

Analysis of Website Portal Rumah Belajar Using WebQual 4.0 Method and Important Performance Analysis

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Abstract

Portal Rumah Belajar is implementing E-Government in Presidential Instruction No. 3 of 2003 concerning National Development Policy and Strategy. The government is required to take advantage of advances in information and communication technology by developing e-government-based public services. The Portal Rumah Belajar is a means for students to get various information about the learning material. Therefore, this website must be able to present quality information based on user perceptions. Based on previous research that analyzed the Rumah Belajar website, there are deficiencies in usability factors and information quality factors that affect user satisfaction. Therefore, the study discusses the Portal Rumah Belajar Website Analysis topic using the WEBQUAL 4.0 method and Importance Performance Analysis to evaluate the Portal Rumah Belajar website's quality. WEBQUAL 4.0 as a reference for making a questionnaire that includes three dimensions in Usability, Information Quality and Service Interaction, and Importance Performance Analysis as an analysis in the form of a level of suitability to the gap quantification. The results obtained from the evaluation that the website's quality has a suitability level of 101.16% concluded that the user feels satisfied with the site's service. The gap level has a positive value of 0.04. It can be concluded that users experience satisfaction with the website.

Keywords: Webqual, Portal Rumah Belajar, Importance Performance Analysis

Abstrak

Portal Rumah Belajar merupakan bentuk dari penerapan E-Government pada Instruksi Presiden no 3 Tahun 2003 Tentang Kebijakan dan Strategi Nasional Pengembangan , pemerintah dituntut harus mampu memanfaatkan kemajuan teknologi informasi dan komunikasi melalui pengembangan pelayanan publik berbasis e-government. Portal Rumah Belajar merupakan sarana siswa dalam mendapatkan berbagai informasi mengenai materi materi pembelajaran, maka dari itu website ini harus mampu menyajikan informasi yang berkualitas berdasarkan persepsi pengguna. Berdasarkan penelitian sebelumnya yang menganalisis website Rumah Belajar terdapat kekurangan pada faktor usability dan faktor information quality yang berpengaruh pada kepuasan pengguna, maka dari itu penelitian ini membahas topik Analisa Website Portal Rumah Belajar menggunakan metode WEBQUAL 4.0 dan Importance Performance Analysis untuk mengevaluasi kualitas website Portal Rumah Belajar. WEBQUAL 4.0 sebagai acuan pembuatan kuesioner yang meliputi 3 dimensi berupa Usability, Information Quality dan Service Interaction dan Importance Performance Analysis sebagai analisis yang berupa tingkat kesesuaian tingkat kesenjangan dan kuadran. Hasil yang didapatkan dari evaluasi bahwa kualitas dari website memiliki tingkat kesesuaian 101.16% yang disimpulkan pengguna merasa mengalami kepuasan terhadap pelayanan situs. Tingkat kesenjangan memiliki nilai positif sebesar 0.04 disimpulkan pengguna mengalami kepuasan terhadap website.

Kata Kunci: Webqual, Portal Rumah Belajar, Importance Performance Analysis

I. INTRODUCTION

Since the enactment of Presidential Instruction No. 3 of 2013 concerning policies and national strategies for e-government development, the government is required to take advantage of advances in information and communication technology through the development of e-government-based public services [1]. One of the goals of e-government is for institutions to provide better public services [2]. The way to implement e-government is to build a website by building a website that can disseminate information quickly and be accessed by various people. The website also has a deeper function, both as branding for an organization or company and a means to get closer to its users [3].

Portal Rumah Belajar website is a learning portal developed by the Center for Data and Information Technology (Pusdatin), a change from the Center for Information and Communication Technology (Pustekkom) Kemendikbud since 2003 under the name e-dukasi.net. In 2011, it was renamed Rumah Belajar, as the official digital learning platform of the Ministry of Education and Culture [4]. This website provides various data information, ideas, or ideas related to multimedia-based learning materials in the form of text, images, graphics, videos, animations, and simulations [5]. The various benefits obtained from accessing the Rumah Belajar portal are as follows: to obtain multimedia-based content or teaching materials, to facilitate learning between students and teachers, and suggestions for improving student achievement [6]. In previous studies, which used the multiple linear regression method, the Portal Rumah Belajar had deficiencies in the usability dimension with user satisfaction of 4.05% with a significance level of 0.688 and the Information Quality dimension with user satisfaction of 11.84% with a significance level of 0.238 [7]. To support the quality of service and distribution of information on a website, of course, one must pay attention to the quality of the website to its users. A website's quality is important, and many methods are used to understand what a good quality website looks like [8]. In previous research, the more complicated the Portal Rumah Belajar is, the lower the user's information and the easier access to the Portal Rumah Belajar, the user satisfaction is also increasing [9].

