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Usability Analysis of Sapa Warga Application Using Usability Testing Method and System Usability Scale (SUS)

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Abstract

Sapawarga is software used to fulfill the needs of citizens in a variety of services, ranging from public information, letter submission, to public complaints. There are some negative comments about the application on the Google app store. This suggests there are quality issues in the Sapawarga software. By applying usability tests, namely the System Usability Scale (SUS), and SPSS for data analysis, this study aimed to ascertain user satisfaction features with the SapaWarga application. The study collected primary Data from distributed questionnaires to 400 respondents from Bandung City residents. It has been determined that the application achieved a total score of 52.92, which is classified as OK. However, the grade scales and acceptability ranges were relatively low, indicating that there are still many improvements needed to achieve maximum user satisfaction. In the paper, the researchers provided recommendations for enhancing the usability of the Sapawarga application in West Java.

Keywords: *Sapa Warga, Usability Testing, System Usability Scale, SPSS*

1. Introduction

Public services are a critical element in maintaining public welfare and improving quality of life. In an effort to improve the efficiency and affordability of public services, the utilization of information technology and applications is becoming increasingly important. One such initiative is the development of the SAPAWARGA application in West Java, which aims to provide more efficient, transparent and technology-based public services. SAPAWARGA West Java application offers a variety of services, ranging from public information, letter submission, to public complaints. The application of technology in this public service is expected to speed up the process, reduce bureaucracy, and increase responsiveness of the government to citizens' needs. In this context, an in-depth research is needed to analyze the performance of public services through the West Java SAPAWARGA application West Java. This analysis includes an evaluation of of various aspects, such as speed of response speed, information availability, ease of of use, as well as the level of satisfaction of user satisfaction. An in-depth understanding of performance of the SAPAWARGA application will provide a clear picture of effectiveness of technology implementation in improving public services in West Java.

System usability scale is one of the methods that can be used to test users satisfaction. The System Usability Scale (SUS) method was chosen because it focuses on end-user involvement in testing, thus providing a perspective that is relevant to real user experience [1][2].The questionnaire used in this method consists of 10 questions with a rating scale of 1 to 5. The number of respondents needed in this method is not too many, However, obtaining the results mathematically is more difficult than using the heuristic evaluation approach. This approach has proved dependable for assessing customer satisfaction for more than 30 years, according to industry standards [3].

Several studies have been conducted related to usability measurement. One of them is Usability Evaluation Applying Discovery Prototyping Techniques and the System Usability Scale (SUS) to the PLN Mobile Application (Case Study of PT. PLN) conducted by [4]. This research aims to test the usability of the PLN Mobile application

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and make an improvement design with the Discovery Prototyping method. Based on this research, the usability value of the PLN Mobile application is 13.33% for effectiveness criteria, 8.33% for efficiency criteria and 46.66% for the satisfaction category. The prototype that has been designed is then tested again in the same way as before. The usability test results for the designed improvement prototype are 100% for effectiveness criteria, 85% for efficiency criteria and 70.78% for the satisfaction category [4].

Then, [5] conducted research related to usability with the title Utilizing the System Usability Scale Method to Assess Online Learning Media's Usability at XYZ University. The purpose of this research is to assess how user-friendly XYZ University's online learning media services are for students. Data collection in this study was conducted using questionnaires from SUS Method and Likert Scale. A total of 50 students of the Faculty of Computer Science, XYZ University were involved in this study as respondents. The usability score obtained by the online learning media service of XYZ University in this study is 69.9. This value is included in grade C in the OK category which means that the service is still generally acceptable to students [5].

Based on the background that has been described, the author chooses to use the questionnaire approach of the System Usability Scale (SUS) as a suggestion for enhancement, which is applied in a research named "Usability Analysis Of Sapa Warga Application Using Usability Testing Method And System Usability Scale (SUS)" the author hopes that this research can evaluate and provide recommendations for improvement regarding the usability aspects of the Sapawarga application in jawabarat.

2. Reseach Methodology

The research's procedures and phases start by identifying the issue and looking up references for a literature review, and they conclude with the creation of the final report. This will serve as a guide for the literature review process, which will culminate in the production of a final report. The following is an indication of the research phases [6].

