

Quality Analysis of Access KRL Applications Use Method ISO 25010:2011

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Abstract— The community's need for reliable transportation in terms of time and speed makes KRL a choice, especially for people who live in capital cities such as Bogor, Bekasi, Depok, Tangerang. The trend of using KRL is increasing. Data from PT KAI Commuter Indonesia (KCI) shows, since 2013 until now the average growth of users has grown rapidly from 431,886 to 885,642 users per day, up 105 percent. Punctuality is often complained by users, whereas every day there are 980 commuter line trips. To overcome this, PT KCI made a breakthrough by presenting the KRL Access smartphone application that can monitor in real-time the current location of the KRL that will cross the station. With the Train Position feature or real-time information on current KRL locations that will arrive at the station. Based on the number of downloads contained in the Apps Store and Play store the number is > 13,000 downloads. The availability of information needed is sometimes difficult to access, such as the old application to respond and in terms of appearance also influences the attractiveness of passengers to use the application. This study will discuss application analysis using the ISO 25010: 2011 method using 2 dimensions, namely Product Quality and Quality in Use where the KRL Access application will be analyzed with the Blackbox testing, Stress testing and Observation methods and KRL Jakarta-Depok-Bogor passengers as research objects by distributing questionnaires containing 17 questions. In this study, the results obtained on the dimensions of Product Quality with 7 characteristics, namely Functional Suitability, Performance Efficiency, Compability, Reliability, Security, Maintainability, and Portability owned by ISO 25010: 2011 get good results. Whereas in the Quality in Use dimension which has 6 sub-characteristics of Usability, namely Appropriates recognizability, Learnability, Operability, User error protection, User interface aesthetic and Accessibility that is owned by ISO 25010: 2011 get good results too.

Keywords— Access KRL Applications, Product Quality, Quality in Use, ISO 25010:2011.

I. INTRODUCTION

The community's need for reliable transportation in terms of time and speed makes KRL a choice, especially for people who live in cities that support capital cities such as Bogor, Bekasi, Depok, Tangerang.

The trend of using KRL is increasing. Data from PT KAI Commuter Indonesia (KCI) shows, since 2013 until now the average growth of users has grown rapidly from 431,886 to 885,642 users per day, up 105 percent. Previously, punctuality was often complained by users, whereas every day there were 980 commuter line trips (Ratna Kartika, 2016). To overcome this, PT KCI made a breakthrough by presenting the KRL Access smartphone application that can monitor in real-time the current location of the KRL that will cross the station.

With the Train Position feature or real-time information on the latest KRL locations that will arrive at the station, users can plan their trips better. They no longer need to wait too long at the station or rush to catch the coming KRL. In addition to these features, in the KRL Access application users can also interact directly with a variety of PT KCI social media channels. The application allows users to receive notifications directly when there is important information, such as new policies from KCI, KRL traffic conditions, travel disruption info. Since it was launched in June to August 2016, the number of users downloading the application in the Play Store has reached more than 100,000 and in the App Store more than 3,000.

The availability of the required information is sometimes difficult to access such as the old application to respond and in terms of appearance also influences the attractiveness of passengers to use the application. So that an evaluation of the mobile application needs to be held. So that from a technical aspect such as accessing information can be displayed in realtime and quickly and in terms of the user interface can be easy to use.

Evaluation of KRL access applications involves active users who are expected to provide application quality information. One way to evaluate it is to use the ISO 25010: 2011 method to evaluate the quality of application information systems specifically based on two dimensions, namely *product quality* and *quality in use*. Dimensions *product quality*, where the process refers to the intrinsic characteristics of a software product, has several elements which include *functional suitability, reliability, performance efficiency, Maintainability, security, compatibility, Portability* And *Quality in use*. There are several relative characteristics that are viewed from the user's perspective, among others *Appropriateness recognizability, Learnability, Operability, User error protection, User interface aesthetics dan Accessibility*.

With the application of several aspects in the research, it is expected to know the performance of mobile applications Access KRL from the side *Product quality* and *Quality in use*.

II. RESEARCH METHODS

Research methodology is a methodology that will be used in research to analyze the quality of KRL Access. The following are some of the methods used in this study.

A. Characteristics and sub-characteristics ISO/IEC 25010

1. Functional Suitability

The extent to which software can provide functions that meet the needs that can be used in certain conditions. These characteristics are divided into several sub characteristics.

