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## Analysis Of Usability Level PeduliLindungi Application

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### Abstract

In order to fight the spread of the coronavirus (Covid 19) in Indonesia, the Ministry of Communication and Information, in partnership with other relevant ministries and organizations, is developing the PeduliLindungi application, which serves as an information tool and tracks the movement of Indonesians who may be infected with the virus. The purpose of this study was to examine the community's level of knowledge and difficulty in utilizing the PeduliLindungi application. This study evaluates the usability of the PeduliLindungi application in five categories: learnability, efficiency, memorability, error, and satisfaction are all important factors to consider. This research is quantitative descriptive. In this study, data was collected using an online questionnaire administered to Indonesians using Google Forms, with the variable measurement scale referring to the likert scale. The results showed that the usability level was said to be good with an average score of around 72.85 and a satisfaction percentage of 79.3% so that it can be said that the PeduliLindungi application is user-friendly, with an indication that the application features are easy to use, understand and use, efficient in operation, coloring is comfortable to see, but the error rate is below the average value, this is because the network is unstable and users are not familiar with this application. The limitation of this study is only to calculate the usability level of the PeduliLindungi application to determine the comfort in using the application.

**Keywords:** Analysis, Usability, PeduliLindung Application, Five categories of usability

### INTRODUCTION

At the end of 2019, the world was shocked by the presence of a deadly virus found in Wuhan, China, known as the coronavirus disease (covid 19). The uncontrolled spread of the corona virus has caused tremendous panic throughout the world, including the Republic of Indonesia.

The COVID-19 pandemic that occurred in Indonesia caused the government to have to intervene to take policies so that its spread could be controlled. One of the policies of the Government of Indonesia through the Ministry of Communication and Information in collaboration with other relevant ministries and institutions is the creation of an application that aims to find out information and the movement of Indonesian residents who are potentially infected with the coronavirus, this application is known as the PeduliLindungi application. In implementing an application, usability analysis is needed to find out its utilization and to find out whether the application built is user friendly. Usability is a part of Human Computer Interaction science that focuses on studying the design of interfaces and interactions between humans and computers.

According to Jacob Nielsen, usability is a quality attribute that assesses the level of ease of the user interface.

This research was conducted to determine the level of usability by measuring using a usability scale system based on usability categories, namely: **Learnability, Efficiency, Memorability, Errors and Satisfaction** (Nielsen, J 2012)

**System** usability scale is a questionnaire used to evaluate usability as a very valid and reliable tool (Orfanou et al., 2015) (Prokopia V et.al 2020).

## LITERATURE REVIEW

Before conducting research on the usability level of the PeduliLindungi Application, the researcher conducted a literature review on several similar and relevant previous studies to support this research.

The first reference is a similar study conducted by I Wayan Sudiarsa & I Gede Bagus Wiraditya (2020). In this study the researchers used the method of collecting data obtained by distributing questionnaires through group chats to 100 respondents at random and the assessment study was carried out by the heuristic evaluation method. The results of this study show that there are 9 problems and which are the main concerns in HE 9 and HE 10, and the overall usability of the PeduliLindungi Application is said to be good and can provide the information expected by the user.

There are several differences between the research conducted by I Wayan Sudiarsa & I Gede Bagus Wiraditya and the research being conducted. I Wayan Sudiarsa & I Gede Bagus Wiraditya use the heuristic evaluation testing method, while in this study the usability scale system testing method is based on five usability categories, namely: **Learnability, Efficiency, Memorability, Errors and Satisfaction**.

