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Measuring the Usability of the KPOP's Application at the South Sumatra Provincial Library Service Using the System Usability Scale Method

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Abstract

Current technological developments are very influential in helping work in an agency with the presence of technology able to provide convenience for the community, especially for library service users. KPOP's is an application in the South Sumatra provincial library to assist visitors in collecting member data and information. The information system in the application needs to be known in measuring the extent to which the KPOP's application system can be used by users in terms of learnability, efficiency, memorability, errors, and satisfaction. The instrument used in this research is the SUS (system usability scale) method, where this method has 10 statements by distributing questionnaires to 100 respondents. The final results of this research obtained an average score of 69.45, categorized as Marginal High, the grade scale was at grade D, and the adjective ratings were OK, which was almost close to good in terms of use, so the KPOP's application for the South Sumatra provincial library could be said to be effective in its use.

Keywords: Usability, Application, KPOP's, System Usability Scale.

1. Introduction

The current development of information and communication technology is very influential in helping to carry out work in an agency with the help of technology to obtain the necessary information quickly, accurately, and efficiently. One of the positive effects of technological advances includes applications and the internet [1]. Due to technological advances, the use of information and communication technology in libraries is urgently needed to support and make things easier for library service users.

Humans as technology users must be able to utilize current technology, as well as subsequent technological developments [2]. Human adaptation to new technology that has developed must be done through education [3];[4]. This is done so that future generations are not left behind in terms of new technology. That way, technology, and education can develop together along with the new generation as the successor to the old generation. Some of these adaptation methods can be realized in the form of training or education [5]. Information technology can help all types of businesses in improving the efficiency and effectiveness of business processes, making decisions quickly and accurately, and collaborating with business organizations so that they can strengthen their competitive position in the rapidly changing modern era. [6]. Then information technology becomes a solution, business innovation, opens up creativity, and increases effectiveness and efficiency in doing work [7]. With information technology, human work becomes easier, faster, and more precise.

The South Sumatra Provincial Library service is one of the regional libraries in the city of Palembang which has a KPOP's application as a service requirement to help simplify the management of library information in the form of a mobile application that can be installed via the Play Store. KPOP's stands for South Sumatra Province Online Library Card which functions to help the data collection process more quickly and accurately, also helps users to make it easier to operate the library service system such as online member registration, borrowing books, searching for books and can also see the book layout. in library. However, not many KPOP's users still know how to use the application, the KPOP'S application can only be installed on the Play Store using Android, while for iOS users the application is not yet supported. There are also problems faced by Ayu Rari, users of the application who feel that there are still obstacles in accessing the application which sometimes experiences errors such as the application exiting by itself. Therefore, the quality of KPOP's services needs to be measured based on user convenience, information quality, and service quality to increase the effectiveness of the application. As

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well as to determine future recommendations in developing and improving the quality of use of the system. So the author of this study will use the system usability scale method to measure the usefulness of the KPOP's application.

System usability scale is a method developed by John Brooke in 1986 to measure the level of usability that can be used to evaluate products or services [8]. This research uses a usability scale system, the reason for using this method is to find out or measure learnability, efficiency, memorability, errors, and satisfaction in using the KPOP's system.

2. Research Methods

2.1. Location

The research location is the place that researcher wants to research, who takes the research at the South Sumatra Provincial Library Service which is located on Jalan Demang Lebar Daun Number 47, Lorok Pakjo, Ilir Barat 1, Palembang City, South Sumatra. By using objects in the KPOP's application.

2.2. Populasi dan Sampel

a. Population
   Population is a generalized area consisting of objects or subjects that have certain quantities and characteristics determined by researchers to be studied and then conclusions drawn [9]. The population used in this research is KPOP'S service users who are registered as members in 2022-2023 at the South Sumatra Provincial Library Service. The total population from 2022-2023 is 7832 users.
b. Sample
   The sample is part of the number and characteristics of the population [10]. The number of samples that will be used is a sample of KPOP'S users such as students, college students, and the general public. One way to determine the sample size is with the Slovin formula.

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

Based on the calculation results obtained using the Slovin formula, namely 100 samples, the number of respondents required for research is 100 respondents.

2.3. Method of collecting data

a. Observation
   Observation is a series of data collection carried out directly to obtain data and information on objects in the KPOP's application at the South Sumatra provincial library service.
b. Study of literature
   The literature study method is a series of activities related to collecting, reading, and recording library information as well as managing research materials. In this research method, scientific journals study the application of the System Usability Scale (SUS) method to measure the usability of KPOP's.
c. Questionnaire
   A questionnaire is a data collection technique that is carried out by giving a set of questions or written questions to respondents [11]. In this research, questionnaires were distributed to respondents, where the respondents were KPOP's member users such as pupils, students, and the general public who use the KPOP's application at the South Sumatra provincial library service. The questionnaires will be distributed using 2 methods, namely via Google form and manually. This is done so that information and respondents' answers can be processed and stored digitally.