Thus, it is necessary to conduct website analytics to measure a website's quality and identify and fix problems. The method used in this research is to measure a website's quality using Webqual 4.0 and IPA. In his research, Sri Huning Anwariningsih explained that WebQual 4.0 is a method or technique for measuring the quality of websites based on the perceptions of end-users [10]. This method is an extension of SERQUAL (Zeithaml et al. 1990), widely used previously in measuring service quality. WebQual 4.0 has been developed since 1998 and has experienced several interactions in the preparation of dimensions and question items, dimensions of website service quality in Webqual, namely usability, information quality, and service interaction [11]. Importance Performance Analysis is needed to identify important and performance factors that must be demonstrated by an organization in meeting user satisfaction [12].

II. LITERATURE REVIEW

A. Portal Rumah Belajar

Portal Rumah Belajar provides learning materials and communication facilities that support interaction between communities. Rumah Belajar is present as a form of learning innovation in the industrial era 4.0, which can be utilized by students and teachers of Early Childhood Education (PAUD), Elementary Schools (SD), Junior High Schools (SMP), Senior High School / Vocational Schools (SMA / SMK) and the equivalent. By using Rumah Belajar, we can study anywhere, anytime with anyone. All contents in Rumah Belajar can be accessed and utilized free of charge [13].

B. Webqual 4.0

Webqual 4.0 is a measurement to measure websites' quality based on research instruments categorized into three variables. We change several items according to the topic that the author is researching, namely:

1. Usability. This is a quality related to site design, for example, appearance, ease of use, navigation, and the image presented to the user [14].
2. Information Quality. This is a quality related to site design, for example, appearance, ease of use, navigation, and the image presented to the user [14].
3. Service Interaction. This is the quality of service interactions experienced by users when they delve deeper into the site, manifested with trust and empathy [14].

TABLE 1
WEBQUAL QUESTIONNAIRE

Dimension	Number	Questionnaire
Usability	1	The author finds it easy to learn how to operate this site.
	2	The author's interactions with the site are clear and easy to understand.
	3	The author finds this site easy to navigate
	4	The author finds this site easy to use
	5	This site has an attractive appearance
	6	Design this site according to its type
	7	This site creates a sense of competence in the author
	8	This site provides a positive experience for the author
Information Quality	9	The website provides accurate information.
	10	The website provides reliable information.
	11	The website provides up to date information.
	12	The website provides information according to its use.
	13	The website provides easy-to-understand information.
	14	The website provides information with the right level of detail.
	15	This site creates a sense of competence in the author
Service Interaction	16	The website has a good reputation.
	17	Does the website provide a test that measures knowledge well
	18	The website provides a sense of security on personal data.
	19	The website can be adjusted according to the user's wishes.
	20	The website provides a community for exchanging messages.
	21	The website makes it easy to communicate with organizations.
	22	The website provides services as promised.
	23	The overall appearance of the website is good.

C. Importance Performance Analysis

Importance Performance Analysis is an analytical technique used to identify what important performance factors a company must show user satisfaction. Important Performance Analysis aims to understand more deeply about service users' perceptions of these services' quality. Important Performance Analysis is a tool to describe quality attributes' position to see the names of priority attributes that must be considered and become a reference for development [15].

1. Suitability Analysis. The suitability analysis is the result of a comparison between the performance score of the implementation (performance) and the score of importance to determine the value of end-user satisfaction with a website, where X is the level of performance, while Y is the level of importance) [16]. If the suitability analysis results $> 100\%$, user satisfaction exceeds the desired level of expectations, and

the user feels very satisfied. If the results of the suitability analysis state = 100%, it means that the level of user satisfaction reaches the desired level of expectations and the user is satisfied, and If the results of the suitability analysis state < 100%, it means that the level of user satisfaction does not reach the desired level of expectations and the user is not satisfied.