- a. *Functional completeness*,
 - b. *Functional correctness*,
 - c. *Functional appropriateness*. (Gunawan and Triantoro, 2017)
2. *Performance Efficiency*
Performance is relative to the resources used in certain conditions. These characteristics are divided into several sub characteristics.
- a. *Time behaviour*,
 - b. *Resource utilization*,
 - c. *Capacity*. (Gunawan and Triantoro, 2017)
3. *Compatibility*
The extent to which a product, system, or component can exchange information with a product, system, or component and/or perform other functions required simultaneously when sharing the same hardware and software environment. These characteristics are divided into several sub characteristics.
- a. *Co-existence*,
 - b. *Interoperability*. (Gunawan and Triantoro, 2017)
4. *Usability*
The extent to which a product or system can be used by users to achieve goals with effective, efficient, and certain satisfaction in the context of use. These characteristics are divided into several sub characteristics.
- a. *Appropriateness recognizability*,
 - b. *Learnability*,
 - c. *Operability*,
 - d. *User error protection*,
 - e. *User interface aesthetics*,
 - f. *Accessibility*. (Gunawan and Triantoro, 2017)
5. *Reliability*
The extent to which a system, product, or component can perform certain functions under certain conditions for a specified period of time. These characteristics are divided into several sub characteristics.
- a. *Maturity*,
 - b. *Availability*,
 - c. *Fault tolerance*,
 - d. *Recoverability*. (Gunawan and Triantoro, 2017)
6. *Security*
The extent to which a product or system protects information and data so that someone or other systems can access data according to the type and level of authorization that is owned. These characteristics are divided into several sub characteristics.
- a. *Confidentiality*,
 - b. *Integrity*,
 - c. *Non-repudiation*,
 - d. *Accountability*,
 - e. *Authenticity*. (Gunawan and Triantoro, 2017)
7. *Maintainability*
The extent to which the effectiveness and efficiency of a product or system can be maintained. These characteristics are divided into several sub characteristics.
- a. *Modularity*,

- b. *Reusability*,
- c. *Analyzability*,
- d. *Modifiability*,
- e. *Testability*. (Gunawan and Triantoro, 2017)

8. *Portability*

The extent to which the effectiveness and efficiency of a system, product, or component can be transferred from one hardware, software, or used in a different environment. These characteristics are divided into several sub characteristics.

- a. *Adaptability*,
- b. *Installability*,
- c. *Replaceability*. (Gunawan dan Triantoro, 2017)

B. *Analytical Hierarchy process*

AHP is a decision support model that this decision support model will break down complex multi-factor or multi-criteria problems into a hierarchy (Saaty,1993). Hierarchy is defined as a representation of a complex problem in a multi-level structure where the first level is the goal, followed by the level of factors, criteria, sub-criteria, and so on down to the last level of alternatives. With hierarchy, a complex problem can be broken down into groups which are then arranged into a hierarchical form so that the problem will appear more structured and systematic. AHP is often used as a method of solving problems compared to other methods for the following reasons : (Pressman,Ph.D.Roger S, 2010)

- a. The hierarchical structure, as a consequence of the chosen criteria, reaches the deepest sub criteri.
- b. Take into account validity up to the tolerance limit of the inconsistencies of various criteria and alternatives chosen by decision-makers.
- c. Take into account the resilience of the decision making sensitivity analysis output.

C. *Blackbox Testing*

Black Box Testing is also called behavior testing, focusing on the functional requirements of the software. That is, the black box testing technique allows you to create several sets of input conditions that will fully do all the functional requirements for the program. Black box testing is not an alternative technique for black boxes. Instead, this is a possible complementary approach to uncovering a different class of error than that revealed by the white box method. Black box testing attempts to find errors in the following categories:

1. Incorrect or missing function,
2. Interface error,
3. Errors in data structures, external database access,
4. Error in behavior or performance,
5. Initialization and termination errors. (Pressman, 2010:597)

D. *Stress Testing*

Stress Testing is carried out to ensure that the system will not crash under a crisis situation. Under Stress Testing, AUT is emphasized for a short time to find out the capacity to endure. The most prominent use of stress testing is to determine the boundary, where the system or software or

hardware is damaged. It also checks whether the system shows effective error management in extreme conditions. Stress testing is also very important for the following reasons, to check whether the system is working in abnormal conditions. Displays the exact error message when the system is under pressure. System failure in extreme conditions can result in huge loss of income. Better to prepare for extreme conditions by executing Stress Testing. (Ferry, 2019)

