

Usability of JKN Mobile Application Using System Usability Scale (SUS) Method

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Abstract

Mobile JKN is a new Government application to register and manage the health protection membership. The problem that often occurs is that many participants do not really understand the application and their use. Therefore, JKN mobile application needs to be adjusted and developed so that the usefulness and benefits can be felt by the participants and the wider community. The method used is the System Usability Scale (SUS), a questionnaire that can be used to measure the usability of a computer system according to the user's subjective point of view. In performing SUS calculations using 5-point Likert scale. The first SUS score was obtained from testing the JKN Mobile Application by distributing SUS questionnaires to 23 respondents. The second test was carried out by involving 3 professionals and experts in the science of design and IT. The treatment of the SUS questionnaire in the second test was by adding points of recommendation for improvement to the Mobile JKN application in accordance with the first results in each statement of the second test questionnaire. And the results of the SUS score in this second test experienced a significant increase from 59 to 81, this shows that the recommendations for improvements to the Mobile JKN application need to be improved or need to be developed a lot. The Mobile JKN application needs to be developed a lot in terms of updating and providing information about this application because there are still many and do not understand about the Mobile JKN application.

I. INTRODUCTION

Mobile JKN is the Government's new application in terms of health protection and social security, which can make it easy to register, and change membership data, easy to get information on family participant data, easy to see the cost of paying participant fees, easy to get FKTP (Fasilitas Kesehatan Tingkat Pertama) and FKTL (Fasilitas Kesehatan Tingkat Lanjut) and provide convenience for the community if they want to submit suggestions or complaints[1]. Likewise, it can make it easier when someone forgets to bring their BPJS card, just click on the application, the JKN card can be shown directly to health workers. Not only that, this application is also registered as a family card, not an individual. This app is available on android as well as IOS[2][3].

However, the problem that often occurs is that many people are BPJS Health participants but do not understand the application. There are still many people who have not been able to access the Mobile JKN application and some of them even said that they did not know what the Mobile JKN application was. In fact, this application is very important for them when it comes to getting health insurance. One of these is the complexity of accessing the application [4], so many people still use the manual method by printing their BPJS cards.

Therefore, an in-depth knowledge of the usability value of the JKN mobile application is required. This research is to determine how big the level of usability value according to the people who use it. In addition, the results of this study will also describe the effectiveness of the JKN mobile application, whether it is in accordance with the needs of the community or not. This is because there are still many people who have not used the application or even know about it[5].

The method used is the System Usability Scale (SUS) method to measure satisfaction quickly and neatly. The System Usability Scale (SUS) is a questionnaire that can be used to measure the usability of a computer system according to the user's subjective point of view. SUS is in the form of a questionnaire consisting of 10 question items [6]. In calculating SUS using a 5-point Likert scale. The SUS questionnaire in this study was applied in 2

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stages, stage 1 for general users of the JKN mobile application. Meanwhile, the second phase of the SUS questionnaire application was given to experts in IMK from the IT, design and related fields[6].

II. RELATED WORKS/LITERATURE REVIEW (OPTIONAL)

Human-computer interaction is a very important science and is concerned with the design, implementation and evaluation of interactive computing systems for use by humans and the study of its scope, there is an interaction between one or more humans and one or more computing machines[7] [8].

The scope of human-computer interaction has 3 components, namely humans, computers and interactions. These three components are mutually supportive and related to each other. Humans are users who use computers. These users are different and have their own characteristics according to their needs and abilities to use computers. Computers are electronic equipment that includes hardware (hardware) and software (software). As we know that the working principle of a computer consists of input, process and output. This computer will work according to the instructions given by the user. The user gives commands to the computer and the computer prints/writes responses on the display screen[7] [9]

Regarding the Mobile JKN application, there are several previous researchers who have looked more deeply at the level of community satisfaction in using the application, such as in their article entitled Community Satisfaction Levels with Online Registration in the JKN Mobile Application[10]. Likewise with abiding who also analyzed the satisfaction of BPJS health application users in his article entitled The Effect of BPJS Health Service Quality on Patient Satisfaction at the Cempae Health Center, Parepare City. Not only that, the topics and problems of the Health PBJs and the Mobile JKN application are interesting things. This has been proven by many other researchers who have also conducted research related to this matter[5] [11].

