

## ANALYSIS OF USER SATISFACTION OF THE STUNTING APPLICATION BASED ON ARDUINO UNO USING WEBQUAL 4.0

Sri Restu Ningsih<sup>1)</sup>, Cyntia Lasmi Andesti<sup>2)</sup>, Muhammad Amrin Lubis<sup>3)</sup>, Muhammad Rizky Hidayat<sup>4)</sup>, Alif Budiman Wahabbi<sup>5)</sup>

<sup>1,3</sup>Information Systems Study Program, Metamedia University, Jl. Khatib Sulaiman In No. 1 Padang, West Sumatra, Indonesia

<sup>2,4,5</sup> Informatics Study Program, Metamedia University, Jl. Khatib Sulaiman In No. 1 Padang, West Sumatra, Indonesia.

Email: <sup>1</sup>[srirestuningsih@metamedia.ac.id](mailto:srirestuningsih@metamedia.ac.id), <sup>2</sup>[cyntiaandesti@metamedia.ac.id](mailto:cyntiaandesti@metamedia.ac.id),  
<sup>3</sup>[mamrinlubis@metamedia.com](mailto:mamrinlubis@metamedia.com), <sup>4</sup>[rizky@gmail.com](mailto:rizky@gmail.com), <sup>5</sup>[alifbudiman@gmail.com](mailto:alifbudiman@gmail.com)

### Abstract

The high prevalence of stunting that currently occurs is a serious problem faced. This is because stunting checks are still done manually. For this reason, an application for detecting stunting in toddlers using Arduino Uno was designed, in the form of the SIPASBU application (Information System for Preventing Stunting in Mothers and Toddlers) quickly, accurately, and able to provide early treatment using Arduino Uno tools. The problem that occurs is that there are still complaints from health workers when using the SIPASBU application. The purpose of this study is to analyze the satisfaction of SIPASBU application users, in this case health workers at the Puskesmas. Webqual 4.0 is used as a method to evaluate and analyze the SIPASBU application which is used as a medium for online stunting detection. In order for the evaluation to be carried out, assessment variables are needed that refer to three variables, namely Usability, Information, and Service Interaction. The results showed that the Usability value in measuring the quality level of the SIPASBU application was 3.32 with the Good category. The Information Quality value in measuring the quality level of the SIPASBU application is 3.22 with the Good category, for the Interaction Quality value in measuring the quality level of the SIPASBU application is 3.33 with the Good category. The overall value for the WebQual 4.0 indicator obtained is 3.29 in the Good category, so users assess that the SIPASBU application is qualified as a medium for detecting stunting of toddlers at the Puskesmas.

**Keywords:** Stunting, Application, SIPASBU, Webqual 4.0

### 1. INTRODUCTION

All health issues in Sustainable Development Goals (SDGs) are integrated into one goal, namely ensuring a healthy life and promoting prosperity for all people at all ages. Global health is one of the topics that is becoming a topic everyone's attention. Through the SDGs, all countries are required to pay more attention to the importance of global health for all countries (Hadjarati et al., 2022). The rapid development of technology has an impact on various fields, including health synergy (Ningsih et al., 2022). Stunting is one of the serious problems facing Indonesia. WHO (2020) states that stunting is a child's growth and development disorder caused by inadequate nutritional intake and/or recurrent/chronic infections that occur in the First 1000 Days of Life (HPK).

One of the problems of malnutrition that is still quite high in Indonesia is stunting and wasting in toddlers as well as the problem of anemia and chronic lack of energy (KEK) in pregnant women. The problem of malnutrition in pregnant women can ultimately cause low birth weight (LBW) and malnutrition in toddlers. Nutritional problems are caused by direct causes such as inadequate food intake

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and infectious diseases (Pipit Mulyah, Dyah Aminatun, Sukma Septian Nasution, Tommy Hastomo, Setiana Sri Wahyuni Sitepu, 2020).