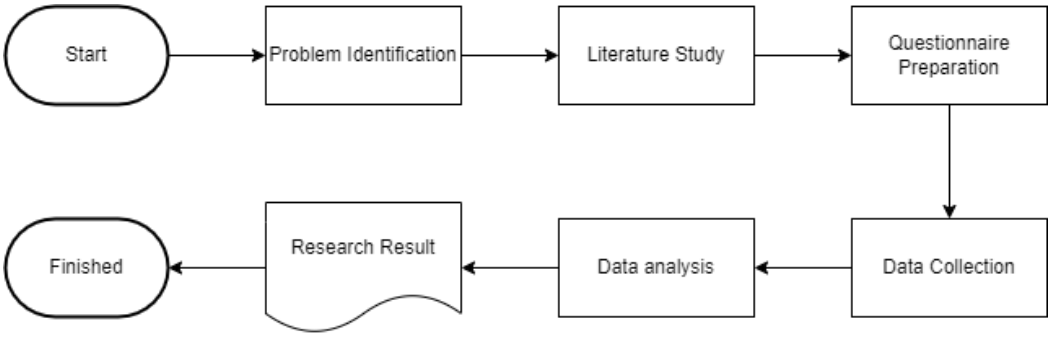

Figure 1. Activity Flowcharts

a) Problem Identification
The focus of problem formulation is so that researchers are not trapped in the amount of data obtained in the field. obtained in the field [7]. The degree of originality of the information to be gleaned from the field setting is a more important factor in determining the problem's emphasis. This is meant to restrict qualitative research as well as research in order to determine what data is important and what is not [8].

b) Literature Study
The goal of reviewing earlier studies is to gather reference and comparison data. Additionally, to prevent drawing conclusions about similarities with previously conducted studies [9]. As a consequence, the researcher presents the findings of earlier study. Journals are used as examples while discussing the sapa Warga program policy. Additionally, prior research helps to clarify and enhance the

discussion of research while also setting it apart from currently being done study [10].

c) Questionnaire Preparation

At this stage the researcher made adjustments by changing the questionnaire from English to Indonesian to make it easier for respondents to better understand the questionnaire. because the respondents in this study were residents of Bandung who used Indonesian to communicate.

Table 1. Question Items

Question Items
I'll wish to make greater use of Sapawarga Jawa Barat.
Sapawarga Jawa Barat doesn't need to be this difficult, in my opinion.
Sapawarga Jawa Barat seems user-friendly to me.
I require technical assistance in order to use SapaWarga Jawa Barat.
I thought Sapawarga Jawa Barat's features were really well-integrated.
Many contradictory items were discovered by me on SapaWarga Jawa Barat.
I believe that Sapawarga JawaBarat will be simple for many people to learn how to utilize.
Sapawarga Jawa Barat is quite difficult for me to utilize.
I feel really secure utilizing My SapaWarga JawaBarat.
Before utilizing SapaWarga Jawabarat, I must learn.

a. Data Collection

The procedure of acquiring data involved the use of both a user satisfaction survey and using the System Usability Scale (SUS) survey. (SUS) as well as a survey to gauge user satisfaction. The inhabitants of West Java who utilize the SapaWarga program make up the study's population, and non-probability sampling is used in this investigation [11]. Non-probability sampling is one of the sample approaches used in this investigation. Purposive sampling is one type of non-probability sampling that is utilized. The Bernoulli method was used to determine How many samples are used in this research; the authors rounded up to 400 respondents from the minimum sample estimate of 385 respondents. The Sapa Warga program users who were chosen at random by the researcher serve as the resource individuals for this study [12].

b. Data Analysis

The data analysis method is done by quantitative data analysis. Data results research results from the questionnaire will then be processed using the method based on formulas that have been determined based on the SUS method. The scoring scale is shown in Table 2. The score is obtained with the following stages by converting respondents' responses:

1) The final result is derived by deducting 1 from the user's score for each odd number of questions (x).
2) The final result is calculated by deducting the result from 5 minus the user's score (x) for each even number of questions.
3) The computation of each user's weighting involves multiplying the aggregate score by 2.5.

