

The Analysis of Quality and Services on PT. Kereta Api Indonesia Website Concerning the Users by means of Web Quality Evaluation Method (WEBQEM)

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ABSTRACT

PT. Kereta Api Indonesia always strives to provide the best services to meet the needs of the passengers. Thus, PT. Kereta Api Indonesia provides website services that can be accessed by users. WEBQEM is a website evaluation method used to know the quality of a website based on the rating by users. The WEBQEM method assesses the characteristics of Usability, Functionality, Reliability, and Efficiency. The evaluation of the quality of PT. Kereta Api Indonesia website is expected to generate additional insights for the relevant parties working on the development of the website. Based on the research findings, one of the aspects that needs to be improved is that there is inconsistency on the website of PT. Kereta Api Indonesia when it is used. The users did not agree that those who occasionally use PT. Kereta Api Indonesia website would like it. This is obtained from of usability analysis.

Keywords: *Evaluation, Webqem, Transportation, PT. Kereta Api Indonesia.*

1. INTRODUCTION

PT. Kereta Api Indonesia (PT. K.A.I.) is a service company engaged in land transportation. PT. Kereta Api Indonesia is a transportation service company that is quite popular among the community that uses rail transportation services. The following table contains the statistics of train transportation users from January to December 2017 released by Badan Pusat Statistik (Central Bureau of Statistics) in Jabodetabek (Jakarta, Bogor, Depok, Tangerang, Bekasi), Non Jabodetabek, and Sumatera [1].

Table 1: The Number of Railway Passengers (Thousands People)

Number of Passenger of Railways Transportation (thousands Passenger)	Railway Area				
	Jabodetabek	Non Jabodetabek (Java)	Java Jabodetabek + Non Jabodetabek	Sumatera	Total
Januari	24185	6174	30359	590	30949
Februari	21743	5095	26837	505	27342
Maret	25775	5837	31612	558	32170
April	25411	5523	30934	568	31502
Mei	27385	5772	33157	588	33745
Juni	24432	5749	30181	542	30723
Juli	27016	6653	33669	641	34310
Agustus	27679	5576	33255	536	33791
September	26158	5763	31921	577	32498
Oktober	28765	5733	34498	572	35070
November	28246	5552	33798	563	34361
Desember	29059	7081	36140	667	36807

Source: Badan Pusat Statistik (BPS)

PT. Kereta Api Indonesia as a land transportation company that is quite popular among the community needs to provide optimal quality of services in order to continue on competing with others. PT. Kereta Api Indonesia provides optimal service for users by creating PT. Kereta Api Indonesia website. This website contains information about the history, the latest information, and services provided by PT. Kereta Api Indonesia, one of which is E-Ticketing service.



E-Ticketing is one of the services provided by PT. Kereta Api Indonesia to facilitate those who want to buy ticket so that they do not need to come to the ticket purchasing counter. The users who use E-Ticketing services feel quite satisfied and less satisfied with the E-Ticketing service launched by PT. Kereta Api Indonesia. Informants who claim to be satisfied stated that the E-Ticketing service currently makes it easier for prospective passengers who will buy tickets. Meanwhile, many informants who claimed to be less satisfied with the E-Ticketing service complained about the computer error. In addition, users who book the tickets through E-Ticketing on the official website also experience a server error in the middle of booking process. So, they have to repeat the ticket booking process [2]. Starting from the problem that occurred in 2015, researchers will currently analyze the quality and services on PT. Kereta Api Indonesia website using the characteristics of the WEBQEM (Web Quality Evaluation Method) method. The WEBQEM method consists of the characteristics of usability, functionality, reliability, and efficiency [3].

From the description in the background above, the problem identified includes how to analyze the quality and services on the website of PT. Kereta Api Indonesia using the characteristics of the WEBQEM method, namely usability, reliability and efficiency so the purpose of this research is to analyze the quality and services available on the website of PT. Kereta Api Indonesia. The researcher used the WEBQEM method to optimize website performance in order to provide optimal services.

2. BASIC THEORY

2.1 WEBQEM

Web Quality Evaluation (WebQEM) method is a website evaluation method which is carried out based on the users' point of view [3]. WebQEM identifies four characteristics for testing web applications, namely usability, functionality, reliability and efficiency [3]. For this research, researcher only focus on usability, reliability and efficiency.

2.2 Usability

Usability is the quality level of a system that is easy to learn, easy to use and encourages users to use the system as a positive tool in completing tasks. In this context, what is meant by a system is a software. Usability can also be interpreted as a measure, where users can access the functionality of a system effectively, efficiently and satisfactorily in achieving certain goals [4].

