

Quality Analysis of E-Office Application PT. KAI (Persero) Use Method ISO 25010

Endhika Saputra¹, Lintang Yuniar Banowosari²

¹Master of Information Systems Management Department, Business Information System, Gunadarma University, Indonesia

²Faculty of Technology and Engineering, Gunadarma University, Depok, West Java, Indonesia - 16424

Email Address: ¹endhika.saputra @ gmail.com, ²lintang @ staff.gunadarma.ac.id

Abstract— PT. KAI (Persero) has implemented an e-office application. E-Office is a website that functions as a storage for important documents regarding employee data. Based on observations at UPT. Balai Yasa Manggarai, PT. KAI (Persero) is known that the e-office has no feedback from the user to find out how good the quality of using the application is. In order to improve the quality in the use of applications, the quality level of e-office applications is measured by using the ISO 25010 method, which is an international standard method of measuring application quality levels. This study uses the ISO 25010 framework, namely functional suitability, performance efficiency, compatibility, usability in use, reliability, security, maintainability, & portability. The results of this study will obtain a quality level based on the effectiveness, efficiency and level of satisfaction of e-office users and have a feasibility level score from the application.

Keywords— E-office Application, ISO 25010, PT. KAI (Persero), Quality in Use, Product Quality.

I. INTRODUCTION

In the development of technology, there are increasingly new innovations, especially in the field of information technology. This information technology can have a positive impact on several groups in facilitating data processing and receiving and conveying information.

PT KAI (Persero) is a State-Owned Enterprise (BUMN) engaged in transportation services, namely railways in Indonesia. PT KAI (Persero) has implemented information system technology in the field of website-based human resources, namely the E-office. E-office is a system related to administration, virtual centralizing the components of an organization where data, information, and communication are made through telecommunications media [1].

The e-office implemented by PT Kereta Api Indonesia (Persero) is a container for storing important document archives of employee data totaling 27,779 permanent workers as of December 2020, excluding workers seconded to subsidiaries.

Physically, worker data documents are recorded in the Work History Card book and stored manually in a filing cabinet in the Personnel Care, Control and Development Unit. Meanwhile, electronically, worker data documents are scanned, rename, uploaded and stored on the e-office website to make it easier for workers to find documents when they are needed again. If PT Kereta Api Indonesia (Persero) workers need their personal documents, they can be seen by logging in on the e-office website without asking the Personnel Care, Control and Development Unit.

The following information and documents of workers can be seen at the e-office and are up to date every day:

1. Detailed data on workers and their scanned documents
2. Worker education data and scanned documents
3. Data on training & worker certification along with the scanned documents
4. Worker's family data (data of workers 'spouses & workers' children) along with the scanned documents
5. Employee position history data along with the scanned documents
6. Employee performance history data
7. Worker's discipline penalty data and its scanned documents
8. Employee award history data and scanned documents
9. Detailed employee bank data along with the scanned documents
10. Employee promotion history data along with the scanned documents
11. Historical data of employee periodic salary increases and their scanned documents
12. Other document data

Currently the application that has been implemented, namely the e-office, has weaknesses in accessing the website, namely:

1. There is no limit for each employee to access e-office applications
2. The data presented in the e-office application is less accurate and incomplete
3. Lack of socialization for human resource units in the use of e-office applications
4. The e-office application can only be used in the workplace (intranet network), if you access outside you must use the VPN Portal first.
5. By changing the e-office password which is done every 3 months automatically by the system, the system often forgets it when changing passwords.

Judging from the weaknesses of an information system, then when analyzing the system an important step is needed to be able to influence the next steps in the need for improvement. Therefore, this study uses the ISO 25010 method, which is one of the methods in measuring software used to measure the quality of application systems using two general dimensions, namely product quality and quality in use.

The product quality dimension, in the process, refers to the inherent aspects of a software, and has several indicators, namely functional suitability, performance efficiency, compatibility, usability, reliability, security, maintainability

and portability. Meanwhile, the quality in use indicator has relative aspects to be seen from the user aspect, namely usability in use, flexibility in use, and safety [2].