E. Computer System Usability Questionnaire J.R Lewis

Usability analysis was performed using the J.R Lewis questionnaire. The quantitative data obtained were then calculated using the McCall quality factor equation (Lewis, J. R, 1995), using a formula:

$$\text{Percentage of Eligibility (\%)} = (\text{Observation score}) / (\text{Expected score}) \times 100\%$$

The collected data were analyzed using quantitative descriptive analysis techniques revealed in the distribution of scores and percentages of the rating scale categories determined in quantitative values as the table below.

TABLE I. Score Skala Linkert

No	Answer	Score
1	Strongly Disagree	1
2	Disagree	2
3	Doubtful	3
4	Agree	4
5	Strongly Agree	5

After the presentation in the form of a percentage, then describe and draw conclusions about each aspect indicator in the development of learning media, for assessment can use the percentage interpretation table below:

TABLE II. Reliability testing intervals and criteria

No	Criteria	Explanation
1	Questionnaire Eligibility 0 - 21%	Strongly Disagree
2	Questionnaire Eligibility 21 - 40%	Disagree
3	Questionnaire Eligibility 41 - 60%	Doubtful
4	Questionnaire Eligibility 61 - 80%	Agree
5	Questionnaire Eligibility 81 - 100%	Strongly Agree

III. RESEARCH RESULT AND DISCUSSION

A. Determination of the Characteristic and Sub-Characteristics Method Weights ISO 25010:2011 on Product Quality

The study was conducted on the quality of KRL Access software, the determination of value will be done on 7 characteristics and 22 sub-characteristics of Product Quality as shown below.

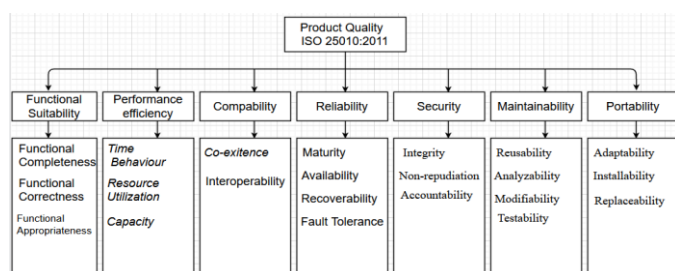


Fig. 1. Product Quality ISO 25010:2011

Determination of this value using AHP tools based on Web with url address <https://bpmmsg.com/ahp/ahp-calc.php>.

B. Results of Determination of the Characteristics Value of the ISO Method 25010:2011

The results of determining the priority value of the characteristics ISO 25010:2011 for Product Quality which has 7 characteristics: Functional Suitability, Reliability comes first with priority 21.3%. Performance Efficiency ranks 3 with priority 19.6%. Security ranks 4 with priority 17.4%. Compability ranks 5 with priority 8.2%. Portability ranks 6 with priority 6.5% and Maintability ranks 7 with priority 5.8%.

After determining the values of the 7 characteristics of ISO 25010: 2011 in Product Quality, then the value per sub-characteristic of Functional Suitability, Performance Efficiency, Compability, Reliability, Security, Maintainability and Portability. This journal will present three results of determining the value and testing of sub-characteristics, namely *Functional Suitability, Performance Efficiency and Reliability*.

C. Determination the value of Functional Suitability Sub Characteristics use AHP

In the Functional Suitability characteristics, the sub-characteristics to be determined are *functional completeness, functional correctness and functional appropriateness*, here are better criteria for determining characteristic values.

The functional completeness sub characteristics is more important than functional correctness with priority 1, which is just as important because functional completeness is a sub-character to test the overall features of the software whether it can run well or not. functional correctness is a sub characteristic that will be used to test whether a software feature can perform its function correctly or not.

The functional completeness sub characteristics are more important than functional appropriateness with priority 3, which is slightly more important. That is because functional completeness is a sub-characteristic to test the overall features of the software that can run well or not. functional appropriateness is a sub characteristic used to test whether the features of the software are appropriate for their functions or not.