2. Gap Analysis. This is an innovative and useful approach for conducting needs assessments and for evaluating programs. Analysis can measure the difference between user satisfaction and the performance of the actual website [16].
3. Quadrant Analysis. The X-axis describes quadrant analysis in method importance-performance analysis (IPA), the attributes of performance/reality (performance), and the attributes of interest/expectations (importance) are described by the Y-axis [16]. First quadrant: "Priorities for Improvement" attributes within the first quadrant's scope with low performance but very influential because they have high priority importance to become an important point in quality improvement points. The second quadrant: "keep up the good work" attributes that fall within the scope of the second quadrant with the same performance and priority of importance so that its value only needs to be maintained to maintain quality. Third quadrant: "low priority" attributes in the second quadrant's scope with the same low performance and priority of interest so that there needs to be an increase in the aspects contained in the scope of this quadrant. Fourth quadrant: "Possible Overkill" attributes in the second quadrant's scope with too high performance than the importance level. There is a need for distribution on aspects contained in the scope of other quadrants as in the first quadrant.

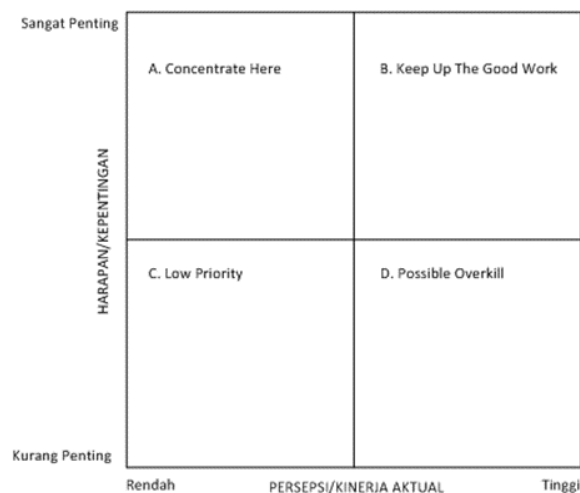


Fig. 1. Quadrant Analyst

D. Purposive Sampling

According to Sugiono (2010), purposive sampling is a technique for determining research samples with specific considerations that aim to make the data obtained later be more representative [17]. In this study, the sample size was determined using the Slovin formula. The Slovin formula is a formula used to calculate the minimum sample size of a finite population survey, where the main purpose of the survey is to estimate the proportion of the population. The Slovin formula is as follows:

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

From the formula above, variable n is the total sample, variable N is the total population, and variable e is the Slovin calculation error.

E. Validity and Reliability

The validity test is a test of the chosen instrument, whether it has a level of accuracy to measure what should be measured or not. Instrument validation is intended to ensure that the instrument that has been made is suitable for use and can measure modifier what it should be measured [18]. The reliability test comes from the word reliability means the extent to which the results of a measurement can be trusted. A measurement result can be trusted if, in several times the implementation of measurements on the same subject group, the measurement results are relatively the same, as long as the aspects measured in the subject have not changed [19].

$$r_{xy} = \frac{N \sum XY - (\sum X)(\sum Y)}{\sqrt{\{N \sum x^2 - (\sum x)^2\} \{N \sum Y^2 - (\sum Y)^2\}}} \quad (2)$$

It is known that r_{xy} is the correlation coefficient between variables X and Y , N is the number of subjects, X is the score of each item, Y is the sum of the item score.

$$r_{11} = \left(\frac{n}{n-1} \right) \left(1 - \frac{\sum \sigma_t^2}{\sigma_t^2} \right) \quad (3)$$

It is known that r_{11} is the reliability sought, n The number of questions tested, σ_t^2 is the total variance, and $\sum \sigma_t^2$ is the total variance of the score for each item.