II. LITERATURE REVIEW

Several studies have been carried out using the ISO 25010 method. Taufiq Abdul Ghaffur & Nurkhamid [3] conducted research to ensure the quality level of the information system for mobile web-based school activities, as well as to avoid errors, and to adjust its features and functionality as planned by testing. which is based on the ISO 25010 standard uses 4 characteristics of ISO 25010 functional suitability, compatibility, usability, and performance efficiency. The research instruments used were black-box testing, USE Questionnaire, Yslow tools and Pingdom Website Speed Test. The results of research on school activity information systems that meet ISO 25010 standards on 4 characteristics, functional suitability characteristics with 100% results, compatibility aspects have a value of 100%, and usability has a value of 82% with Cronbach's alpha 0.981, and performance efficiency is 94.2. With an average access speed of 0.9305 seconds per page (good).

Another study, Heru Setiawan, Handaru Jati [4], conducted a study using 5 characteristics of the ISO 25010 standard, namely functional suitability, usability, reliability, performance efficiency, and maintainability. The instruments used were a functionality questionnaire, USE Questionnaire, stress testing, load testing, and maintainability index to determine the quality of the monitoring information system for character building of students at SMKN 2 Depok Sleman. The results of his research have met the ISO 25010 standard on functional suitability characteristics with a value of 1 (good), usability characteristics of 85.3% (very feasible) and a Cronbach alpha value of 0.944 (excellent), reliability characteristics of 100% (passed), performance characteristics. efficiency of 2.5 seconds (accepted), and maintainability characteristics of 100 (very easy to maintain).

In the research of Fadli H. Wattiheluw, Siti Rochimah, Chastine Fatichah [5], conducted a study to evaluate the quality level of e-commerce website software based on the characteristics of ISO / IEC 25010 on functional suitability, performance efficiency, reliability and usability using the Fuzzy Mamdani method. To assess the quality of the e-commerce website based on the characteristics and weighting the importance of the characteristics using the Analytical Hierarchy Process method. The results obtained from the evaluation model can help developers to design and develop a quality e-commerce website with an accuracy level of 0.684.

III. RESEARCH METHOD

The research method used is the characteristics of ISO 25010, namely functional suitability, performance efficiency, compatibility, usability, reliability, security, maintainability & portability. The instrument used was the Validity, Reliability & Descriptive Statistics Test to determine the quality of the e-office application of PT. KAI (Persero). ISO / IEC 25010 is a reference or standard used to test software quality.

The following is the research framework taken in carrying out this research.

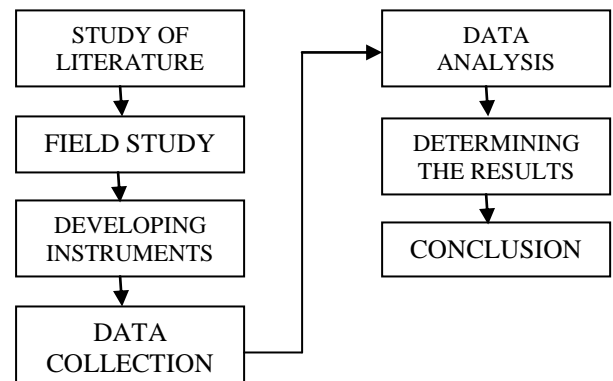


Fig. 1. Research Framework.

In Figure 1, the research framework is a flowchart that is used as a reference in conducting research to get the best quality results of e-office applications when analyzing. The following are the research stages used in the analysis of e-office applications:

1. Study of Literature

The method of literature study is carried out to compare similar research. There are various types of research such as final assignments, theses, theses, and journals that can be used as a reference in this research. By studying some of the literature, so that you can find out what things have not been done in previous research and avoid mistakes in previous research, and can add insight about ISO 25010.

2. Field Study

This research was conducted within the UPT. Balai Yasa Manggarai, PT. KAI (Persero).