2.3 Reliability

Reliability is a system test to determine the quality of a system. Reliability is tested using stress testing. Stress testing is a type of testing system where testing runs a system with abnormal amount, frequency, or volume resources [5]. The test using Web Application Load, Stress and Performance Testing software (WAPT 9.7) with included several parameters in the error report contained in the software: Failed Session, Failed Hits, and Failed Pages.

2.4 Efficiency

Testing uses a tool measuring pingdom and gtmatrix to measure the efficiency performance of a web page. The performance that will be measured is the amount of document data bytes, the number of HTTP requests, the load time and the final score / grade.

3. RESEARCH METHOD

3.1 Tables and Figures

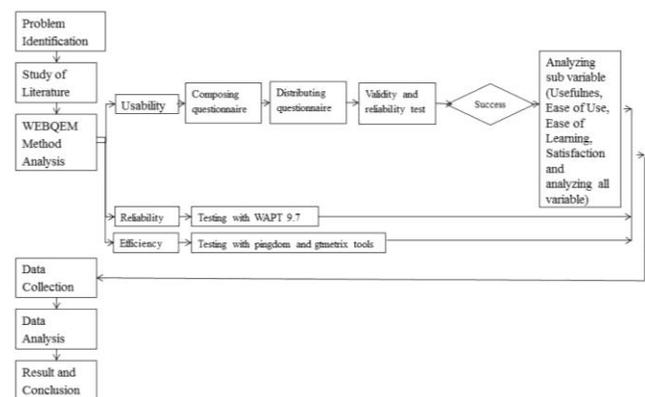


Fig. 1. Research Framework

The flow of research above explains the research process conducted by the researcher. Starting from the identification of the problem where the researcher determined the object to be studied, namely PT. Kereta Api Indonesia. The researcher looked for journals or research on problems that had occurred on the website of PT. Kereta Api Indonesia. The researcher conducted literature studies and determined the characteristics of the WEBQEM method as the analytical method used. The WEBQEM method consists of usability, reliability and efficiency. The usability questionnaire includes Usefulness, Satisfaction, and Ease of use (USE). The questionnaire used in this study was developed by STC Usability and User Experience Community that was adjusted to the website of PT. Kereta Api Indonesia. The questionnaire was then distributed to 100 respondents. The results of the questionnaire data were tested for

reliability and validity using SPSS. If the test results obtained meet the alpha crumbath value, the data were calculated for each sub variable in the questionnaire using quantitative data analysis; but if the test results do not meet alpha crumbath, then the process started again – from changing the questionnaire statements to testing reliability and validity.

Reliability testing uses WAPT 9.7 software to find out the quality of the website whether there is a page error or not. Efficiency testing uses pingdom and gtmatrix tools to determine the speed of access of PT. Kereta Api Indonesia website. The data that has been collected are then analyzed using analysis techniques that match each criterion. The data obtained is summarized and processed into recommendations for the development of the next PT Kereta Api Indonesia website.

3.2 Data analysis method

This section describes the methods used to analyze the results of data that have been collected, namely quantitative data analysis.

3.2.1 Quantitative Data Analysis

Quantitative data collection was done by distributing USE questionnaires to users of PT. Kereta Api Indonesia. Steps taken to process quantitative data from the USE questionnaire employed descriptive statistics. The answers to the questionnaire that had been filled out by the respondent were then processed to make assessment criteria for each item of the question that was determined by percentage. The following are the stages of processing questionnaire answers until determining the assessment criteria in the form of percentages:

1. Determination of cumulative value is by adding up the score of each question which is the answer of 100 respondents.
2. Percentage is the cumulative value of each question divided by the frequency value of each question and multiplied by 100%.

3. The number of respondents studied was 100 people. The greatest measured scale value is 5, while the smallest measurement scale is 1. Determination of the greatest cumulative number is $100 \times 5 = 500$, and the smallest cumulative number = $100 \times 1 = 100$. The smallest percentage value is $(100: 500) \times 100\% = 20\%$. The greatest percentage value is $(500: 500) \times 100\% = 100\%$. Range value = $100\% - 20\% = 80\%$. If divided by the value of the largest measurement scale, the percentage value of the percentage is 16%.

4. DISCUSSION

4.1 Validity & Reliability Test

The statements in the questionnaire need to be tested for validity to find out whether the statements in the questionnaire are valid or not. How to test the validity of the statements requested in the questionnaire can be done by determining the r value of the table used. The following is how to get the r table value:

- a. The value of n is the number of respondents who filled out the questionnaire.
- b. After getting the value of n, input the value into the formula $(dk) = n-2$. For example, the value of n in this study is 100, so if it is input into the formula as follows: $dk = 100 - 2 = 98$, the value of dk obtained is 98.
- c. The next step is to look for r table value. The result of r table with a significance level of 5% is 0.195.