The stunting rate in West Sumatra Province is still relatively high than the national average. According to data from the Indonesian Nutrition Study Survey (SSGI) in Pariaman City, the prevalence of stunting is still at 16%, where the national target is 14% in 2024. Stunting cases are of particular concern to the Pariaman City government, there are 600 children who are at high risk of being affected by stunting (Dinas Kesehatan Kabupaten Banyumas, 2022). This is because there is still no proper education regarding the importance of 1000 HPK (Source; Pariaman City Health Service, 2023). From this problem, the author's innovative idea emerged in the form of an innovative stunting detection application for mothers and toddlers based on Arduino Uno as a strategy to achieve Universal Health Coverage in the SDGs Era in the form of an accelerated stunting reduction program using the SIPASBU application (Information System for Maternal and Infant Stunting Prevention) at Community Health Centers Pariaman City.

One technology-based application that can be used in the process of health independence is the SIPASBU application. The SIPASBU application is an application that allows the creation of effective health services. This application is assumed and expected to be an alternative in answering problems in preventing stunting in society (Khairunnisa, 2020).

The problem that occurs is that there are still user complaints when using the SIPASBU application to detect stunting, and the dissatisfaction of pregnant women and toddlers when using the SIPASBU application. Apart from that, there is no analysis of the obstacles and difficulties for pregnant women and toddlers in using the SIPASBU application as a stunting detection medium, especially for pregnant women and toddlers in the city of Pariaman.

The aim of this research is to carry out an analysis to find out the level of satisfaction of users of the SIPASBU application. The research only analyzes the SIPASBU application which is a medium for detecting stunting in pregnant women and toddlers, and to find out the factors that influence the satisfaction of pregnant women and toddlers, using the Webqual 4.0 method. From the results of this research, the Community Health Center, pregnant women and toddlers can measure the level of difficulty found in the SIPASBU application.

## 2. RESEARCH METHODS

The method in this study uses a survey approach that is described quantitatively with an online questionnaire as a data collection tool. The research stages carried out in this study are shown in Figure 1.

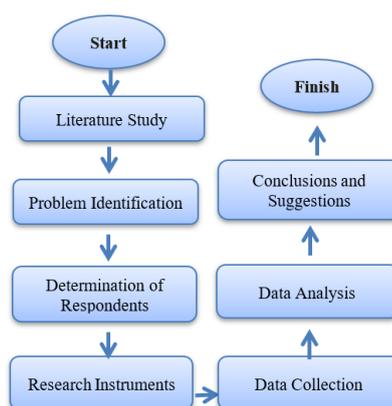


Figure 1. Research Stages

From Figure 1, the steps can be explained as follows:

### 1) Literature Study

Research begins with a literature study of various relevant sources that support research on the SIPASBU application.

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2) Problem Identification

Problems are found through observation and interviews with several health workers as application users. Observations and interviews were conducted at several Pariaman Health Centers. The problems found were then identified into a research problem formulation.

3) Determination of Respondents

The number of samples used in the study were 30 respondents with the criteria of health workers who had used the SIPASBU application. Data collection in this study used a quantitative approach. Where questionnaires were distributed online using google form to respondents, namely health workers at the Puskesmas.

4) Data Collection

Data collection in this study uses a quantitative approach. Where questionnaires were distributed online using google form to target respondents, namely health workers at the Puskesmas.

5) Data Analysis

The next stage after obtaining the questionnaire data is to process and analyze the data using Webqual 4.0. The results of the analysis are used to obtain information about the understanding and ease of health workers in using the application.

6) Conclusion and Suggestion

After the analysis results are obtained, conclusions can be drawn based on the results and discussion of the research. As well as suggestions in the form of recommendations for improvements to the application or improvements for further research.

The research method used in measuring the quality of the SIPASBU application is WebQual 4.0. This research was carried out using a research instrument created based on WebQual 4.0 indicators and then distributed to application users, namely health workers from the Community Health Center. WebQual 4.0 is an instrument that assesses the quality of a website from the end user's perspective (Liani et al., 2020).