The focus of this study is to analyze the usability value of the Mobile JKN application as measured by the Software Usability Scale (SUS) method. With the results of this study, it can be seen the level of usefulness of the JKN mobile application based on the opinions of the people involved in this research. Thus, recommendations and suggestions for improvement will also be generated through this research to develop the application in the future.

1. Assessment Method

The results obtained in point 4, have their respective meanings. The meaning of the score obtained on SUS is shown in Table 1.

TABLE 1
 Acceptability Range SUS

SUS	Acceptability Range
0 - 50,9	Not Acceptable
51 - 70,9	Marginal
71 - 100	Acceptable

In addition to the interpretation of the SUS results based on the Acceptability Ranges as shown in Table 1, there are other ways to interpret the SUS results and these methods are shown in Figure 1

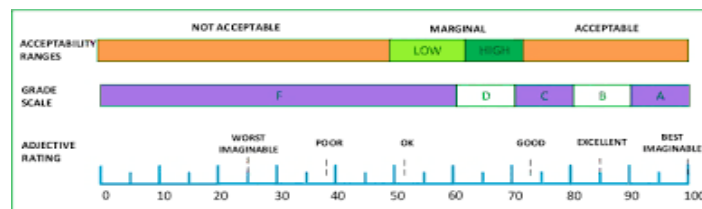


Fig. 1 Adjective Rating by Bangor[12]

1. Grade Scale

The resulting SUS score is divided into five grades, namely A (90 - 100), B (80 - 90), C (70 - 80), D (60-70), and F (Score < 60).

2. Adjective Rating

SUS score, which was originally numeric, into an adjective. Adjective rating scale: Worst Imaginable, Awful, Poor, OK, Good, Excellence, and Best Imaginable[13].

III. METHODS

1. Literature Study

The literature study conducted by the author is to find and review previous relevant research. From this study, the authors get several research results as a reference as in part II of this paper.

2. Test Method

The test method that I use in this research uses the System Usability Scale (SUS) method to determine the level of usability, identify problems. The researcher gave the SUS questionnaire which contained 10 questions to the respondents [14].

3. Determination of Respondents

In this study, I determined the respondents with the community in Ambon among young children with the number of respondents being 23 people.]

4. Data Collection

The author collects data in this study by conducting in-depth interviews with respondents. This interview was conducted by respondents by filling out a questionnaire that had been given various questions regarding the use of the Mobile JKN application.

5. Data Processing

Data processing is carried out after all the questionnaires distributed have been collected, where the results of data collection have been described by the authors in the form of regular, sequential, logical, non-overlapping, and effective sentences so as to facilitate understanding and interpretation of the data.

IV. RESULTS

Usability testing of the Mobile JKN application using the SUS method was carried out on May 4, 2022 to June 11, 2022 with a quota of 23 respondents, the selected users are Ambonese people who are familiar with this application, or not. The second test was carried out on June 20, 2022 with 3 respondents, the selected respondents were those with more than 5 years of experience in software development and application interface design. The selection of respondents with these criteria is necessary because to carry out this test, respondents are required to be able to visualize the results of the recommendations so that they can provide an assessment of the SUS questionnaire statement that has been given recommendations for website improvement. The following is the respondent's profile as shown in Table 2.

TABLE 2
Respondent's Profile and Distribution Data

Respondent's Background	Amount
Student	13
Private employees	5
Government employees	5

The questionnaire in this study consisted of 10 questions with 5 answer choices from 1 to 5 as shown in Table 3.

TABLE 3
SUS Method Questionnaire

No	statement
1	I think I will use this JKN Mobile application system again.
2	I feel that the system in the Mobile JKN application is complicated to use.
3	I find the system of this application easy to use.

4	I need help from someone else or a technician in using this system.
5	I feel the features of this system are working properly.
6	I feel there are a lot of things that are inconsistent (incompatible on this system).
7	I feel like other people will understand how to use this system quickly.
8	I find this system confusing.
9	I feel there are no obstacles in using this system.
10	I need to get used to it first before using this system.