The second reference to be used is research from Usman Effendi (2019). In this study, researchers compared usability measurement techniques between the heuristic evaluation method and the usability scale system method. This comparison looks at the number of respondents, the use of testing instruments, the implementation steps of the test, the assessment calculation system, the process of determining the results of the assessment, the strengths and weaknesses of the two methods. The results show that the respondents in the heuristic evaluation test required are experts with the number of respondents requiring about three to five evaluators, this is because the cost of Alhi is quite expensive, while in the usability scale system the respondents needed are end users with different number of respondents. different which is independence and in accordance with the needs of researchers. The test instruments used by both methods are the same, namely ten instruments. The testing steps carried out by the two methods are almost the same, the difference is that in the first step, the heuristic evaluation starts from the selection of the evaluator, while the usability scale system starts from determining the scenario. The determination of the results of the heuristic evaluation uses a weighting scale starting from 0 to 5, while the usability scale system uses three points of view, namely acceptability, grade scale and adjective rating or using SUS percentile rank. each method has advantages and disadvantages so that to implement the test method, the advantages and disadvantages must be considered in order to get maximum and correct results.

The third reference that becomes a reference is the research of Muhammad Ismail Faraouqi (2018). In this study, researchers evaluated the usability level of the Gojek application and data

collection methods through direct interviews and questionnaires. Qualitative data obtained from the usability testing stage and interviews with respondents who will be identified to find problems that arise. Quantitative data obtained from usability testing and questionnaires, the data is calculated using the success rate, time based efficiency, error rate and The third reference that becomes a reference is the research of Muhammad Ismail Faraouqi (2018). In this study, researchers evaluated the usability level of the Gojek application and data collection methods through direct interviews and questionnaires. Qualitative data obtained from the usability testing stage and interviews with respondents who will be identified to find problems that arise. Quantitative data obtained from usability testing and questionnaires, the data is calculated using the success rate, time based efficiency, error rate and system usability scale. Usability testing is carried out to determine the aspects of learnability, efficiency and errors, while the satisfaction aspect is known through calculations from interview results. The results showed that there were five usability problems in the Gojek application and the results of the usability level showed an ease of 100%, a speed level of 0.01 goal/sec, an error rate of 0.1 and a satisfaction level of 60%-70%.. Usability testing is carried out to determine aspects of learnability, efficiency and errors, while the satisfaction aspect is known through calculations from interview results. The results showed that there were five usability problems in the Gojek application and the results of the usability level showed an ease of 100%, a speed level of 0.01 goal/sec, an error rate of 0.1 and a satisfaction level of 60%-70%.

## RESEARCH METHOD

The methodology in this study uses a quantitative descriptive method, with a usability scale system. The data collection in this study used a questionnaire conducted online on the Indonesian people using google form, with the variable measurement scale referring to the Likert scale. According to Usman Effendi (2019) on the usability scale system, the respondents needed are end users of the software with different numbers of respondents who are independent and in accordance with the needs of the researcher. From several studies of usability scale system testing using very few respondents, namely five to ten respondents, but in other studies using four hundred and ninety-nine respondents. In this study, researchers took 100 respondents from active users of the PeduliLindungi application. The research steps are presented in Figure 1.

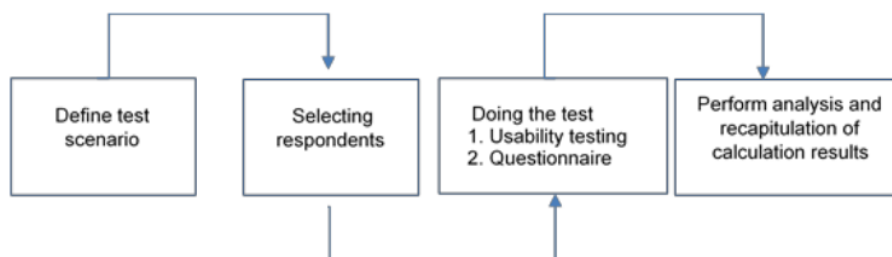


Figure 1. Research Steps

The research steps start from determining the test scenario, selecting respondents, conducting usability testing and questionnaires, analyzing and recapitulating the calculation results.

In the step of determining the test scenario, the activity carried out is to create a test scenario starting with explaining the PeduliLindungi application and a questionnaire.