Webqual 4.0 is used in this research as a method for evaluating the SIPASBU application which is used as an online detection tool. To see how the evaluation is carried out, assessment variables are needed. The variables used refer to three variables from Webqual 4.0, namely Usability, Information and Service Interaction (Yasir & Rusmala, 2021).

This research develops the WebQual 4.0 measurement model into one construct to identify the level of user satisfaction. Webqual is a method or technique for measuring website quality based on site user perceptions (Nainggolan, 2022). WebQual 4.0 replaces the site quality dimension with the Usability dimension (Mude et al., 2020)(Mustopa et al., 2020).

The hypothesis proposed in developing the research model above can be stated as follows: H1 = WebQual 4.0 has a significant effect on User Satisfaction. This research method uses a quantitative approach. Data collection was carried out by distributing online questionnaires to health workers at the Community Health Center.

The data processing technique used in this research is associative quantitative using a reliable questionnaire. According to previous research, quantitative associative research is research by obtaining numbers which aims to determine the degree of relationship and pattern/form of influence between two or more variables, where with this research a theory will be built which functions to explain, predict and control a phenomenon (Fahredy et al., 2023).

### **3. RESULTS AND DISCUSSION**

The measurement scale that researchers used in this research was the Likert scale. Using the Likert scale method, assessing the quality of the SIPASBU application uses a questionnaire designed with a

Likert scale using instruments with the dimensions of usability, information quality and instruction quality. (Liani et al., 2020).

The measurement scale for satisfaction level is 1 (Strongly Disagree), 2 (Disagree), 3 (Agree), 4 (Strongly Agree) (Wibowati, 2020). The formula for calculating the Likert scale is:

Average assessment score  $(STS*1) + (TS*2) + (S*3) + (SS*4)$ /number of respondents.

Matlab is a program that can be used to validate research results using various methods (Jamaaluddin & Indah, 2021). Apart from that, research results can also be visualized clearly. Matlab is a high-level, closed, and case sensitive programming language in the world of numerical computing developed by MathWorks (Khlifi, 2020). One of its most popular advantages is the ability to create graphs with the best visualization. Matlab has many tools that can help various scientific disciplines. This is one of the reasons why industry uses Matlab. Apart from that, Matlab has many libraries which are very helpful for solving mathematical problems such as creating function simulations, mathematical modeling and GUI design (Jamaaluddin & Indah, 2021).

### 3.1 Overview of Questionnaire Results

An overview of the questionnaire results from the dimensions of usability, information quality and interaction quality can be depicted in the following Matlab software.

#### 1. Usability Dimension

In the usability dimension, the results of the Likert scale interval calculation consisting of 6 questions are input, so that a graphic description of the Matlab application is obtained as shown in Figure 2.

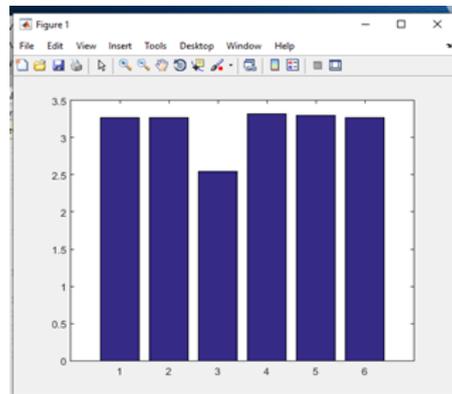


Figure.2. Matlab Results For Usability Category

From Figure 2 it can be seen that in the usability category, question number 4 has the highest level of agreement, namely with an average value of 3.32. This shows that many respondents agree that the SIPASBU Application website can be easily accessed for novice users. The lowest value is shown in graph number 3 with an average value of 2.56 which shows that a few respondents agreed that the SIPASBU application has an attractive appearance and is easy to learn.

