80,41%. For the attributes that have the highest value indicates that the performance of the service has been very good and satisfying. On the attribute USQ4 the ease in finding the site Level has a value of Kesesuian (Tki) 95.37% 100% approaching very quality service a website and a second-order UIQ8 attribute declares that the site already reflect the identity of the College have a level of conformity (Tki) of 91.31%.

The results above show $\bar{\bar{X}}$ =3,54 will become the value of the x axis and $\bar{\bar{Y}}$=4,09 will be the y axis on a Cartesian diagram to determine which

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attributes will be included into quadrants in the Cartesian chart.

2) Results Analysis Distribution Attribute

The result of the calculation of the level of Compliance and the average level between actual with hope, then continued by analyzing the distribution of attributes in a Cartesian diagram, the following distribution attributes results assisted applications SPSS:

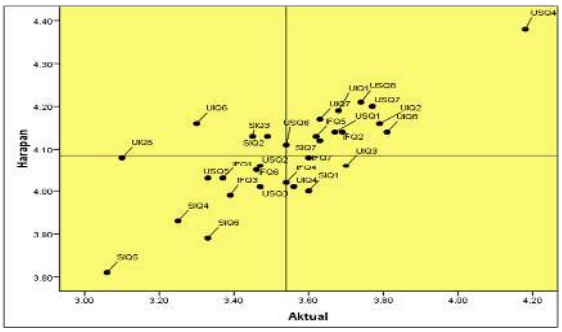

Figure 4. Cartesian Diagram Results Distribution Attribute

The result of the Cartesian diagram gives an overview of attributes which enter into quadrants of Importance Performance Analysis, following the results of the grouping of quadrants:

a) The First Quadrant (Preserve Performance)

In this quadrant describes the factors that are considered already gives satisfaction to what is expected of users and mandatory for sustained quality services site as a supporting factor in meeting user expectations. It contains the attributes of the first Quadrant is the site easy to find (USQ4), the font used is appropriate (UIQ2), has reflected the identity of the College website (UIQ8), can add to knowledge and information (USQ8), have a look in accordance with academic website (USQ7), the layout has been structured and consistent (UIQ7), using the right image (UIQ1), reliable information (IFQ2), easy to learn (USQ1), the information conveyed is very believable (SIQ7), the information available and easy to understand (IFQ5).

b) The Second Quadrant (Tend To Be Exaggerated)

In this quadrant describes the factors that are considered not too important and less expected users, but has a good performance. It contains the attributes of the second Quadrant, among others, the appropriate color (UIQ3), a reputable site (SIQ1), design appropriate page (UIQ4), and the information in the appropriate format (IFQ7).

c) The Third Quadrant (Low Priority)

In this quadrant describes the factors that are considered not too important and less expected users, but has a relatively low performance. The attributes that are included into the Third Quadrant among others the site can create an atmosphere of Community (SIQ5), interest in the use of (SIQ4), every link works quite well (UIQ5), the availability of the features assessment website (SIQ6), the information is always up to date (IFQ3), (IFQ1) accurate information, the information is quite detailed (IFQ6), it looks attractive (USQ5), the information provided is relevant (IFQ4), the interaction of the site clear and easy to understand (USQ2), explored the site navigation (USQ3).

d) The Fourth Quadrant (Increase Performance)

In this quadrant describes the factors which are considered very important and expected user, however the performance of information systems has not been giving satisfaction to what is expected of users (students) are optimal. The attributes that are included into the Fourth Quadrant is the site has yet to give a sense of security to keep personal data (SIQ3), when the transaction data (SIQ2), the layout of the information in the site is not yet exactly (USQ6) and download speeds on a page of the site that are not yet as you wish (UIQ6). It is this dimension that needs to be prioritized for repair.

d. Hypothesis Test Results

The test technique in testing a hypothesis using Paired Samples T Test hypothesis test in which the respective dimensions according to WebQual:

1) Usability Quality

Table 12. Mean Dimensions Usability Quality

Perception	Mean	N	Std. Deviation	Std. Error Mean
Actual	29.1557	100	4.87539	.48754
Hope	33.1309	100	5.61896	.56190

Source : Results Primary Data Processing, 2016.

Tabel 13. Results T Test Dimensions Usability Quality

.Pair	Paired Differences			
	Mean	Std. Deviasi	T	Sig. (2 Tailed)
Actual-Hope	-3.975	5.795	-6.860	.000

Source : Results Primary Data Processing, 2016.

From table 13. Note that the difference between actual and mean hope is-3,975 with standard deviation of 5,795. the results of the

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calculation of t statistics show the value of 6,860 and significance of 0000. because of the significance of the results of 0000 < 0.05 then concluded that the difference between actual perceptions and expectations of students ' ideal dimensions of usability quality on the quality of service information systems Academy surroundings BSI is significant and the accepted hypothesis (H1) while H0 is rejected.

2) Information Quality

Table 14. Mean Dimensi Information Quality

Perception	Mean	N	Std. Deviation	Std. Error Mean
Actual	24.6746	100	4.58579	.45858
Perception	Mean	N	Std. Deviation	Std. Error Mean
Hope	28.4517	100	5.48880	.54888

Source : Results Primary Data Processing, 2016.

Tabel 15. Results T Test Dimensions Information Quality

.Pair	Paired Differences			
	Mean	Std. Deviasi	T	Sig. (2 Tailed)
Actual-Hope	-3.777	5.782	-6.532	.000

Source : Results Primary Data Processing, 2016.