III. RESEARCH METHOD

A. Research Flow

The method used in this study is WebQual 4.0 as a standard in the quality of the site, which has 23 attributes in it [20], and Importance Performance Analysis (IPA) as an analysis and research flow from this study begins with the start to finish stage as in Fig 2.

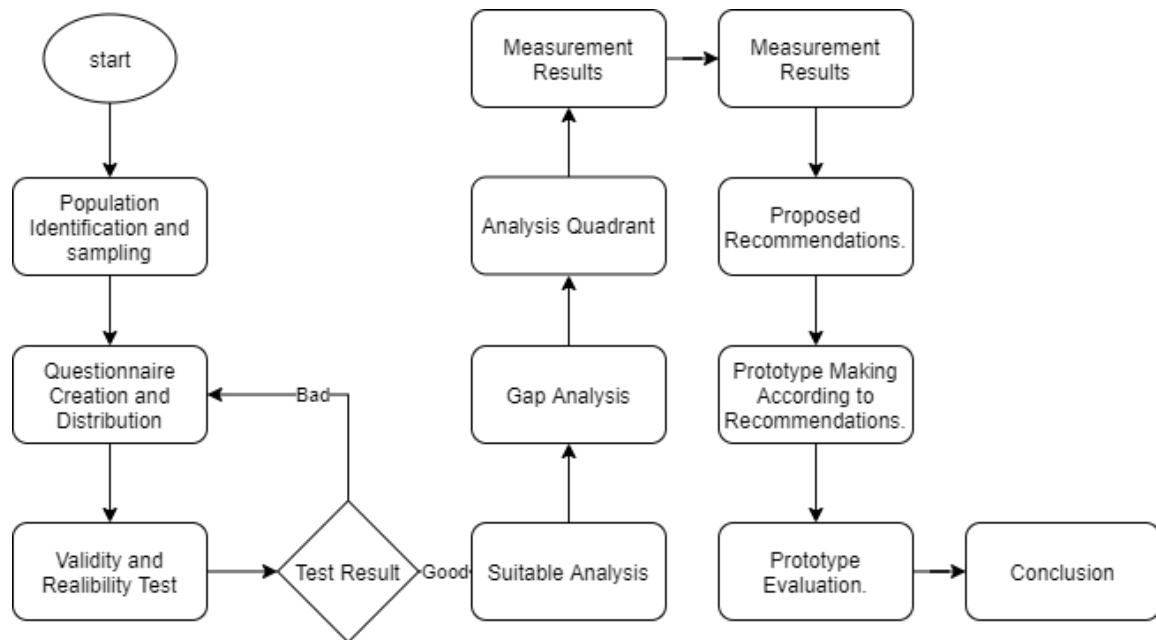


Fig. 2. Research Flow

B. Population Identification and Sample Determination

To determine the population of this study used a purposive sampling technique based on respondents who are undergoing education from elementary school to senior high school and have visited the Rumah Belajar website. To determine the minimum number of samples, the Slovin formula is used because the behavior of the population is not known with certainty and the existence of the population is difficult to determine [21].

$$n = \frac{617237}{1 + 617237 (0.1) (0.1)} = 99.98 = 100 \quad (4)$$

C. Questionnaire Creation and Distribution

In this study, using WebQual 4.0 as a questionnaire containing three components and 23 attributes as questions in the questionnaire [20], the questionnaire was divided into two parts of the assessment, namely based on importance and performance be continued with the IPA assessment. To measure the scale of the respondent's answer in this study using four Linkert measurement scales. The scale used is a scale of 1 to 4 because no answer refers to doubt. The following scale will be used [22]. The following scale will be used.

TABLE 2
LINKERT SCALE

Perfomance		Importance	
Scale or Points	Annotation	Scale or Points	Annotation
1	Not very good	1	Not very good
2	Not good	2	Not good
3	Good	3	Good
4	Very good	4	Very good

D. Validity Test

The validity test is carried out by correlating the data obtained from the questionnaire. The validity test uses the product-moment relation coefficient (R-Table) with a significant level of 5%. With the number of respondents (n) = 100, the R-Table is 0.197, meaning that the questionnaire is considered valid if the calculated correlation value (R-Count) is greater than the boundary value of R-Table ($R\text{-Count} > R\text{-Table}$). The results of the calculations can be seen in Table 5 and to calculate the correlation coefficient, the correlation formula is used as follows:

E. Reliability test

Done by finding the value of the reliability coefficient. Where this coefficient shows the reliability of a questionnaire using the Cronbach Alpha formula [23]. The results of the reliability test can be seen in the Table 6 and Table 7, the total Cronbach alpha value is 0.927 for performance and the Cronbach alpha total is 0.922 for the benefit. The Cronbach alpha value of performance and importance $> r$ table 0.195 so that it meets the criteria and is a reliable measuring tool.