Moreover, a formula like this is used to total the overall score:

$$\bar{x} = \frac{\sum x}{n} \quad (1)$$

$\bar{x}$ = Average value.
$\sum x$ = Total SUS score.
n = Amount of respondents

These results yield the average value of the respondent's opinion of their total score. There are two techniques that may be employed to determine the assessment grade

results. First, the assessment results are computed using the SUS score percentile rank. As Table 2 shows, this is frequently accomplished utilizing the results of user assessment computations.

Table 2. SUS Score percentile rank

GRADE	Description
A	Score >= 80,3
B	Score >= 74 and <80,3
C	Score>=68 and 74
D	Score>= 51 and <68
E	Score more<51

The second is measured in terms of the scale grade, adjective rating, and user approval level. The scale grade has three categories: unacceptable, marginal, and acceptable. As seen in Table 3, there are three groups that include the degree of user acceptance: not acceptable, marginal, and acceptable.

Table 3. Acceptability Range

SUS Score	Description
0-50,9	*Not Acceptable*
51-70,9	*Marginal*
71-100	*Acceptable*

c. Research Result

From the results of research conducted from start to finish, the test results obtained by the Sapa Warga application are obtained. So that researchers can draw conclusions whether this application is in accordance with user expectations or not, it can also provide suggestions according to user expectations [13].

3. Result and Discussion

3.1. Characteristics of Respondents

We also gathered respondent profiles and demographic information from the completed questionnaires. Male respondents made up 49% of the 199 respondents in this study, while female respondents made up 51% of the 207 respondents.

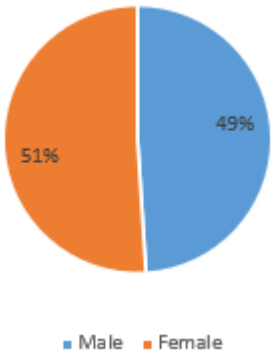

Figure 2. Demographic Data

3.2. Validity Test Results

In this investigation, we confirmed the questionnaire's validity If N = 400 and r number > r table is valid and the significance value is 5%, then the survey is declared valid and r table is 0.098. 400 (5% significance level), 0.098 would be the R table value. The findings of the study validity question, which were ascertained with the use of the statistical software Social Sciences (SPSS), are displayed below [14].

Table 4. Validation Test Results

Statement items	R count	R table	Description
Q1	0,474	0,098	VALID
Q2	0,153	0,098	VALID
Q3	0,464	0,098	VALID
Q4	0,140	0,098	VALID
Q5	0,330	0,098	VALID
Q6	0,224	0,098	VALID
Q7	0,311	0,098	VALID
Q8	0,499	0,098	VALID
Q9	0,252	0,098	VALID
Q10	0,100	0,098	VALID

3.3. Reability Test Results

When employing several research techniques in a study, reliability testing looks at the consistency of outcomes for tools or inquiries found in a research questionnaire. Research questionnaires are included in various circumstances and with varying research methodologies. Put differently, a questionnaire is deemed dependable if it produces consistent score outcomes for the same parameter at many times [15].

Reliability testing was conducted using the Cronbach alpha method. If N = 400 and r number > r table and the significance value is 5%, then the questionnaire is considered reliable and we get an r table of 0.098. Therefore, if these measurements yield consistent score results, It might be said that the survey is trustworthy [16]. Table 5 presents the results of the reliability test of the questionnaire used in this investigation. The Statistical Program for Social Science was used to calculate the results of this study (SPSS).

Table 5. Reliability Test Results

Cronbach Alpha Score	r-table	Description
0,774	0,098	Reliable

It is clear from the reliability test findings that the survey questionnaire is valid and appropriate for analysis [17].

3.4. Questionnaire Calculation Results

Figure 3 illustrates the range of options provided by participants who chose Likert scales 1 through 5. like in Q1, 23 respondents selected Likert scale 1, 20 selected Likert scale 2, 73 selected Likert scale 3, and 103 selected Likert scale 3. [18]. Likert scale 1, 20 respondents chose Likert scale 2, 73 respondents chose Likert scale 3, Likert scale was selected by 103 responders. Likert scale was selected by 4 and 181 respondents. 5. Selecting the Likert scale Likert scale was selected by 4 and 181 respondents [19].