The r table value obtained is compared with the value in each statement in the "Corrected item-Total Correlation" column in the output generated by SPSS as in table 2. It is considered valid if each of the statements in question is greater (>) than the value of r table.

Table 2: Cronbach Validity Test

Statement	Corrected Item-Total Correlation	Results
Website of PT. Kereta Api Indonesia helped me get the information I needed.	0,610	Valid
Website of PT. Kereta Api Indonesia save my time when using it.	0,639	Valid
Website of PT. Kereta Api Indonesia provides the services I need.	0,652	Valid
Electronic Ticketing service on the website of PT. Kereta Api Indonesia helped me meet my needs.	0,619	Valid
website of PT. Kereta Api Indonesia is useful	0,533	Valid
website of PT. Kereta Api Indonesia is easy to use	0,621	Valid
I can use the website of PT. Kereta Api Indonesia without written instructions (assistance).	0,658	Valid
I don't see inconsistencies on the website of PT. Kereta Api Indonesia when using it.	0,596	Valid
Users who only occasionally use the website of PT. Kereta Api Indonesia will like it.	0,623	Valid
Services available on the website of PT. Kereta Api Indonesia is easy to use	0,744	Valid
Electronic Ticketing Service on the website of PT. Kereta Api Indonesia is easy to use.	0,683	Valid
I am easy to learn using the website of PT. Kereta Api Indonesia.	0,748	Valid
I am easy to learn to use the services available on the website of PT. Kereta Api Indonesia.	0,720	Valid
I am easy to learn to use the Electronic Ticket service on the website of PT. Kereta Api Indonesia	0,763	Valid
I am an expert at using website of PT. Kereta Api Indonesia	0,694	Valid
I am satisfied with the website of PT. Kereta Api Indonesia.	0,692	Valid
I would recommend the website of PT. Kereta Api Indonesia to friends or relatives	0,603	Valid
Website of PT. Kereta Api Indonesia is working like we expect	0,683	Valid

The next stage tests the value of Cronbach's statistical reliability to see the reliability of the data. The results can be seen in table 2 below.

Table 3: Cronbach Statistical Reliability

Cronbach's Alpha	N of Items
0,938	18

Table 3 shows the value of cronbach'alpha from the questionnaire statements that were given a score of 0.938. The instrument is said to be reliable (reliable) to measure variables if it has an alpha value which is greater than 0.50. The alpha value is 0.938, the statement items used were said to be quite reliable.

4.2 Analysis of the overall assessment of USE dimensions

The results of processing the data regarding the USE questionnaire were collected. The average value of the sub-variables was added up and calculated to obtain usability value:

Table 4: Results of the Analysis of the USE Questionnaire

Number Item	Sub Variable	Average presentase
1,2,3,4,5	Usefulness	87.32%
6,7,8,9,10,11	Ease of Use	82,17%
12,13,14,15	Ease of learning	84.05%
16,17,18	Satisfaction	82.73%
Average presentase		84.07%

Table 4 states that the highest percentage: 87.32% is for the sub variable of usefulness, while the lowest percentage: 82.17% is for the sub variable of the ease of use. The interpretation criteria for the overall value of the sub variables can be seen in the continuum line below:

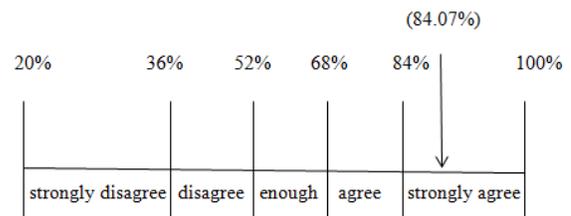


Fig. 2. Continuum Line of the entire USE questionnaire sub variable

Figure 2 states that the percentage obtained for the entire USE questionnaire sub variable is 84.07%, in the very good criteria because it is between 84% -100%. Among the four sub-variables, the usefulness is the sub-variable with the highest acquisition value: 87.32%. This indicates that the users or customers assess that the website of PT. K.A.I helps them get the information

needed. The website of PT. K.A.I provides needed services such as food ordering service. E-Ticketing service on the website of PT. K.A.I helps in meeting ticket booking needs. The users or consumers also assess that the website of PT. K.A.I is useful. While the lowest sub varabel is ease of use that gets the percentage value of 82.17%.