#### 2. Dimensions of Information Quality

In the information quality dimension, the results of the Likert scale interval calculation consisting of 4 questions are input, so that a graphic image of the Matlab application is obtained as shown in Figure 3.

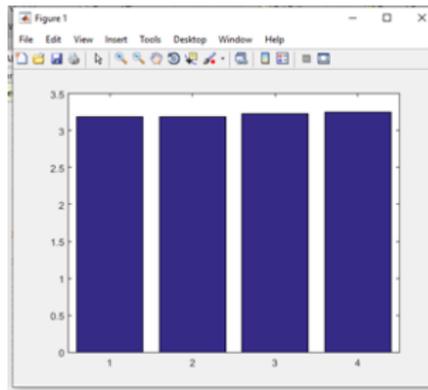


Figure 3. Matlab Results In The Information Quality Category

From Figure 3 above, it can be seen that in the information quality category, question number 4 has the highest level of agreement, with an average value of 3.32 and number 3 has the lowest level of agreement, with an average value of 3.21. This shows that many respondents stated that the SIPASBU Application provided reports on time. However, very few respondents agreed that the SIPASBU Application provided accurate reports.

### 3. Dimensions of Interaction Quality

In the information quality dimension, the results of Likert scale interval calculations consisting of 7 questions given to 43 health worker respondents were input, so that a graphic image of the Matlab application was obtained as shown in Figure 3.

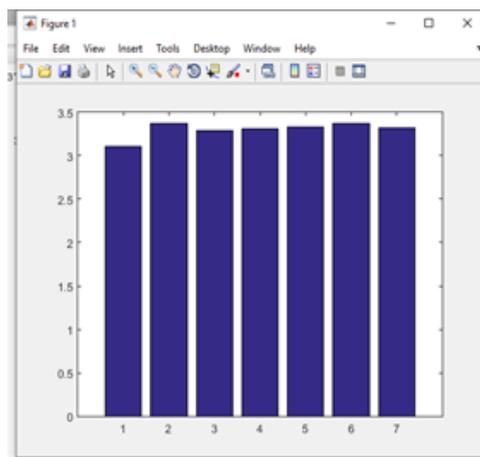


Figure3. Matlab Results In The Interaction Quality Category

From Figure 3 above, it can be seen that in the interaction quality dimension, question number 1 has the lowest level of agreement and question 2 has the highest level of agreement, on average it has almost the same level of agreement, namely the highest value with an average of 3.35. This shows that respondents from pregnant women and toddlers agreed that the SIPASBU application was suitable for its expected use.

### B. Discussion of Questionnaire Results

After collecting data from the questionnaire results from respondents based on 3 question criteria including usability quality, information quality and interaction quality services. From the results of calculating Likert scale intervals, a table can be created to calculate the level of respondent satisfaction with the service quality of the SIPASBU Application Website using a Likert scale.

Score: The total number of each ariable.

Average:  $\text{Assessment score} = \frac{(STS*1) + (TS*2) + (S*3) + (SS*4)}{\text{number of respondents}}$

The results of calculating Likert scale intervals for the three dimensions of usability quality,

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information quality and interaction quality services can be seen in Table 1.

Table 1. Likert Scale Interval Calculation Results

Webqual Dimension	Variables Measured	Average	Description
Usability	Operating the SIPASBU Application is easy	3,32	Agree
	The SIPASBU application is able to detect stunting in mothers and toddlers	3,36	Agree
	The SIPASBU application has an attractive appearance and is easy to learn	3,21	Agree
	The SIPASBU Application Website page has a clear appearance and is easy to understand	3,33	Agree
	The SIPASBU Application Website can save time and costs	3,36	Agree
	The SIPASBU Application Website is easy to access for novice users	3,35	Agree
	The SIPASBU application provides reports that are easy to understand	3,32	Agree
Information Quality	The SIPASBU application provides accurate reports	3,30	Agree
	The SIPASBU application provides reports according to time	3,31	Agree
	The SIPASBU application provides relevant reports	3,36	Agree
	The SIPASBU application makes it easy to detect stunting for pregnant women and toddlers	3,11	Agree
	The SIPASBU application is the right medium for pregnant women and toddlers to detect stunting	3,37	Agree
Interaction Quality	The SIPASBU application provides information security for users of pregnant women and toddlers	3,29	Agree
	The SIPASBU application is in accordance with the expected use	3,31	Agree
	All processes in the SIPASBU application run optimally and well	3,33	Agree
	The SIPASBU application provides room for personalization	3,37	Agree
	The SIPASBU application provides space for the community.	3,32	Agree