2.4. Research Instrument Tools

The instrument used in this research is a questionnaire, the scale used in this research is the Likert scale. The Likert scale is used to measure respondents' attitudes, opinions, and perceptions about the symptoms or phenomena that occur. The following is a table on the Likert Scale:

Table 1. Likert Scale

No	Symbol	Assessment criteria	Skor
1	STS	Strongly Disagree	1
2	TS	Don't agree	2
3	N	Neutral	3
4	S	Agree	4

5	SS	Strongly agree	5

2.5. SUS Method

System Usability Scale (SUS) is a method used to assess a product by measuring its level of usefulness. The System Usability Scale contains 10 statements as in the following table:

Table 2. SUS Method Statement

No	Statement	Scale
1	I would like to use this app more often	1 - 5
2	I feel like this app doesn't have to be this complicated	1 - 5
3	I think the app is easy to use	1 - 5
4	I need help from a technical person to use this application	1 - 5
5	I found the features on the app to be well-integrated	1 - 5
6	I think there is a mismatch in this application	1 - 5
7	I find it easy for most people to learn the app very quickly	1 - 5
8	I found the app very complicated to use	1 - 5
9	I am confident in using this application	1 - 5
10	I need to study before I use the app	1 - 5

Source: [12]

The following are the rules for calculating the SUS score on the questionnaire which can be seen in the following points:

a. For odd-numbered statements, the score given by the respondent is reduced by 1.
b. Even numbered statements, the score given by the respondent is used to subtract 5.
c. The conversion results are added up for each respondent and multiplied by 2.5 to get a value between 0–100.

The System Usability Scale (SUS) includes three aspects, namely Acceptability, Rating Scale, and Adjective Rating to determine the results of the rating calculation. There are three levels of acceptability consisting of not acceptable, marginal (low and high), and acceptable. Meanwhile, the grade scale consists of A, B, C, D, and F. The adjective rating has several levels, namely worst imaginable, poor, ok, good, excellent, and best imaginable. Among the three rankings, the System Usability Scale (SUS) has another way of determining assessment results, namely by using the SUS score percentile rank. Determination of assessment results based on the SUS score percentile rank is generally carried out based on the results of user assessment calculations. SUS score percentile rank has differences with acceptability, grade scale, and adjective rating which are grouped into three categories.

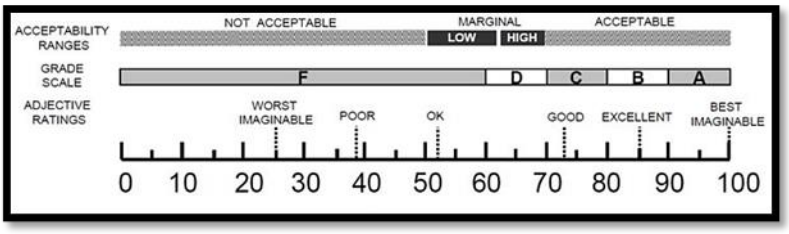

Figure 1. SUS Score

2.6. Data Instrument Test

Data collection carried out in this research used a questionnaire, so data management was carried out using validity and reliability tests to test the seriousness of the respondent's answers. This test uses the SPSS version 26 application program.

a. Validity test
   Validity tests are carried out to test research instruments so that they can provide results according to their objectives, by calculating the correlation between item scores and total scores.

b. Reliability Test
Reliability is a measuring tool to determine stability and consistency in measuring a symptom. A variable is said to be good if it has a Cronbach's Alpha value > 0.6, so it is reliable.

3. Results and Discussion

The object of this research use the KPOP's (South Sumatra Province Online Library Card) application at the South Sumatra Provincial Library service. In this study, questionnaires were distributed to 100 respondents using Google Forms and paper or manual questionnaires, where the respondents were KPOP's application users such as students and the general public.
The results obtained from data collection through distributing questionnaires to 100 respondents, obtained research results using the KPOP'S application based on 3 categories such as gender, age, and occupation which can be seen in the following table:

3.1. Respondent's Gender

Table 3. Gender

GENDER			
		Frequency	Percent
Valid	Man	39	39.0
	Woman	61	61.0
	Total	100	100.0

Based on Table 3, shows that there were the most female respondents, with 61 people or 61% participating in answering this research questionnaire, while there were 39 male respondents or 39%.

3.2. Respondent's Age

Table 4. Age

USIA			
		Frequency	Percent
Valid	< 20 Years	28	28.0
	20-35 Years	70	70.0
	36-50 Years	2	2.0
	Total	100	100.0

Based on Table 4, shows that the majority of respondents who filled out the questionnaire were aged < 20 years as many as 28 people or 28%, aged 20-35 years as many as 70 people or 70%, and aged 36-50 years as many as 2 people or 2%.