3. Constructing the Inquiry Instrument Using ISO 25010

At this stage, the instrument is prepared based on the ISO / IEC 25010 standard in the form of a list of questions / questionnaires needed. The instrument consists of a test case in the form of a questionnaire with a Likert scale. The Likert scale is a psychometric scale used in questionnaires and is the largest scale used in a survey research. The name of this scale is derived from the name Rensis Likert, who published a report describing its use [6].

TABLE 1. Likert Scale Statement.

Statement	Positive	Negative
Strongly Disagree	1	5
Disagree less	2	4
Simply Agree	3	3
Agree	4	2
Strongly agree	5	1

The following is a list of user questions per dimension based on ISO 25010 for a sample of employees of PT. KAI (Persero).

TABLE 2. List of Functional Suitability Indicator System Evaluation Questions.

Code	Statement	Variable
A1	The information / data available on the e-office system is complete	Functional Appropriateness
A2	The buttons or menus on the e-office system can be used	Functional Correctness
A3	The information displayed by the e-office system is as needed	Functional Completeness

TABLE 3. List of Questions for System Evaluation of Performance Efficiency Indicators.

Code	Statement	Variable
B1	The e-office system responds quickly when displaying information	Time Behaviour
B2	During peak hours the e-office system is down and inaccessible	Capacity & Resource Utilization

TABLE 4. List of Questions for System Compatibility Indicator Evaluation.

Code	Statement	Variable
C1	The e-office system can be used in various browsers	Co- Existence
C2	The e-office system features a storage feature	Interoperability

TABLE 5. List of Usability Indicator System Evaluation Questions.

Code	Statement	Variable
D1	How to use the e-office system is easy to remember	Appropriateness Recognizability
D2	Using the e-office system is easy to learn	Learnability
D3	The e-office system is easy to run	Operability
D4	The appearance of the e-office system is easy to understand	User Interface Aesthetics
D5	The e-office system can be used by several users at the same time	Accessibility
D6	A message appears when an error occurs when using the e-office system	User Error Protection

TABLE 6. List of Reliability Indicator System Evaluation Questions.

Code	Statement	Variable
E1	The e-office system can be accessed at any time	Maruity
E2	The e-office system can be accessed when needed	Availability
E3	How big is the error when running an e-office system	Fault Tolerance
E4	An error occurred in the system and could return to normal if an error occurred while using the e-office system	Recoverability

TABLE 7. List of Security Indicator System Evaluation Questions.

Code	Statement	Variable
F1	Can be accessed by all users without being noticed by other users in the e-office system	Confidentiality
F2	The e-office system has a security system	Integrity
F3	There are e-office system visitor statistics	Non - Repudiation
F4	The computer installation location is safe enough from possible disturbances or disasters from outside the room on the e-office system	Accountability
F5	There is an e-office login menu	Authenticity

TABLE 8. List of Maintainability Indicator System Evaluation Questions.

Code	Statement	Variable
G1	The e-office system needs to be updated to make it better	Modularity & Reusability
G2	Errors do not occur frequently in e-office systems	Analyzability
G3	Modifications are needed to make the e-office system easier to understand	Modifiability
G4	The e-office system is able to function properly	Testability

TABLE 9. List of Portability Indicator System Evaluation Questions.

Code	Statement	Variable
H1	The e-office system can be used on a variety of existing hardware. (smartphone, computer, laptop).	Adaptability
H2	E-office systems can be easily removed and installed	Installability

4. Determining Sample

In this study using a saturated sampling method. Saturated sampling is a sampling technique when all members of the population are used as samples [7].

5. Data Collection

The data used in this study are questionnaire sample data obtained after distributing questionnaires to several samples of PT. KAI (Persero) uses google docs forms.

6. Analyze Data

After grouping the data, data analysis was carried out. The analysis technique used is descriptive statistical methods. Frequency distribution techniques are used in data presentation and the mean, median mode value, etc. are determined so that the high and low level of quality values can be found using the form of a frequency distribution table.

7. Determining Results

After getting the value of all known aspects, conclusions can be made from the entire content of the research. After the conclusions are generated from the quality level, it can be compiled in the form of a conclusion on the value of each aspect along with the level of quality that will be given. The quality level arrangement aims to improve the quality of the e-office application system of PT. KAI (Persero) can continue to be maintained and improved.