4.3 Testing Reliability

Reliability testing uses WAPT software version 9.7, where testing uses 20 simultaneous respondents with 30 minutes of trial time. Parameters assessed include Failed Session, Failed Hits, and Failed Pages. Test results can be seen as shown below:

Table 5: Stress Testing Results

Successful Sessions	Failed Sessions	Successful Pages	Failed Pages	Successful Hits	Failed Hits
161	1	2203	1	16078	19

Table 5 is the result of stress testing. The test recorded 161 successful sessions for 30 minutes and 1 session failed. 2203 pages were successfully accessed and 1 page failed to be accessed. It recorded 16078 successful hits and 19 failed hits. The next stage summed up each parameter with its partner. The value of successful sessions, Successful Pages and Successful Hits was added up so that the value of 18442 is called the test case value. Then the value of Failed Sessions, Failed Pages and Failed Hits is added up so that the value of 21 is called total failure. The values that have been obtained are input into the formula: $R = \frac{n-f}{n} = \frac{18442-21}{18442} = 0.9988$ x 100% = 99.88%. The reliability value is 99.88%, so that it can be said that it meets the criteria of reliability standards set by Telcordia which determine the success of software reliability: 95% or 0.95.

4.4 Efficiency Testing

The results of the efficiency test use several tools such as data pingdom, gtmatrix, and generate data as follows :

4.4.1 Pingdom

Figure 3 describes the speed of access time of the website of PT. K.A.I using pingdom tool and is in category B with the score of 87, included in the good category.

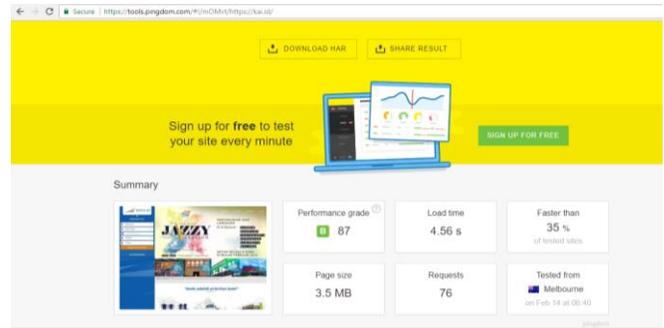


Fig. 3. Data efficiency tools.pingdom.com

4.4.2 GT-Matrix

Figure 4 describes the speed of access time of the website of PT. K.A.I using the gtmatrix tool and is in category B with the score of 87, included in the good category.

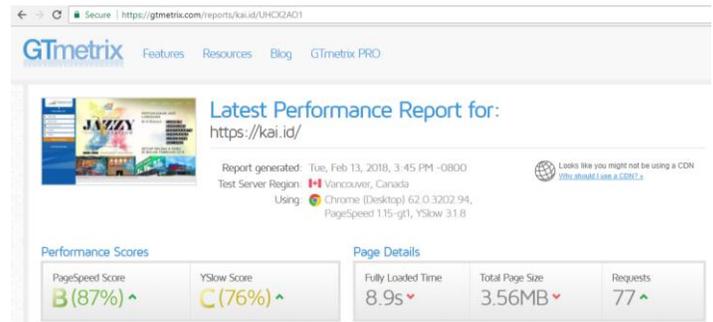


Fig. 4. Data efficiency gtmatrix.com

The data from the efficiency test using pingdom and gtmatrix data tools calculated the average value to obtain the efficiency value and concluded for the specified category criteria. The calculations is as in the table below :

Table 6: Calculation of the second value of efficiency testing tools

No	Tools	Result
1	Tools.pingdom.com	87
2	Gtmatrix.com	87
Mean		87

Source: Data Processed

Table 6 states the average value of the two tools used in efficiency testing. The average value of efficiency was calculated and obtained: $87 \times 100\% = 87\%$. The value obtained states that the system has a satisfactory efficiency level because it is in the range of 60% - 100.

5. CONCLUSIONS

Based on the background described in the previous chapter, the researcher drew the following conclusions: the quality of the website of PT. K.A.I based on usability criteria in terms of usefulness gets the average value of 87.32%, included in very good criteria. In terms of the ease of use, it gets the average value of 82.17%, included in good criteria. In terms of the ease of learning, it gets the average value of 84.05%, included in very good criteria. In terms of satisfaction, it gets the average value of 82.73%, included in good criteria. The overall quality of the website of PT. K.A.I is in very good criteria because it gets the average value of 84.07%. The website reliability criteria of PT. K.A.I gets the value of 99.88% where the value is said to meet the criteria of reliability standards set by telcordia. The efficiency criteria gets the value of 87% and can be concluded that the system has a satisfactory level of efficiency because it is in the range of 60% - 100%.

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