Priorities

These are the resulting weights for the criteria based on your pairwise comparisons:

Cat		Priority	Rank	(+)	(-)
1	Functional Completeness	42.9%	1	0.0%	0.0%
2	Functional Correctness	42.9%	1	0.0%	0.0%
3	Functional Appropriateness	14.3%	3	0.0%	0.0%

Number of comparisons = 3
Consistency Ratio CR = 0.0%

Fig. 2. Result of Determining the Functional Suitability Sub Characteristics value

The *functional correctness* sub characteristic is more important than *functional appropriateness* with priority 3, which is a little more important because *functional correctness* is a sub-characteristic used to test whether the features of the software can work well or not. *functional appropriateness* is a sub characteristic used to test whether the features of the software are appropriate for their functions or not. Here are the results of determining the weights of Functional Suitability Sub characteristics.

D. Determination the value of Performance Efficiency Sub Characteristics use AHP

On the Performance Efficiency characteristics, the sub-characteristics to be determined are *Time Behavior*, *Resource Utilization*, *Capacity*, and here are better criteria for determining characteristic values.

The Time Behavior sub characteristic is more important than the Resource Utilization sub-characteristic with priority 1, which is the level of importance that is equally important. This is because time behavior is a sub-characteristic for testing software processing time when used by users. Resource utilization is a sub-characteristic whose function is to test the use of hardware resources used by software.

The Time Behavior sub-characteristic is more important than Capacity with priority 3, namely the level of importance is slightly more important. That is because time behavior is a sub characteristic used to test the software processing time used by the user. Capacity is a sub characteristic that functions to test the memory used by the software.

Priorities

These are the resulting weights for the criteria based on your pairwise comparisons:

Cat		Priority	Rank	(+)	(-)
1	Time Behavior	42.9%	1	0.0%	0.0%
2	Resource Utilization	42.9%	1	0.0%	0.0%
3	Capacity	14.3%	3	0.0%	0.0%

Number of comparisons = 3
 Consistency Ratio CR = 0.0%

Fig. 3. Results of the determination of the Sub Characteristics of Performance Efficiency

The Resource Utilization Sub Characteristics is more important than Capacity with priority 3, namely the importance level is slightly more important. That is because Resource Utilization whose function is to test the use of hardware resources used by software. Capacity is a sub characteristic that functions to test the memory used by the software. Here are the results of determining the value of Functional Suitability Sub characteristics.

E. Determination the value of Reliability Sub Characteristics use AHP

In the Reliability characteristics sub characteristics that will be determined are Maturity, Availability, Recoverability and Fault Tolerance, the following are better criteria for determining the characteristic values.

Maturity sub characteristics are more important than Availability with priority 3, which is a little more important because the maturity sub characteristics function to test software maturity when tested under various conditions. Availability is a sub characteristic whose function is to determine the extent to which a product or system is ready to operate and can be accessed when it needs to be used.

Maturity sub characteristics are more important than Fault Tolerance with priority 1 with the same importance level because the maturity sub characteristics function to test software maturity when tested under various conditions. Fault Tolerance sub characteristics whose function is to determine the ability of the software to maintain performance when an error occurs.

Maturity sub characteristics are more important than Recoverability sub characteristics with priority 3, which is a slightly more important level of importance. That is because maturity is a sub characteristic whose function is to test the vulnerability of a software when it is tested under various conditions. Recoverability is used to determine the extent to which a product or system is able to recover data directly affected and rearrange the system conditions as desired when an interruption occurs.

Availability sub characteristics are not more important than Fault Tolerance sub characteristics with priority 3, which are of small importance. That is because Availability is a sub characteristic whose function is to determine the extent to which a product or system is ready to operate and can be accessed when it needs to be used. Fault Tolerance sub characteristics whose function is to determine the ability of the software to maintain performance when an error occurs.

Availability sub characteristics are more important than Recoverability sub characteristics with priority 1, namely the importance of the same importance. That is because Availability is a sub characteristic whose function is to determine the extent to which a product or system is ready to operate and can be accessed when it needs to be used. Recoverability is used to determine the extent to which a product or system is able to recover data directly affected and rearrange the system conditions as desired when an interruption occurs.