3.3. Respondent's Occupation

Table 5. Occupation

WORK			
		Frequency	Percent
Valid	Student/Students	80	80.0
	Etc	20	20.0
	Total	100	100.0

Based on the respondents' occupations in Table 5, it shows that 80 respondents have jobs as students, or 80% and the remaining 20 are others, or 20%.
Following are the results of the recapitulation of respondents' answers to each statement related to measuring application usability in the questionnaire distributed to 100 respondents, described as follows:

Table 6. Summary of Respondents' Answers

Statement	Answer 1 STS	2 TS	3 N	4 S	5 SS	Total
Learnability						
1. I think I will often use this KPOP's application	0	1	33	38	28	100
2. I feel that the KPOP's application is complicated to use	22	50	23	3	2	100
Efficiency						
3. I find the KPOP's application easy to use	0	4	12	56	28	100
4. I need help from other people to use this KPOP'S application	18	41	25	10	6	100
Memorability						
5. I feel that the existing KPOP's application features are working properly	1	2	26	49	22	100
6. I feel there is an inconsistency in the KPOP's application	15	52	29	3	1	100
Errors						
7. I feel other people will understand how to use this KPOP's application quickly	1	2	17	53	27	100
8. I find the KPOP's application confusing	16	55	25	3	1	100
Satisfaction						
9. I feel there are no obstacles to using the KPOP's application	0	4	33	42	21	100
10. I need to get used to it first before using the KPOP's application	6	30	32	26	6	100
Total	79	241	255	283	142	1000
Proportion (%)	79%	241%	255%	283%	142%	1000%

3.4. SUS Score Calculation Process

The guideline in the method has rules for calculating the SUS score. The following are the rules for calculating the SUS score on the questionnaire which can be seen in the following points:

a. For odd-numbered statements, the score given by the respondent is reduced by 1.
b. Even numbered statements, the score given by the respondent is used to subtract 5.
c. The conversion results are added up for each respondent and multiplied by 2.5.

Table 7. Scale recapitulation using the SUS method

No	Respondent Answer Scale 1	2	3	4	5	Total Respondent	Average Mark
P1	0	1	33	38	28	100	2.93
P2	22	50	23	3	2	100	2.87
P3	0	4	12	56	28	100	3.08
P4	18	41	25	10	6	100	2.55
P5	1	2	26	49	22	100	2.89
P6	15	52	29	3	1	100	2.77
P7	1	2	17	53	27	100	3.03
P8	16	55	25	3	1	100	2.82

P9	0	4	33	42	21	100	2.80
P10	6	30	32	26	6	100	2.04

Based on Table 7, it shows the calculated values received by respondents for each statement instrument. The formula for calculating the average value of each statement is to select the average value and multiply it by 2.5, as shown in Table 8.

Table 8. Recapitulation of 10 SUS X 2.5 Statements

No	Average value Statement x 2.5	Amount
P1	2.93 X 2,5	7.33
P2	2.87 X 2,5	7.175
P3	3.08 X 2,5	7.7
P4	2.55 X 2,5	6.375
P5	2.89 X 2,5	7.225
P6	2.77 X 2,5	6.925
P7	3.03 X 2,5	7.575
P8	2.82 X 2,5	7.05
P9	2.80 X 2,5	7
P10	2.04 X 2,5	5.1
Total SUS Value		69.45

From the calculated value, the SUS scale results from the answers of 100 respondents have an average value of 69.45, then the results are included in the Marginal High category with scale grade D, adjective ratings Ok so it can be said that the KPOP's application is almost good in terms of use and almost above average.

3.5. Validity test

Validity testing is carried out to test the research instrument so that it can provide results following its objectives, by calculating the correlation between the item scores and the total score using the SPSS Statistics 26 application program. The test results where all the variables tested are carried out on each statement item with a calculated total score of r compared with r table, where df= N-2, with a significance of 5% or 0.05 if r calculated > r table, then the data is declared valid.

Table 9. Validity Test Results

Item	r count	r table	Information
X01	0.629	0,196	Valid
X02	0.766	0,196	Valid
X03	0.799	0,196	Valid
X04	0.706	0,196	Valid
X05	0.694	0,196	Valid
X06	0.735	0,196	Valid
X07	0.764	0,196	Valid
X08	0.715	0,196	Valid
X09	0.690	0,196	Valid
X10	0.608	0,196	Valid

Based on Table 9, it is known that the results of the validity test of the 10 statements in the questionnaire can be concluded that all statements are valid because all r counts > r tables in the questionnaire have a value of > 0.196 so it can be said that each item in the statement is declared valid.

3.6. Reliability Test

Reliability is a measuring tool to determine stability and consistency in measuring a symptom. The condition for knowing the reliability of an item is to look at the results of the reliability test, if each variable is > 0.60 then the variable is declared reliable.

Table 10. Reliability Test Values

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.885	.892	10

Based on table 7. above, it is known that the results of the reliability test show that 10 items are declared reliable because Cronbach's Alpha is 0.885 > 0.6. Therefore, it can be concluded that the data is reliable or reliable and consistent.

4. Conclusion

Based on the results and discussion above, it can be concluded that the results obtained using the system usability scale method obtained an average score of 69.45, categorized as Marginal High, the grade scale was at grade D, and the adjective ratings OK which was almost close to good. This shows that the results of measuring the level of usefulness of the KPOP's application are quite useful, but with the level of acceptance still low, it is necessary to evaluate and improve the development.

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