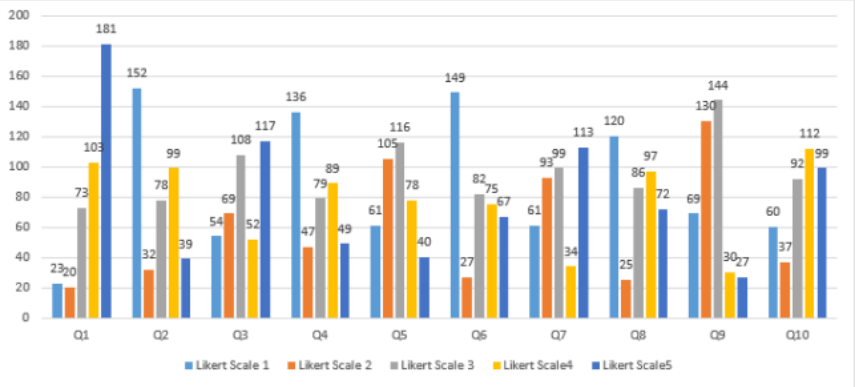

Figure 1. System Usability Respondent Answers

3.5. System Usability Scale (SUS) Calculation Results

Table 6 illustrates that an average response is provided for every question item, which is derived by summing the answers using the SUS formula. Multiplying the overall average answer by 2.5 yields a final result of 52.92. Based on this evaluation, the West Java Sapawarga application receives a grade of D or OK. This means that the West Java Sapawarga application can continue to be used, but many improvements are still needed [20].

Table 6. System Usability Scale Score Results

Questions	Average
Q1	2,99
Q2	2,39
Q3	2,27
Q4	2,33
Q5	1,67
Q6	2,17
Q7	2,11
Q8	2,06
Q9	1,54
Q10	1,61
Total Average	21,17
SUS Score = Total Average*2.5	52,92

3.6. Discussion

From the data collected for the average value in each questions, the results of the distribution of questionnaires are as follows:

Table 7. System Usability Scale Discussion

Q	Average	Description
Q1	2,99	Users are satisfied with the West Java Sapawarga application, but it still needs improvements to get maximum score.
Q2	2,39	Users find the West Java Sapawarga application too complex and difficult to understand.
Q3	2,27	Users find the West Java Sapawarga application not easy to use.
Q4	2,33	Users are still facing difficulties in using West Java Sapawarga application and need technical help.
Q5	1,67	The functionality of the West Java Sapawarga application is not yet well integrated, so developers must request improvements or add new features.
Q6	2,17	Users feel that there are many inconsistencies in West Java Sapawarga applications and developers need to fix these inconsistencies in West Java Sapawarga applications.
Q7	2,11	Many users still find it difficult to learn how to use the West Java Sapawarga applications.
Q8	2,06	Users still find the West Java Sapawarga application complicated to use. Therefore, developers need to improve West Java Sapawarga applications to make them easier to use.
Q9	1,54	Users experience inconvenience when using West Java Sapawarga applications, so developers must pay attention to the issue of user comfort when using West Java Sapawarga applications.
Q10	1,61	Developers need to make West Java Sapawarga applications more user-friendly because users still have to learn something before using West Java Sapawarga applications.

4. Conclusion

Usability analysis using the SUS measurement model on the West Java Sapawarga Application obtained a score of 53.92 with Adjective Ratings classified as OK, Grade

Scales including D value, and Acceptability Ranges classified as Marginal low. Overall respondents assess the West Java Sapawarga Application is good to use but there are still many features that need to be improved and updated. that need to be improved and updated. The main purpose of Citizens accessing the West Java Sapawarga Application West Java Sapawarga Application is to provide accessibility, ease and speed in obtaining information about public services and ensuring accuracy [21].

Recommendations that might be made to enhance the quality of the SapaWarga West Java application based on the research findings, including the following: Checking the connection between the database and the website whether it is well connected or not because a popup appears that displays no network even though the network used by the user is running well which causes users to be unable to access the application. The features that are made are not too complex because many users complain about features that are too complex so it is difficult for users to understand the usefulness of these features. update the features contained in the application more often so that it runs as desired. And suggestions for future researchers can re-measure the West Java Sapawarga After the West Java Sapawarga Application was updated, the application used the System Usability Scale (SUS) measurement paradigm to compare the usability values before and after the upgrade. Testing alternative assessment techniques is required to detect problems since SUS is not diagnostic or does not highlight problems in further detail.

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