The Fault Tolerance sub characteristic is more important than the Recoverability sub characteristic with priority 3, which is slightly more important because the Fault Tolerance sub characteristic has the function to determine the software's ability to maintain performance when an error occurs. Recoverability is used to determine the extent to which a product or system is able to recover data directly affected and rearrange the system conditions as desired when an interruption occurs. Here are the results of determining the Reliability value.

Priorities

These are the resulting weights for the criteria based on your pairwise comparisons:

Cat		Priority	Rank	(+)	(-)
1	Maturity	37.5%	1	0.0%	0.0%
2	Availability	12.5%	3	0.0%	0.0%
3	Fault Tolerance	37.5%	1	0.0%	0.0%
4	Recoverability	12.5%	3	0.0%	0.0%

Fig. 4. Result of Determination of Reliability Characteristic Sub Weight

F. Testing Functional Suitability Characteristics

1. Functional Completeness

Testing the *functional completeness* sub characteristics on the KRL Access application is done using the blackbox testing method. The purpose of testing is to determine the extent to which the function provided includes all the specific tasks and objectives of the user.

2. Functional Correctness

Testing *functional correctness* sub characteristics in the KRL Access application is done using the blackbox testing method. The purpose of testing is to determine the extent to which the product or system provides the correct results as needed.

3. Functional Appropriatenes

Testing *Functional Appropriatenes* Sub characteristics in the KRL Access application is done using the blackbox testing method. The purpose of testing is to determine the extent to which the functions provided are able to facilitate the completion of certain tasks and objectives.

4. Total value of Functional Suitability Characteristics

After evaluating each sub-characteristic contained in the specified Functional Suitability characteristics, values are obtained as the table below.

TABLE III. Total Value of Functional Suitability Characteristics

No	Sub Characteristics	Value	Score	Total
1.	Functional Completeness	42.9%	5	42.9% * 5 = 2,145
2.	Functional Correctness	42.9%	5	42.9% * 5 = 2,145
3.	Functional Approriateness	14.3%	5	14.3% * 5 = 0,71
				Total = 5

G. Testing Performance Efficiency Characteristics

1. Time Behavior

Testing the *Time Behavior* sub characteristics of the KRL Access application is done using the blackbox testing method. The purpose of testing is to determine the extent to which the response and processing time of the product or system can meet the requirements when carrying out the function.

2. Resource Utilization

Testing the sub characteristics of *Resource Utilization* sub in the KRL Access application is done using the blackbox testing method. The purpose of testing is to determine the extent to which the amount and type of resources used by the product or system can meet the requirements when carrying out functions.

3. Capacity

Testing the *Capacity* sub-characteristic on KRL Access application is done using the blackbox testing method. The purpose of testing is to determine the extent to which the maximum parameters of the product or system can meet the requirements.

4. Total Value of Performance Efficiency Characterist

After evaluating each sub-characteristic contained in the Performance Efficiency characteristics, values are obtained as shown in the table below.

TABLE IV. Total Value of Performance Efficiency Characteristics

No	Sub Characteristics	Value	Score	Total
1.	Time Behavior	42.9%	5	42.9% * 5 = 2,145
2.	Resource Utilization	42.9%	5	42.9% * 5 = 2,145
3.	Capacity	14.3%	5	14.3% * 5 = 0,71
				Total = 5

H. Testing Reliability Characteristics

1. Maturity

Testing sub characteristics *Maturity* on the KRL Access application is done using the Stress testing method. The purpose of testing is to determine the extent to which a product or system is able to meet requirements reliably under normal circumstances.

2. Availability

Testing the *Availability* sub characteristics on the Access KRL application is done using the Stress testing method. The purpose of testing is to determine the extent to which the product or system is ready to operate and can be accessed when it needs to be used.

3. Recoverability

Testing sub characteristics *Recoverability* on the KRL Access application is done using the Blackbox testing method. The purpose of testing is to determine the extent to which the product or system is able to recover data directly affected and rearrange the system conditions as desired when an interruption occurs.

4. Fault Tolerance

Testing sub characteristics *Fault Tolerance* on the KRL Access application is done using the Stress testing method. The purpose of testing is to determine the extent to which the product or system continues to run as intended despite an error in the hardware, software or user.

5. Total Value of Reliability Characterist

After evaluating each sub-characteristic contained in the Reliability characteristics, values are obtained as the table below.