In the step of selecting respondents, the activities carried out are to determine respondents who assess the PeduliLindungi application. The respondents who can rate the PeduliLindungi application are those who already have and use the PeduliLindungi application.

At the stage of conducting usability testing and questionnaires, the work carried out is to ask respondents to give an assessment of the PeduliLindungi application based on the system usability scale instrument and questionnaire.

At the stage of analysis and recapitulation of the test results is to recapitulate the results of the test calculations and analyze the reasons given by the respondents

Table 1. System Usability Scale Testing Instruments

No	Statement	Scale
1.	I think will use this PeduliLindungi app again.	5/d 5
2.	I feel the PeduliLindungi apps complicated to use.	1 s/d 5
3.	I feel the PeduliLindungi app is easy to use	1 s/d 5
3	I need help from someone else or a technician in using the PeduliLindungi app	5 s/d 5
5.	I feel the features of the PeduliLindungi application are working properly	1 s/d 5
6.	I feel there are a lot of things that are inconsistent (mismatched on the peduli_lindungi apps).	1 s/d 5 6
7.	I feel others will understand how to use the PeduliLindungi app quickly	1 s/d 5
3	I feel the PeduliLindungi app confusing	6 s/d 5
9.	I feel there are no obstacles in using the pedulilindungi application	1 s/d 5
10.	I need to get used to it first before using this system	1 s/d 5

The usability scale system is a testing tool using 10 questions with 5 answer options starting from strongly disagree to strongly agree with a score ranging from 0 to 100. There are several rules in calculating the system usability scale score, namely:

- Each question has an odd number, the score of each question is obtained from the user's score minus 1
- Each question is even numbered, the score of each question is obtained from 5 minus the user's score.
- The system usability scale score is obtained from the sum of each question score that has been multiplied by 2.5

In interpreting the results of the usability scale system score, there are five ways that can be used, namely based on the interpretation of the percentile, grade, adjective, acceptable and NPS comparison of the usability scale system score (Jeff Sauro, 2018). As shown in Figure 2

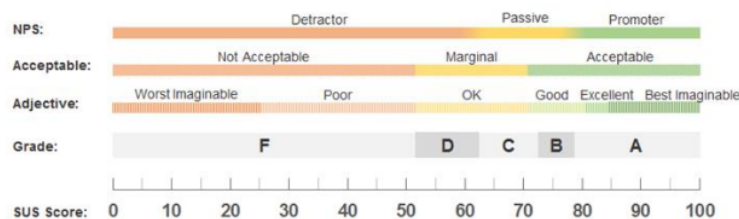


Figure 2. Interpretation of System Usability Scale Score



Table 2. below provides a clearer picture of the interpretation values contained in Figure 2.

4 Table 2. Interpretation of the Score System Usefulness Scale

Grade	SUS	Percentile Range	Adjective	Acceptable	NPS
A+	84.1 - 100	96 - 100	Best Imaginable	Acceptable	Promoter
A	80.8 - 84.0	90 - 95	Excellent	Acceptable	Promoter
A-	78.9 - 80.7	85 - 89	Good	Acceptable	Promoter
B+	77.2 - 78.8	80 - 84		Acceptable	Passive
B	74.1 - 77.1	70 - 79		Acceptable	Passive
B-	72.6 - 74.0	65 - 69		Acceptable	Passive
C+	71.1 - 72.5	60 - 64		Acceptable	Passive
C	65.0 - 71.0	41 - 59	OK	Marginal	Passive
C-	62.7 - 64.9	35 - 40		Marginal	Passive
D	51.7 - 52.6	15 - 34		Marginal	Detractor

2 Usability testing based on Nielsen includes 5 components, namely 3 learnability, efficiency, memorability, error and satisfaction. Learnability is a test to measure the level of user convenience in using the application. Efficiency is a measure of how fast the application can complete commands. Memorability measures user recall related to application design. Errors is a test to measure the level of error made by the application in processing data and satisfaction measuring the level of comfort in using the application.