Meanwhile, after the questionnaires were distributed to the respondents, the researchers finally got the results of the assessment scores based on the SUS method as shown in Table 4.

TABLE 4
 Score Results Based On SUS Method

Respondents	SUS Score
1	43
2	50
3	63
4	65
5	58
6	70
7	65
8	63
9	65
10	58
11	65
12	70
13	60
14	50
15	78
16	50
17	53
18	50
19	58
20	55
21	63
22	38
23	63
Quantity : 1348	
Average SUS Score: 59	

From the calculation using the SUS method on Table 4, the average SUS score is 59. After that, the SUS score is converted into Percentile ranks and Letter Grades. In percentile ranks this shows usability in the form of a percentage (%). Unlike the case with letter grades, which uses usability levels in classes A+ to F, A is the best class, while F is the worst class. Percentile ranks of the results of this study is shown in Figure 2.

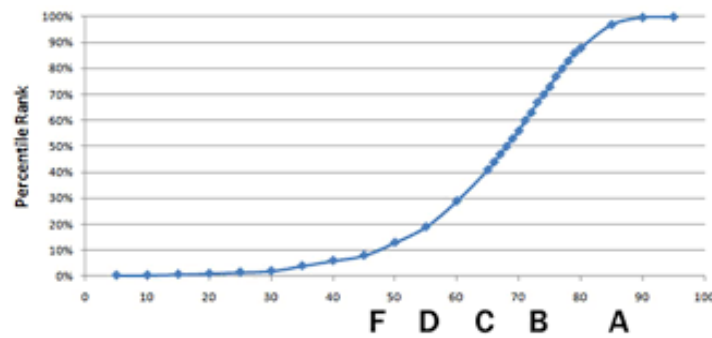


Fig. 2 Percentile Ranks

- Percentile Ranks. Based on the results of the graph by J. Sauro, the SUS score is 59 (Grade D), where the percentile is 29%. Where is a value that is low enough to be interpreted into this SUS value[15].
- Letter Grades. In the calculation using the SUS method, the average SUS score is 59 and this SUS score will be converted in the form of letter grades. Letter grades to show usability levels into classes from A+ to F, based on the provisions listed in the table, the usability level obtained is 59 so it is included in class D
- Adjective rating. Interpretation with an adjective rating like Figure 1, a score of 59 is included in the OK rating, which means it is still far from GOOD.
- Acceptability range Interpretation with an acceptability range rating as shown in Figure 1, with a score of 59 which is included in the Marginal Low rating.
- For the overall results that have been assessed based on the Percentage of Ranks, Letter Grades, Adjective rating, and acceptability range, as shown in Table 5.

TABLE 5
 SUS Method Result

RESULT	
SUS Score	59
Percentile Ranks	29%
Grade Letter	D
Adjective Ratings	OK
Acceptability Range	Marginal Low

A SUS score of 80 is required to be able to pass grade A, where users will recommend the Mobile JKN application to the general public. And from the results of the usability testing that has been carried out, the Mobile JKN application has a SUS score of as much as that means this application does not yet have sufficient usability.

Statement number 1 is a positive statement which means that the respondent will give a statement of agreement if it supports the statement. From the picture above, it can be seen that 60.9% of respondents chose to agree to use the Mobile JKN application again. The results of the assessment for statement 1 is shown in Figure 3

Saya berpikir akan menggunakan sistem aplikasi Mobile JKN ini lagi.
 23 responses

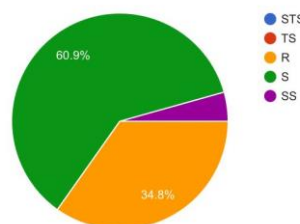


Fig. 3 Respondent's Assessment for Statement 1

Statement 2 is a negative statement which means that the respondent will give a statement of agreement if he does not support the statement. From the picture above, it can be seen that 47.8% of respondents agree that it is not too complicated when using the Mobile JKN application. The results of the assessment are as shown in Figure