TABLE V. Total Value of Reliability Characterist

No	Sub Characteristics	Value	Score	Total
1.	Maturity	37.5%	3	37.5% * 3 = 1,12
2.	Availability	12.5%	5	12.5% * 5 = 0,62
3.	Recoverability	37.5%	3	17.5% * 3 = 0,52
4.	Fault Tolerance	12.5%	1	12.5% * 1 = 0,12
				Total = 2,38

I. Determination of Usability ISO 25010:2011 Sub Characteristics on Quality in Use

The study was conducted on the quality of the KRL Access software on Quality in Use, Determination of weight will be

carried out on 6 sub-characteristics contained in the Usability sub-characteristics using Web-based AHP tools with the URL <https://bpmsg.com/ahp/ahp-calc.php>. Below is a picture of the usability section to be tested.

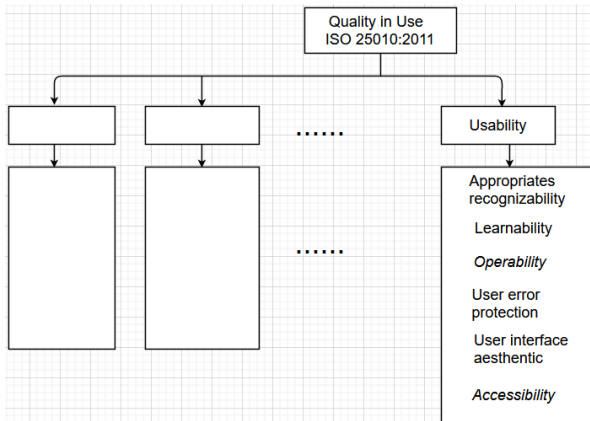


Fig. 5. Quality in Use ISO 25010:2011

J. Results of the Determination of the Value of Usability Sub Characteristics

The results of determining the priority weights of Usability characteristics that have 6 sub characteristics are *Appropriates recognizability*, *Learnability*, *Operability*, *User error protection*, *User Interface Aesthetic* and *Accessibility*. The results of determining sub-characteristic values. *Learnability* and *Operability* took first place with Priority 22.4%. Third, *Use Error Protection* with priority 18.2%. Fourth *Aesthetic User Interface* with priority 15.8%. Fifth *Appropriates Recognizability* with priority 13.5% and Sixth *Accessibility* with priority 7.7%.

K. Testing Usability Sub Characteristics for Quality in Use

This study will use 6 sub characteristics on Usability to test the KRL Access Application, namely: *Appropriates recognizability*, *Learnability*, *Operability*, *User error protection*, *User interface aesthetic*, and *Accessibility*. The purpose of Usability characteristics is the extent to which a product or system can be used by users to achieve goals effectively, efficiency, and satisfaction in using software. The data used in this study uses a questionnaire intended for users who have used the KRL Access application. Following is an explanation of the KRL Access application test.

1. Research Sample Selection

This study uses a solovin approach with an error limit that is tolerated at 10%. Based on the online media source beritasatu.com which was published on November 20, 2019, with the article title "KRL Passenger Growth in Bodebek Increases Rapidly" it is known that the number of Jakarta-Depok KRL users was 7,408,141 in 2019 from January to October. Following are the calculations from sample selection.

- a. Number of Jakarta-Depok KRL passengers is 7,408,141.
- b. The calculation uses the method as below.

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

Ket : n = Sample Amount

N = Populasi Amount
 e = Limitation of Tolerable Errors (1%, 5%, 10%)
 $= \frac{7.408.141}{1+7.408.141(10\%)^2}$
 $= \frac{7.408.141}{1+7.408.141 (0,01)}$
 $= \frac{7.408.141}{74.082,41}$
 $= 99,99$
 $= 100$

After calculating using the solovin approach, the number 99.99 is rounded to 100. The number 100 will be used to distribute questionnaires to 100 people who have used the KRL application. Especially KRL Jakarta-Depok users.

2. Validity Testing Using SPSS

Validity testing is used to find out which questionnaires have been filled by valid respondents or not, validity testing using SPSS tools by entering questionnaire data, Here are the results of Validity testing. Results From the validity test found valid because the value obtained exceeds the value of r table with N = 100 at a significance of 5% with a value of r of 0.195. Here is a table of test results.