IV. RESULTS AND DISCUSSION

A. Average Each Item

Based on the results of distributed questionnaires, found that 100 respondents accessed the Rumah Belajar Portal website. From these respondents filled out an importance and performance assessment form using the Linkert scale. After that, all the respondents' assessments were added up based on each question indicator, then divided by the total respondents, the average answer for each indicator was obtained. Below is the average answer for each indicator used in this study. The results can be seen in Table 3 below:

TABLE 32
AVERAGE EACH ITEM PORTAL RUMAH BELAJAR

Item	Performance	Importance
1	3.22	3.42
2	3.11	3.33
3	3.04	3.13
4	3.14	2.98
5	3.08	2.88
6	3.07	2.95
7	3.11	3.03
8	3.24	3.01
9	2.99	3.00
10	3.10	3.06
11	2.96	3.04
12	3.01	2.93
13	3.09	2.88
14	3.05	3.01
15	3.02	2.95
16	3.03	2.93
17	3.05	3.00
18	2.98	3.10
19	2.94	3.02
20	3.03	2.99

21	3.00	2.97
22	3.07	3.05
23	3.15	3.01
Average	3.06	3.03

B. Quadrant Analysis

By looking average at Table 3, for Rumah Belajar total average perceived performance is 3.06, this value is a reference for the x-axis, and the total average perceived importance of 3.03 this value is the reference for the y-axis.