From table 15. Note that the difference between actual and mean hope is-3,777 with standard deviation of 5,782. the results of the calculation of t statistics show the value of and the significance of 6,532-0000. because of the significance of the results of 0000 < 0.05 then concluded that the difference between the actual and the ideal expectations perception student dimensions information quality in information systems service quality surroundings Academy BSI is significant and the accepted hypotheses (H2) and H0 is rejected.

3) Service Interaction Quality

Table 16. Mean Dimensions Service Interaction Quality

Perception	Mean	N	Std. Deviation	Std. Error Mean
Actual	23.8195	100	4.74005	.47400
Hope	28.0077	100	5.69876	.56988

Source : Results Primary Data Processing, 2016.

Tabel 17. Results T Test Dimensions Service Interaction Quality

.Pair	Paired Differences			
	Mean	Std. Deviasi	T	Sig. (2 Tailed)
Actual -Hope	-4.188	5.951	-7.037	.000

Source : Results Primary Data Processing, 2016.

From table 17. Note that the difference between actual and mean hope is-4,188 with standard deviation amounted to 5,951. the results of the calculation of t statistics show the value of 7,037 and significance of 0000. because of the significance of the results of 0000 < 0.05 then concluded that the difference between actual perceptions and expectations of students ' ideal dimensions of service quality on the quality of interaction of information systems Service Academy surroundings BSI is significant and the accepted hypotheses (H3) and H0 is rejected.

4) User Interface Quality

Table 18. Mean Dimensions User Interface Quality

Perception	Mean	N	Std. Deviation	Std. Error Mean
Actual	28.5723	100	5.40139	.54014
Hope	32.9663	100	5.88493	.58849

Source : Results Primary Data Processing, 2016.

Tabel 19. Results T Test Dimensions User Interface Quality

.Pair	Paired Differences			
	Mean	Std. Deviasi	T	Sig. (2 Tailed)
Actual-Hope	-4.394	6.627	-6.630	.000

Source : Results Primary Data Processing, 2016.

From table 19. Note that the difference between the mean between actual and expectation was 4,394-with standard deviation of 6,627. the results of the calculation of t statistics show the value of 6,630 and significance of 0000. because of the significance of the results of 0000 < 0.05 then concluded that the difference between the actual and the ideal expectations perception student dimensions the user interface quality on the quality of service information systems Academy surroundings BSI is significant and the accepted hypotheses (H4) and H0 is rejected.

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e. Strategies Of Improvement (Fishbone)

The results of the use of methods WebQual applied to the issues contained in quadrant 4 in the diagram Cartesian are personal data (SIQ3), the transaction data is (SIQ2), the layout of the information (USQ6) and download speeds (UIQ6). Then the problem is illustrated by using Fishbone. We can see figure of fishbone below:

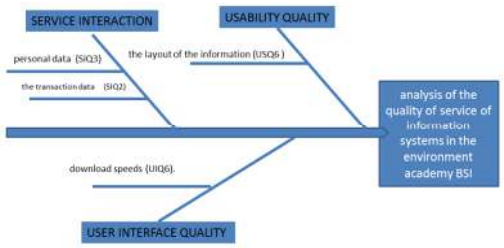

Figure 5. Fishbone Diagram Service Quality Information System

The results of the interviews were obtained from students BSI regarding the layout of information (USQ06) is less understanding of the use of design, not observation collaborative Web, no notification uptodate, information is not filtered, less interest mengkases, lack of design innovation, design quality is less responsive; Personal Data (SIQ3) is not sop use, security store personal data, the default password, do not change passwords, forgot to logout; Transaction Data (SIQ2) was less than the validity of test data, security of data when a transaction, there is no general text, the lack of site security (SSL); and download speed (UIQ6) is lack of speed of connections, server utilization is not maximized.

Based on the foregoing, the managerial aspects that must be performed by BSI to improve the layout of information (USQ06) is made or to show the workings of the display, perform observations of the web-web kind, membirikan notifications, set up the admin section of the web to filter information , making the website more attractive to students, to innovate the design, as well as a responsive design; Personal Data (SIQ3) is making sop use so as to provide security for the students in the data store, focus on passwords and related matters; Transaction Data (SIQ2) is to test the security of data as well as the use of SSL transactions; Download speed (UIQ6) is to increase download speeds on the campus area and maximization of server resources.

6. CONCLUSIONS

The results of the analysis of information system quality of Service Academy BSI surroundings using the WebQual method that focuses on four dimensions: Usability Quality, Information Quality, Service Interaction Quality and User Interface Quality with analysis method of Importance Performance Analysis.

Following the conclusion of the results of research that has been done:

a. Based on performance and expectations students of 86.67% has a good compliance from 100% overall good value but has a Gap between Expectations and Performance test result of T is done, so it can be concluded that the quality of service information system has not been suitable Surroundings BSI Academy hope students.
b. Strategies of improvement of managerial solutions generate IE: make a notification to the user, to make use of SOP, filter information according to needs, General tests, adding security features and data while accessing the kevalidan site, maximizing your responsibilty trouble on the server hosting as well as replacement periodically for changes to the design.

While suggestions for further research that is:

a. Measuring user satisfaction by using for example CSI (Customer Satisfaction Index) to find out how big the satisfaction of site usage and improve methods of Importance Perforrmance Analysis in providing order of priority attribute is fixed with the PGCV method.
b. Measuring how big each dimension contributes to user satisfaction (students), independent Samples T Test examples.
c. Test the site again with solutions that are already applied to a site that has done the repair to know how big a change of site after getting a repair strategy e.g. Paired Samples t-test.

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