TABLE VI. Validity Test Testing Results

Question	R Count	R Table	Explanation
1 Recognizability	0,635	0,195	Valid
2 Recognizability	0,716	0,195	Valid
3 Recognizability	0,690	0,195	Valid
4 Learnability	0,745	0,195	Valid
5 Learnability	0,692	0,195	Valid
6 Learnability	0,675	0,195	Valid
7 Operability	0,628	0,195	Valid
8 Operability	0,750	0,195	Valid
9 Operability	0,655	0,195	Valid
10 User Error Protection	0,341	0,195	Valid
11 User Error Protection	0,258	0,195	Valid
12 User Interface Aesthetic	0,661	0,195	Valid
13 User Interface Aesthetic	0,654	0,195	Valid
14 User Interface Aesthetic	0,679	0,195	Valid
15 User Interface Aesthetic	0,662	0,195	Valid
16 Accessibility	0,519	0,195	Valid
17 Accessibility	0,522	0,195	Valid

3. Reliability Testing Using SPSS

Reliability testing is done if the questionnaire is said to be valid from validity testing. This step is done after testing the validity of using SPSS Tools, with the results as shown below.

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	100	100,0
	Excluded ^a	0	,0
	Total	100	100,0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
,744	18

Fig.6. Reliability Results

Based on the reliability test the results obtained were 0.744 on **Cronbach's Alpha**, according to the reliability index

criteria table below the **High Correlation** criteria, it was concluded that the questionnaire that had been filled out by respondents was reliable.

TABLE VII. Reliability Testing Intervals and Criteria

Interval	Criteria
0,000-0,200	Correlation is very Low
0,200-0,400	Low Correlation
0,400-0,600	Enough Correlation
0,600-0,800	High Correlation
0,800-1,000	Correlation is very high

4. Testing Appropriates Recognizability

Appropriates recognizability testing conducted on the KRL Access application using a questionnaire method, to test the level of software's ability to know the extent to which the application is easily understood. In this study, questionnaires will be distributed to 100 respondents. In the Appropriates recognizability sub characteristic there are 3 questions with a total of 300 votes.

TABLE VIII. Vote Results Testing Appropriates Recognizability

No	Number of Votes	Explanation
1	3	Strongly Disagree
2	9	Disagree
3	63	Doubtful
4	139	Agree
5	86	Strongly Agree
Total	300	

Based on the results of testing through a questionnaire on the Appropriates recognizability sub-characteristics obtained results **Agree** with 139 votes out of 300 votes.

5. Learnability Testing

Learnability testing conducted on the KRL Access application using a questionnaire method, to test the level of software's ability to know the extent to which the application is easy to learn. Questionnaires will be distributed to 100 respondents. In the Learnability sub characteristics there are 3 questions with a total of 300 votes.

TABLE IX. Vote Result Testing Learnability

No	Number of Votes	Explanation
1	2	Strongly Disagree
2	12	Disagree
3	62	Doubtful
4	153	Agree
5	71	Strongly Agree
Total	300	

Based on the results of testing through a questionnaire on the Learnability sub-characteristics obtained results **Agree** with 153 votes out of 300 votes.

6. User Error Protection

User Error Protection testing conducted on the KRL Access application using a questionnaire method, to test the level of software's ability to know the extent of the software's ability to protect errors made by users. Questionnaires will be distributed to 100 respondents. In the User error protection sub characteristics there are 2 questions with a total of 200 votes.

TABLE X. Vote Results Testing User Error Protection

No	Number of Votes	Explanation
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1	19	Strongly Disagree
2	40	Disagree
3	75	Doubtful
4	45	Agree
5	21	Strongly Agree
Total	200	

Based on the results of testing through a questionnaire on the User error protection sub-characteristics get **Doubt** results with 75 votes from 200 votes.

L. Total Product Quality and Quality in Use Assessments

After conducting several stages of research that starts from weighting characteristics, sub-characteristics and testing applications for Product Quality and Quality in Use and getting the results. Now totaling the total value obtained from Product Quality and Quality in Use along with the suggested lack of applications for PT Kereta Commuter Indonesia as the application owner.

1. Total Product Quality Assessment Results

Research has been conducted on the characteristics and sub characteristics using the ISO 25010: 2011 model on the KRL Access application, the researcher will discuss the total calculation of the characteristics and sub characteristics of the ISO 25010: 2011 model that has been calculated previously. Following is the total calculation table of the characteristic values and sub characteristics in the KRL Access application.