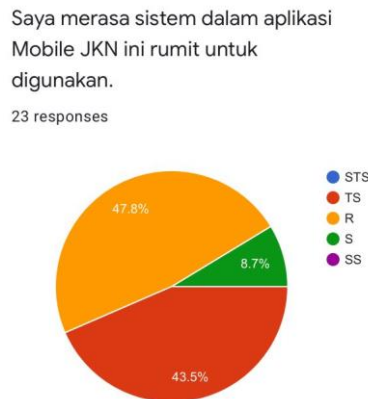


Fig. 4 Respondent's Assessment for Statement 2

Based on the analysis of the respondents answers to these statements, a number of recommendations were made that can be applied to the Mobile JKN application to improve the Usability of the application. These recommendations are as follows:

1. Applications must be updated / provide information to the public.
2. Adding features to make it easier for the community
3. The application is more user friendly.
4. Maybe more outreach to residents so that more people use it.
5. Maintenance of the server is repaired again so that it becomes faster and does not experience interference.
6. This application should be developed further.

To test the results of the recommendations, the researcher added 6 recommendations to each statement on the related SUS questionnaire. The results of these recommendations are the assumptions of website improvements that have been made so as to provide an overview to users of the shape and condition of the website after the recommendations are implemented. The relationship between the statements on the SUS questionnaire and the results of the recommendations can be seen in the following table:

TABLE 6
 Relationship Between SUS Statements And Recommendations

Statements	Recommendations
1	1,3,4
2	1,3,4,6
3	3
4	4,5,6
5	1,2,4,6
6	1,2,4
7	3,4
8	4,5,6
9	4,6
10	3,4

The results of the recommendations obtained in the study will then be re-tested to 3 IT experts and design as expert respondents. This is to find out whether the recommendations obtained in previous studies can be applied to improve the Mobile JKN website. From the retest, the SUS score was obtained as shown in Table 7.

TABLE 7
 SUS Score Results On Retest With Expert

Respondents	SUS Score
1	90
2	75
3	78
Quantity: 243	
Average SUS Score : 81	

From the results of calculations using the SUS method on the JKN Mobile Application that has been given a recommendation, it produces a SUS score of 81. The score when converted into percentile ranks is at 90% and is in class B in letter grades. In adjective ratings, an application is included in the EXCELLENT category.

Overall, the results of usability testing of the JKN Mobile Application that have been recommended using the System Usability Scale (SUS) as shown in Table 8.

TABLE 8
 SUS Method Result After Recommendation

Result	
SUS Score	81
Percentile Ranks	90%
Grade Letter	B
Adjective Ratings	EXCELLENT
Acceptability Range	Acceptable

V. DISCUSSION

In testing the JKN Mobile Application using the System Usability Scale (SUS) in this study, it gave 2 different SUS score results. The first SUS score was obtained from testing the JKN Mobile Application by distributing SUS questionnaires to 23 respondents and the second by means of 3 respondents from among those who are already professionals in their fields. The treatment of the SUS questionnaire in the second test was by adding points of recommendation for improvement to the Mobile JKN application in accordance with the first results in each statement of the second test questionnaire. and the results of the SUS score in this second test experienced a significant increase from 59 to 81, this shows that the recommendations for improvements to the Mobile JKN application need to be improved or need to be developed a lot.

The result of the comparison before and after the recommendations for improvement are given as shown in Table 9.

TABLE 9
 Comparison SUS Method Result Before and After Recommendation

Before Recommendation		After Recommendation	
Score SUS	59	Score SUS	81
Percentile Ranks	29%	Percentile Ranks	90%
Grade Letter	D	Grade Letter	B
Adjective Ratings	OK	Adjective Ratings	EXCELLENT
Acceptability Range	Marginal Low	Acceptability Range	Acceptable

Based on the results of testing the Mobile JKN application before the recommendation and after the recommendation in this study, it was found that the SUS score increased by 22.

VI. CONCLUSIONS

The conclusion that can be drawn from using the SUS method for the Mobile JKN application is that it has several points:

1. This study conducted a test using the SUS method to determine the usability level of the JKN mobile application
2. Based on the results of the first test, it is known that the SUS score obtained is 59. The results of the second test have increased to 81. In other words, there is an increase in the score of 22. This shows that the recommendations from the results of the SUS Test can be applied.
3. The Mobile JKN application must be developed a lot in terms of updating and providing information about this application because there are still many and do not understand about the Mobile JKN application.

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