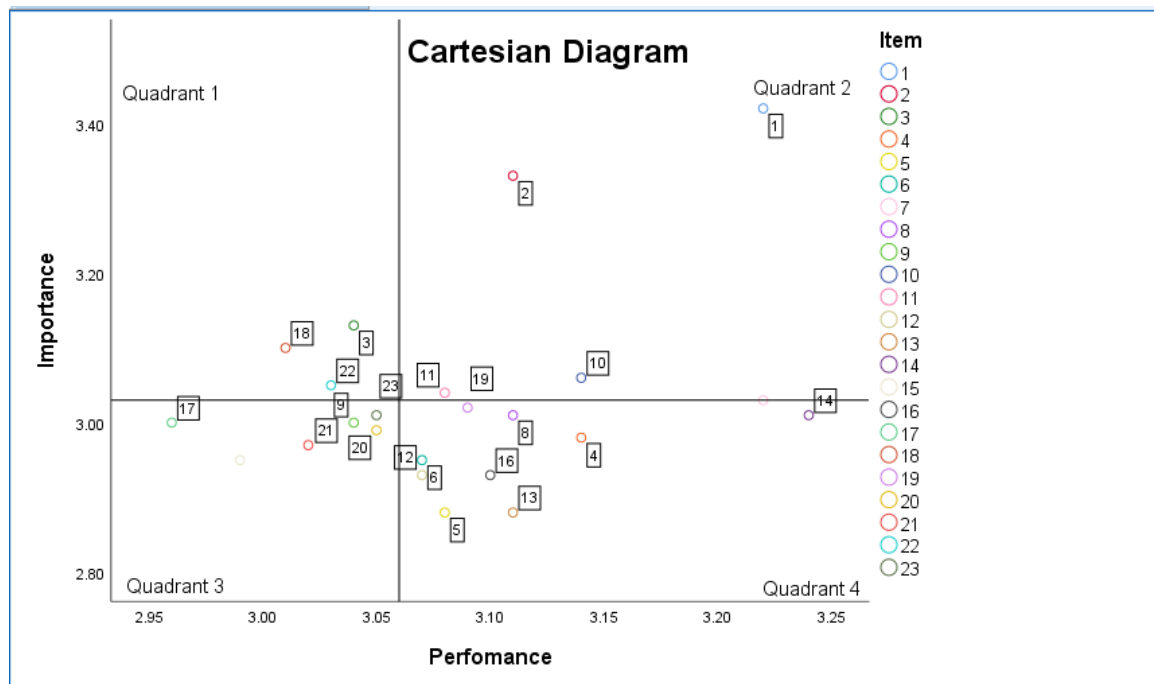


Fig. 3 Cartesian Diagram Rumah Belajar

Based on Fig 3 it can be seen each position of each indicator in the IPA matrix. Each quadrant has a specification for specific actions to be performed on the indicators that are in their part. Based on the position of each quadrant, the following analysis is obtained.

1. Quadrant 1 (Top Priority). Items included in this quadrant are the main priority for improving the Rumah Belajar website's quality. The items below, according to the user, are important but have not met the user's expectations, so they need to be corrected to match the user's expectations:

TABLE 4
RESULT FOR QUADRANT 1 RUMAH BELAJAR

Number Item	Questionnaire	Performance	Importance	GAP
3	The author finds this site easy to navigate	3.04	3.13	-0.09
18	The website provides up to date information.	2.98	3.10	-0.12
22	The website provides a sense of security on personal data.	3.07	3.05	0.02

Quadrant 2 (Maintain Achievement) items included in this quadrant are the advantages of a website. According to users, the items below are important and have high performance that must be maintained because they are considered very important, and the results are satisfactory. The following items are included in this quadrant two is 12, 10, and 22. Quadrant 3 (Low Priority) Items that fall into this quadrant are considered less important by users. All of the items below are considered less important by the user so that the priority is low and can be ignored by the manager. The following items are included in this quadrant three is 9, 12, 14, 15, 16, 17, 19, 20, and 21. Quadrant 4 (Excessive) Items included in this quadrant are areas that are considered excessive because they are not considered important by users but have high performance. All items below need to be diverted resources to a higher priority scale, namely quadrant I or quadrant II. The following items are included in this quadrant four is 4, 5, 6, 7, 8, 13, 23.

C. Results of the Analysis of IPA of Rumah Belajar and Prototype Recommendations

Based on the results of the quadrant analysis mapping, the indicators that must be improved to support website quality improvement are items that are in quadrant one, which for user items in this quadrant are very important but not by user expectations, items that live in this quadrant are easy to do. Navigation on the website provides up-to-date information, and the website provides a sense of security for personal data. These three items must be the concentration of improvement on the Rumah Belajar website. From the results previously described, here are some suggestions for improvement for items in quadrant one and as a reference for making Prototypes:

1. The Author Finds Site Easy to Navigate. Suggested improvements on the navbar move the "other products" menu that was previously in the profile menu to the navbar section to make it easier for users to access this menu. The sidebar for the educational level material menu that was previously on the spread is moved to the homepage to more easily access the menu without opening the sidebar.
2. The Website Provides Up-to-Date Information. Suggestions for improvement comparing the Ruang Guru with the Rumah Belajar so that the excess features of the Teacher Room can be used as a reference for improvement on this item.
3. The Website Provides a Sense of Security on Personal Data. Suggestions for improvement when the home study account does not follow a strong password rule when logging in will be notified to change the password according to the strong password rule, and when changing the password suggestions will be given according to the strong password rule.

Based on the three suggestions for improvement above, a prototype is made using Figma. The following is the prototype link that has been made <https://bit.ly/3axIUnD> and the following is the Rumah Belajar link <http://bit.ly/3udyi68>

D. Average Each Item on Prototype

Based on the results of distributed questionnaires, found that 100 respondents accessed the Prototype Rumah Belajar. From these respondents filled out an importance and performance assessment form using the Linkert scale. After that, all the respondents' assessments were added up based on each question indicator, then divided by the total respondents, the average answer for each indicator was obtained.