TABLE XI. Total Product Quality Assessment Results

No	Characteristics	Value	Score	Total
1.	Functional Suitability	21,3%	5	21,3% * 5 = 1,06
2.	Performance Efficiency	19,6%	5	19,6% * 5 = 0,98
3.	Compability	8,2%	5	8,2% * 5 = 0,41
5.	Reliability	21,3%	2,38	21,3% * 2,38 = 0,50
6.	Security	17,4%	3,20	17,4% * 3,20 = 0,55
7.	Maintainability	5,8%	4,23	5,8% * 4,23 = 0,24
8.	Portability	6,5%	3,70	6,5% * 3,70 = 0,24
				Total = 3,98

After conducting a series of research and trials on applications in the form of Blackbox testing, Stress testing and Observation, it was found that the KRL Access application testing with ISO 25010: 2011 method with 7 characteristics and 22 sub characteristics obtained **3.98** results were rounded to **4.00** and obtained **good** categories.

2. Total Quality in Use Assessment Results

The results of the *Quality in Use* study used data derived from 6 Usability sub characteristics, namely *Appropriates recognizability*, *Learnability*, *Operability*, *User error Protection*, *User interface aesthetic* and *Accessibility*. Then the following results are obtained:

TABLE XII. Total Quality in Use Assessment Results

No	Sub Characteristics	Value	Score	Total
1.	Appropriates recognizability	13.5%	4	13.5% * 4 = 0,54
2.	Learnability	22,4%	4	22,4% * 4 = 0,90
3.	Operability	22,4%	4	22,4% * 4 = 0,90
4.	User Error Protection	18,2%	3	18,2% * 3 = 0,54
5.	User interface aesthetic	15,8%	4	15,8% * 4 = 0,63
6.	Accessibility	7,7%	4	7,7% * 4 = 0,30
				Total = 3,81

After getting a total of 6 sub characteristics, then look for the percentage of eligibility to get the value that has been determined by the method below.

Formula:

$$(\text{Observed score})/(\text{Expected score}) * 100\%$$

$$3,81/5 * 100\% = 76,2\%$$

The results obtained are **76.2%**, then based on the Usability assessment criteria table regarding eligibility, a value of **4** with **Good** categories.

M. Advice for PT Kereta Commuter Indonesia

After the two dimensions of Product Quality and Quality in Use are known, it can be seen the side that must be corrected in the KRL Access application. In the Product Quality characteristic that must be improved is the Reliability characteristic which gets a value of 2.38. These characteristics emphasize that the application is still bad for carrying out certain functions for a specified period of time, so it must be improved again. Whereas in the Quality in Use side that must be corrected is the User error protection which gets a value of 3 from the other gets a value of 4. In this sub-character the user does not get information if he makes a mistake in using the application then it must be increased again.

IV. CONCLUSION AND SUGGESTIONS

A. Conclusion

Based on the research results described previously, it can be concluded that the measurement of the quality of the KRL Access application uses the ISO 25010: 2011 Method which uses 2 dimensions, namely *Product Quality* and *Quality in Use*, the results obtained:

1. *Product Quality* which includes 7 characteristics, namely *Functional Suitability*, *Performance efficiency*, *Compability*, *Reliability*, *Security*, *Maintainability* and *Portability* Produce **good** value, with a value of **4.00**. There are 3 characteristics that get the first perfect score is *Functional Suitability* with the aim of the software being able to provide the needs function used by the second user *Performance Efficiency* with the aim of all features running accordingly or not and thirdly *Compability* with the aim of whether the application can adapt to different environments.

2. *Quality in Use* which includes 6 sub-characteristics of Usability namely *Appropriates recognizability*, *Learnability*, *Operability*, *User error protection*, *User interface aesthetic* and *Accessibility* produces **good values** with a value of **4**. In *Quality in Use* the values obtained are almost the same for all 5 characteristics that get the value 4 but only User Error Protection gets a value of 3.

B. Suggestions

In this study, suggestions can be given for further research that will analyze the quality of applications with the same method, to focus more on the user experience with more indicators and use sub-characteristics that are not used in this study. in order to know in detail of the deficiencies that occur in the application of the dimensions of *Product Quality* and *Quality in Use* so that it can be a reference for application developers and for learning

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