IV. RESEARCH RESULT AND DISCUSSION

The data used to analyze the e-office application of PT. KAI (Persero) as many as 20 data. The analysis process was carried out using validity and reliability tests using SPSS software and to describe the general state of the data using descriptive analysis.

A. Validity Testing

The standard value of the correlation coefficient is 0.3. If the calculated value is > 0.3 then the question is valid. Meanwhile, if the result < 0.3 then the question is not valid. Of the twenty eight items in the questionnaire [8].

TABLE 10. Invalid Questions.

Indicator	Question Code	Question	Pearson Value
Functional Suitability	A2	Tombol atau menu yang ada pada sistem e-office belum dapat digunakan	0,007
Performance Efficiency	B2	Pada jam sibuk sistem e-office tidak down dan dapat dilkses	0,003
Usability	D3	Sistem e-office sulit dijalankan	0,232
Reliability	E2	Sistem e-office sulit diakses bila diperlukan	0,225
Reliability	E4	Sistem e-office bisa memperbaiki apabila terjadi	0,111

		<i>error</i>	
Maintainability	G3	Sistem <i>e-office</i> belum di modifikasi menjadi untuk mudah dipahami	0,204
Portability	H1	Sistem <i>e-office</i> dapat digunakan di salah satu perangkat keras saja	0,253
Portability	H2	Sistem <i>e-office</i> belum dapat dihapus dan dipasang dengan mudah	0,291

Based on these problems, validation was carried out on eight questions in order to make the sentences of the questionnaire questions clearer and the respondents answered the questions in the questionnaire more constantly, then the validation process can be seen in Table 11 Question Validation.

TABLE 11. Validation Questions.

Indicator	Question Code	Question
Functional Suitability	A2	The buttons or menus on the e-office system can be used
Performance Efficiency	B2	During peak hours the e-office system goes down and cannot be accessed
Usability	D3	The e-office system is easy to run
Reliability	E2	The e-office system can be accessed when needed
Reliability	E4	An error occurred on the e-office system and it can return to normal if an error occurs while using the system
Maintainability	G3	The need for modification so that the e-office system is easier to understand
Portability	H1	The e-office system can be used on a variety of existing hardware. (Smartphone, computer, laptop)
Portability	H2	E-office systems can be easily removed and installed

After the validation was carried out in Table 11 Validation Questions, then the questionnaires were distributed again to the respondents at PT. KAI (Persero).

Based on the results of the validity test, it can be seen that all items on all indicators show a correlation value that is greater than the standard value of the correlation coefficient (0.3) so that all items are declared valid.

TABLE 12. Validity Test Results.

Code	Pearson Value	Coefficient Standard Value	Information
A1	0,467	0,3	Valid
A2	0,330	0,3	Valid
B1	0,540	0,3	Valid
B2	0,481	0,3	Valid
C1	0,315	0,3	Valid
C2	0,536	0,3	Valid
D1	0,348	0,3	Valid
D2	0,359	0,3	Valid
D3	0,350	0,3	Valid
D4	0,510	0,3	Valid
D5	0,449	0,3	Valid
D6	0,662	0,3	Valid
E1	0,379	0,3	Valid
E2	0,340	0,3	Valid
E3	0,408	0,3	Valid
E4	0,368	0,3	Valid
F1	0,370	0,3	Valid
F2	0,595	0,3	Valid

F3	0,592	0,3	Valid
F4	0,673	0,3	Valid
F5	0,365	0,3	Valid
G1	0,428	0,3	Valid
G2	0,490	0,3	Valid
G3	0,410	0,3	Valid
G4	0,453	0,3	Valid
H1	0,310	0,3	Valid
H2	0,320	0,3	Valid

B. Reliability Testing

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	22	100,0
	Excluded ^a	0	,0
	Total	22	100,0

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

Reliability Statistics

Cronbach's Alpha	N of Items
,787	28

Fig. 2. Reliability Testing Results Using SPSS.

After doing the scale stage in the SPSS software and moving the items, the results obtained from the reliability test. To find out the reliability test value can be seen in table 13 Cronbach's alpha value.