Below Table 5 is the average comparison of each item between the Rumah Belajar and the Prototype, this shows that there are items that have increased in the Prototype. Items marked in bold refer to items categorized as quadrant one from the Rumah Belajar quadrant analysis results:

TABLE 5
AVERAGE EACH ITEM PROTOTYPE

Item	Portal Rumah Belajar		Prototype	
	Perfomance	Importance	Perfomance	Importance
1	3.22	3.42	3.47	3.60

2	3.11	3.33	3.64	3.66
3	3.04	3.13	3.81	3.57
4	3.14	2.98	3.55	3.56
5	3.08	2.88	3.65	3.67
6	3.07	2.95	3.58	3.54
7	3.11	3.03	3.60	3.52
8	3.24	3.01	3.64	3.57
9	2.99	3.00	3.58	3.48
10	3.10	3.06	3.60	3.47
11	2.96	3.04	3.65	3.53
12	3.01	2.93	3.56	3.45
13	3.09	2.88	3.61	3.52
14	3.05	3.01	3.55	3.55
15	3.02	2.95	3.59	3.47
16	3.03	2.93	3.60	3.51
17	3.05	3.00	3.64	3.58
18	2.98	3.10	3.49	3.50
19	2.94	3.02	3.63	3.56
20	3.03	2.99	3.58	3.55
21	3.00	2.97	3.63	3.52
22	3.07	3.05	3.59	3.56
23	3.15	3.01	3.63	3.59
Average	3.06	3.03	3.60	3.54

E. Result Quadrant Analysis on Prototype

Following are the results of the prototype testers based on the three items given suggestions for improvement.

1. The Author Finds this Site Easy to Navigate. In this item, there was an increase. The results of the increase can be seen in the average results of each item. The results of this item on the Rumah Belajar for performance value are 3.04, and for the importance value is 3.13, then from the prototype for performance are worth 3.81 and for importance are worth 3.57. For the Rumah Belajar quadrant results, the item is in quadrant one while the prototype item increases to quadrant 2.
2. The Website Provides Up To Date Information. In this item, there is an increase. The results of the increase can be seen in the average results of each item. The results of this item on the Rumah Belajar for performance value are 2.98 and for the importance value is 3.10, then from the prototype for the performance value are 3.49 and the importance value is 3.50. for the results of the Rumah Belajar quadrant, the item is in quadrant one, while the prototype item increases to quadrant 3.
3. The Website Provides A Sense of Security on personal data. The average result of this item at Rumah Belajar for performance is 3.07 and for importance value is 3.05, then the yield of the prototype for performance is 3.59 and for importance value 3.56 for the results of the Prototype quadrant remains in quadrant 1, so the suggestion item given does not increase.

V. CONCLUSION

Based on the results of measuring the quality of the Portal Rumah Belajar website using the Webqual 4.0 method and Importance Performance Analysis (IPA), the following conclusions are obtained.

1. The Results of The Suitability Analysis. The results of the level of suitability of the Rumah Belajar are seven items with value <100% while for Prototype Five items are valued <100%. At the same time, the

average level of suitability of the Rumah Belajar is 101.16%. For Prototype, the value is 101.64% with these results. The service level of the Rumah Belajar and Prototype users is by user expectations.

2. The Result GAP. The results of the GAP usability of Rumah Belajar's three items have negative values. At the same time, for Prototype, four items are negative. The overall average usability gap of the Rumah Belajar is 0.04, and for the Prototype it is 0.03 with these results in the usability dimensions of the Rumah Belajar and Prototype by user expectations. For the dimension of information quality Rumah Belajar two items are negative. In contrast, for the Prototype all items are positive. The average gap between the Rumah Belajar and the Prototype is positive. Both in the dimension of information quality fulfill user expectations. The service interaction dimension for the Rumah Belajar has two items that have negative values, and the Prototype has 1 item that has negative values. At the same time, on average, both of them are positive. With the overall results of the positive value dimensions, both have met the service according to user expectations.
3. The Results of The Quadrant Analysis. Items that are in quadrant 1 has a high level of importance. However, the level of performance is considered to be low and in need of repair, item 3 "Easy to Navigate", item 11 "site provides the latest information", and item 18 "Providing Security in Personal Data. The Prototype of these three items has been successfully repaired, as evidenced by the quadrant analysis. The Prototype of these three items is not included in quadrant 1. The results of quadrant 1 in the Prototype are still six items in this quadrant.

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