7 The measurement for the 5 usability components uses a Likert scale calculation with the formula:  $T \times P_n$ , where T is the total number of respondents who choose and P<sub>n</sub> is the choice of Likert score numbers. To calculate the percentage of respondents' answers using the formula: Total score / Y x 100% , where Y is the linker's highest score x the number of respondents. To find out the limits of the percentages that have been found, interval limits are used. The interval formula: 100/ total Likert score.

## FINDINGS AND DISCUSSION

### Point 1

Validity test aims to determine the validity or suitability of the questionnaire in the study to obtain data from respondents. This validity test uses the principle of correlation between each item's score and the total score obtained in the study. Comparison of the coefficient of validity (r) table with r calculations makes the basis for stating an item has a good level of validity, if r table is smaller than r calculated. In this study using 100 respondents and taking the value of r from the table with degrees of freedom n - 2 , where n is the number of respondents , the degree of freedom is 98 , the value of r table = 0.1654 1 . With a significance level of 5% or 0.05 and the results of the r count exceed the r table so that it can be stated that all items are valid. (Table 3)

Table 3. Comparison of Table r and r Calculate

No. Question	r table	r calculate	Description
1	0.1654	0.3474	Valid
2	0.1654	0.1924	Valid
3	0.1654	0.1934	Valid
4	0.1654	0.5719	Valid
5	0.1654	0.2686	Valid
6	0.1654	0.2533	Valid
7	0.1654	0.4490	Valid

8	0.1654	0.1776	Valid
9	0.1654	0.2505	Valid
10	0.1654	0.2156	Valid

## Point 2

System Usability Scale analysis is used to determine the level of usability in the PeduliLindungi application and the data is retrieved online based on the usability scale system testing instrument. The first step is to calculate the score for each statement for each respondent. The score value of each statement for each statement with an odd number sequence, can be calculated by the formula  $(xi - 1)$ . Meanwhile, for an even sequence of statements, it can be calculated using the formula  $(5 - xi)$ , where  $xi$  is the number on the Likert scale chosen by the respondent. After each odd and even statement is calculated by the formula, then add up the results of each statement and then the result of the sum is multiplied by 2.5. The total score for each respondent will range from 0-100. Then add up all the System usability scale values that have been obtained from each respondent and averaged. The illustration of the usability scale system test results from this study is presented in table 4.

Table 4. Illustration of System Usability Scale Test Results

Resp	Calculation result data											Value (Total x 2.5)
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Jumlah	
1	3	2	2	2	3	3	4	3	2	3	27	67.5
2	3	3	3	2	3	3	3	3	3	3	29	72.5
3	4	3	3	0	2	2	4	3	4	3	28	70
4	4	3	4	2	4	2	3	4	4	4	34	85
5	4	4	4	4	4	3	3	3	4	3	36	90
95	3	3	4	4	1	1	3	3	3	3	28	70
96	4	3	4	3	4	3	4	3	4	3	35	87.5
97	3	4	4	4	4	4	3	4	4	4	38	95
98	4	4	4	4	4	4	4	4	4	4	40	100
99	3	3	3	3	3	3	3	3	4	3	31	77.5
100	4	3	4	4	3	2	3	3	4	3	33	82.5
Average Score (Final Result)												72.85

System usability scale is a global aspect of subjective usability assessment perceived by users. The system usability scale score shows the level of user acceptance. From the results of the usability calculation of the care and protection application, the average value is 72.85. From the test results, data interpretation can be done using the system usability scale presented in Figure 3.

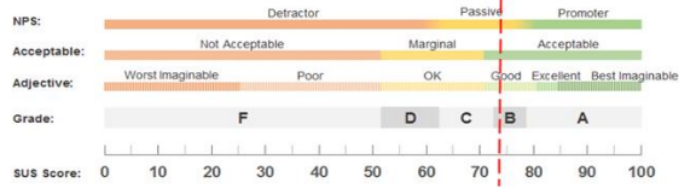


Figure 3. Interpretation of the Score results from the PeduliLindungi Application

A score of 72.85 indicates that the usability aspect of the PeduliLindungi application is in grade B- this is because the result score is in the range of 72.6 - 74.0 and when viewed from the adjective interpretation it is in the good category while the percentile interpretation is in the range of 65. - 69.