TABLE 13. Cronbach alpha values.

Alpha Cronbach Value	Information
0,00 – 0,20	Less reliable
0,20 – 0,40	Rather reliable
0,40 – 0,60	Fairly reliable
0,60 – 0,80	Reliable
0,80 – 1,00	Very reliable

Reliability test results can be seen in Table 14. Overall Results Indicators.

TABLE 14. Overall Results of Indicators.

Cronbach's Alpha value	Information
0,787	Reliable

C. Descriptive Analysis

From the questionnaire data obtained from users of the E-office application, namely a sample of several UPT employees. Balai Yasa Manggarai, PT. KAI (Persero) as many as 20 people, then the percentage is calculated.

$$\text{Percentage eligibility} = \frac{\text{Score obtained}}{\text{Expected score}} \times 100\%$$

Where:

The score obtained = the overall score obtained

Expected score =

Number of respondents x Maximum score per question

[9]

To measure the percentage of achievement and the classification of feasibility can be measured by the product measurement scale as follows:

TABLE 15. Eligibility Classification of the Questionnaire Results.

No	Percentage of Achievement	Eligibility Classification
1	81 % - 100 %	Very Worth it
2	61 % - 80 %	Well worth it
3	41 % - 60 %	Decent enough
4	21 % - 40 %	Not feasible
5	0 % - 20 %	Very Unworthy

After testing the validity and reliability, then the questionnaire is calculated the percentage of achievement and the classification of feasibility. The following is the percentage result per indicator.

TABLE 16. Percentage Per Indicator.

Indicator	Percentage (%)
Functional Suitability	88%
Performance Efficiency	73%
Compatibility	72%
Usability	87%
Reliability	83%
Security	80%
Maintainability	88%
Portability	83%
Average Percentage of Achievement (%)	81%
Eligibility Classification	Very Worth it

Based on Table 16. Percentage Per Indicator, the highest percentage is the Functional Suitability indicator at 88% and Maintainability indicator at 88% and the lowest percentage is on the Compatibility indicator at 72%.

V. CONCLUSION AND SUGGESTIONS

A. Conclusion

Based on the results of the analysis of this study, conclusions can be drawn from research regarding the analysis of the quality of the e-office application system of PT. KAI (Persero) which uses the ISO 25010 method as follows:

1. E-office application system of PT. KAI (Persero) already has good quality software based on ISO 25010 with an average percentage of 81% and is very feasible to use.
2. The following is the level of quality in the e-office application system of PT. KAI (Persero) with the results of quality measurement using the ISO 25010 framework was successfully evaluated by distributing questionnaires to a sample of several UPT employees. Balai Yasa Manggarai, PT. KAI (Persero) and directly observe the location of the UPT. Balai Yasa Manggarai, PT. KAI (Persero), this study found that the quality of the e-office application system of PT. KAI (Persero) "Very Feasible" and the results of the percentage per indicator, namely, the functional suitability indicator has the highest percentage with a value of 88%

and the maintainability indicator with a percentage value of 88%, then the usability indicator with a percentage value of 87%, the portability indicator with a value 83%, reliability indicator with a percentage value of 83%, security indicator with a percentage value of 80%, performance efficiency indicator with a percentage value of 73%, and the indicator with the lowest percentage value is compatibility with a percentage value of 72%. In testing the validity and reliability of the questionnaire instrument, the service satisfaction assessment information system uses the Pearson method in validity testing and the Cronbach Alpha method in testing the reliability. The results of testing the validity of the questionnaire instrument that have been distributed and tested show the valid results or the validity value of each aspect is greater than the significant value. Meanwhile, in testing the reliability of the questionnaire, the reliability value was obtained at 0.787 with reliable information.

B. Suggestions

Suggestions that can be conveyed in this study are the results of measuring the quality of the e-office application system used by PT. KAI (Persero) can be taken into consideration for the development and improvement of the existing e-office application system at PT. KAI (Persero) with dimensions that have a significant effect on user satisfaction and further research is expected to be able to test using other frameworks.

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