The data collection method used was a questionnaire using a Likert instrument measurement scale . In this research, the data analysis technique that the author uses is quantitative descriptive. The quantitative data obtained by the author is expressed in the form of numbers as a result of observations and measurements which can be shown through percentages and then explained in the form of words, sentences, schemes or pictures.(Wibowati, 2020) (Sugandi & Halim, 2020).

The data above is summarized and simplified according to the results of Likert scale interval calculations as shown in Table 2 below:

Table 2. Conclusion of Likert Scale Interval Calculation Results

Aspect Dimensions	Average Total	Category
Usability	3.32	Agree
Information Quality	3,22	Agree

Interaction Quality	3,33	Agree
	<b>3,29</b>	Agree

Based on Table 2, it can be seen that there are three aspects of the webqual 4.0 dimensions based on respondents through questionnaires, the average value is an assessment from health workers which includes, among others: (1) Usability obtained 3.32 with the agree category, (2) Information Quality obtained 3.22 with the agree category , (3) Interaction Quality was obtained at 3.33 in the agree category and the overall average was 3.29 in the agree category. These results indicate that the quality of the website in the SIPASBU application is deemed to be acceptable for the use of detectors for pregnant women and toddlers by health workers at Community Health Centers. The results of the total Likert scale can be depicted on the graph in Figure 4.

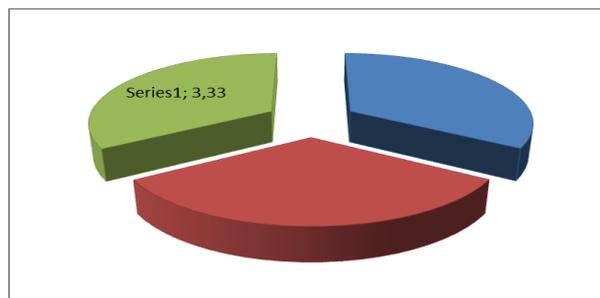


Figure 4. Graph of Likert Scale Results

Figure 4 which shows a graph of the Likert scale results shows a significant value that is almost the same as getting a total average of 3.29, which means that respondents agree with the dimensions of the questions asked using the Webqual 4.0 method..

#### 4. CONCLUSION

Based on the results of research regarding the analysis of the application of WebQual 4.0 which is used to measure the quality level of the SIPASBU application as a stunting detection tool and media, researchers can draw conclusions from the results of the value of each WebQual 4.0 indicator that the Usability value in measuring the quality level of the SIPASBU application is 3.32 in the Good category . This explains that the SIPASBU application is easy to use as a stunting detection tool. The Information Quality value in measuring the quality level of the SIPASBU application is 3.22 in the Good category. This explains that the information produced by the SIPASBU application is trustworthy, relevant, easy to read, up to date, accurate and understandable. The Interaction Quality value in measuring the quality level of the SIPASBU application is 3.33 in the Good category.

This explains that the services provided by the SIPASBU application can make it easier for health workers to provide services to detect stunting for pregnant women and toddlers at Community Health Centers. The overall score for the WebQual 4.0 indicator obtained was 3.29 in the Good category, so that users considered that the SIPASBU application was quality as a medium for detecting stunting for pregnant women and toddlers at the Community Health Center.

#### 5. ACKNOWLEDGEMENT

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