Thus from the existing interpretation that the application of the PeduliLindungi application can be accepted by the respondents, in this case the Indonesian people. In summary, the interpretation results can be seen in table 5.

Table 5. Interpretation of the score results from the PeduliLindungi Application

Grade	SUS	Percentile Range	Adjective	Acceptable	NPS
B -	72.6 - 74.0	65 - 69	Good	Acceptable	Passive

Measurement results from the questionnaire for learnability, efficiency, memorability, errors and satisfaction can be seen from table 6

Table 6. Usability test results

Kategori usability	Nilai Indeks
Learnability	77.8 %
Efficiency	76.9 %
Error	56.8%
Memorability	75.8 %
Satisfaction	79.3%

## CONCLUSION

This study aims to determine the level of knowledge and community difficulties in utilizing the PeduliLindungi application by evaluating it based on five categories, namely learnability, efficiency, memories, errors and satisfaction. Based on the results of research and analysis of the usability level of the PeduliLindungi application using the usability scale system, it produces a score of 72.85 and by using a questionnaire it produces a satisfaction percentage of 79.3%, so it can be said that the PeduliLindungi application is user friendly, with an indication that the application features are easy to understand and use, efficient in operation, coloring is comfortable to look at, but the error rate is below the value on average, this is because the network is unstable and users are not used to this application.



#### LIMITATION & FURTHER RESEARCH

This study uses a quantitative descriptive method, with a test method using a usability scale system and 100 respondents used so that the large number of sources used will reduce the objectivity of the research results.

To strengthen the results of the current study, further research will be carried out to determine the usability level of the PeduliLindungi application using the heuristic testing method.

#### REFERENCES

- Nielsen, J (2012) Usability 101: Introduction to Usability. diunduh 27 Desember 2021  
<https://www.nngroup.com/articles/usability-101-introduction-to-usability/>
- Jeff Sauro. (2018, Sep.) 5 Ways to Interpret a SUS Score. Diunduh 27 Januari 2022.  
<https://measuringu.com/interpret-sus-score/>
- Sudiarsa I & Wiraditya I.G.B (2020). Usability Analysis on information and tracking covid-19 Application PeduliLindungi using heuristic evaluation. Vol 3 No.2 (2020). INTECOMS: Journal of Information Technology and Computer Science. Indonesia pp 354-356
- Prokopia Vlachogianni (2020). Perceived Usability Of Learning Management Systems And University Websites: A Systematic Review. In Proceedings of the 2020 International Conferences Interfaces and Human Computer Interaction (IHCI2020); and Game and Entertainment Technologies (GET2020) Zagreb, Croatia pp. 85- 92 , Curran Associates, Inc.
- Farouqi, Muhammad Ismail (2018). Evaluation of the Usability of the Go-Jek Application Using the Method Testing Usability. Journal of Information Technology and Computer Science Development. Indonesia pp 3110 - 3117
- Al-Omar, K. (2018). Evaluating the Usability and Learnability of the "Blackboard" LMS Using SUS and Data Mining. In Proceedings of the 2018 Second International Conference on Computing Methodologies and Communication (ICCMC), February 15-16, Erode, India, pp. 386-390. IEEE
- Norhaliza Binti Nali Rozali & Mar Yah Binti Said (2015). Usability Testing On Government Agencies Web Portal: A study on Ministry of Education Malaysia (MOE) web portal, Kuala Lumpur, Malaysia. IEEE
- Effendi Usman (2019). System Usability Scale Vs Heuristic Evaluation: A Review. Jurnal SIMETRIS, Vol. 10 No. 1. Indonesia pp 65-74

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