

# Usability Analysis with Webuse Model in Information System Design in Monitoring Child Growth and Development

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**Submission date:** 17-May-2023 03:12PM (UTC+0700)

**Submission ID:** 2095287920

**File name:** peer\_IOP\_ICITDA2020.pdf (459.96K)

**Word count:** 2308

**Character count:** 11724

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To cite this article: Kurniawan Teguh Martono *et al* 2020 *IOP Conf. Ser.: Mater. Sci. Eng.* **803** 012037

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## Usability Analysis with Webuse Model in Information System Design in Monitoring Child Growth and Development

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**Abstract.** Information system today becomes a core need for any organizations as it can help in data management for resulting in the structured data. Also, the use of information system can assist the organization in minimizing the errors in making a policy. One of organizations implementing such system is POSYANDU or Integrated Service Post that is predominantly in charge of monitoring the child growth and development. In this research, a process of testing the information system was conducted using the WEBUSE (Web Usability Evaluation) model aimed to observe the level of usability of the system. Based on the results of the test, it has been found that the average values of the system were 0.69 indicating that the system was at the Good level of usability. Thus, the system can work in accordance to the needs of the users.

**Keywords:** Usability, WEBUSE, Information, Growth and Development

### 1. Introduction

For being a next generation for both family and state, children are considered as one of the important assets for family and state for playing a role in a very strategic position in supporting a success. This very strategic role then needs a serious concern and management in terms of the child growth and development. Growth and development are two different events, Growth means a phase in which the physical size and body structure are facing a change; while development refers to a change of ability or the functions of body is going to be more complex. The factor influencing the child growth and development is divided into two: internal factor and external factor in which both factors can cause the difference in the pattern of growth and development for each child.

To find out the usefulness of this application, we need a test that can be used as a reference to the level of subjective satisfaction of application users. The method used in this test is to use the Web Usability Evaluation Tool or commonly called the WEBUSE. Usability testing is intended to determine the level of comfort of the information system for monitoring the growth and development of children from the user side of the application.

### 2. Literature Review

The process of monitoring the child growth and development is deemed necessary for each state. Indonesia is one of the states implementing the monitoring process for the child growth and development using the monitoring model until the rural phase. It is done by the group of community independently.



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This group of community has been established by the community itself called as POSYANDU or Integrated Service Post. Here, everyone participated in this group has been given a training by the health department, in this case, represented by PUSKEMAS (Centre for Public Health). POSYANDU is an independent institution established by the community in which it is responsible for providing the health basic service including the measurement and monitoring the child growth and development. In addition, POSYANDU provides a health basic service for mothers, family planning and nutritious food and immunisation [1],[2]. Health data plays a crucial role as it can function as a consideration in making a policy. An error in the process of reading or inputting the data can make an error in decision making. Recording the data about the child growth and development conducted in POSYANDU needs to be accurately done to prevent any errors in determining the status of growth and development of an area. Hence, it needs a system that can help the cadres in POSYANDU in facilitating the process of reading the results of measurement and recording process.

Usability is a software testing model that aims to determine the level of ease in learning the system, the ease of using the system as a device that can help positively solve problems [3]. Usability testing process can be carried out with various models, namely by using a special laboratory or by testing in public places. Usability testing is carried out using three aspects, namely effectiveness, efficiency and satisfaction. The effectiveness aspect is a part that is related to how the user can complete the task precisely and accurately. The efficiency aspect is a part that is related to the time needed to complete a task. The satisfaction aspect is related to the feeling of the user after using the application [4], [5], [6]. Usability Testing in general uses 4 stages in its implementation, namely determining the questionnaire model that will be used, determining the participants or participants who will do the testing, determining the number of participants or participants and finally the data analysis.

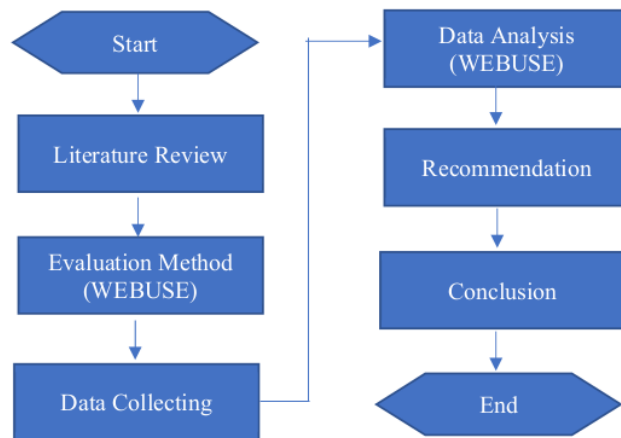
### 3. Research Method

This research was conducted to observe the level of usability of information system application to monitoring the growth and development of children. The aim of this test was to help the application developer in determining how to improve a design of application. In this research, the test of usability was conducted by obtaining the respondents from the cadres of POSYANDU. Then, the cadres were asked to do their task in accordance with the test scenario. The instrument used in this research was WEBUSE (Web Usability Evaluation tool) [7]. The criteria for usability evaluation using WEBUSE are Content, Organization, and Readability, Navigation and Links, User Interface Design, Performance and Effectiveness [8]. The steps in this research are presented as follows.

1. Determining the system to be tested
2. Asking the respondents to answer all questions in the questionnaires
3. Accumulating the scores used based on the answers from the users for each question in each category of usability.
4. The point of usability category is the mean value of each category
5. Point of usability from the website is the mean value from each category.
6. Determining the level of usability based on the point of usability.

The flow chart of this research is shown in Figure 3.1

At this stage of testing, using four variables, namely the level of ease of reading, information content and information structure. The next variable is the use of existing menus in the system which includes buttons and navigation system. The next variable is the interface design of the system, and the last variable is the performance of the system. Data is collected by using a questionnaire that will be distributed to respondents. The choice of the answers in the questionnaires would be divided into 5 answers: Very Disagree, Disagree, Neutral, Agree and Very Agree. Table 3.1 shows the choices of answer with the weight of score from each answer.



**Figure 3.1** Flowchart Diagram of Research

**Table 3.1** Weight and Choice of Answer [7]

Choice	Very Disagree	Disagree	Neutral	Agree	Very Agree
Weight	0.00	0.25	0.50	0.75	1.00

To determine the point of usability in the category was by labelling it with the notification x. Equation 1 shows the value of the point of usability.

$$x = \frac{\sum(\text{Weight of each question form each category})}{\text{number of questions } J} \quad \dots(1)$$

Table 3.2 shows the relationship between usability point and usability level with an explanation of the results obtained.

**Table 3.2** shows the relation between usability points and usability levels

Usability Point	$0 \leq x \leq 0.20$	$0.20 < x < 0.40$	$0.40 < x \leq 0.60$	$0.60 < x \leq 0.80$	$0.8 < x \leq 1.0$
Level	Bad	Poor	Moderate	Good	Excellent

#### 4. Results

The test involved POSYANDU cadres in Gajahmungkur sub-district, Semarang, Indonesia. POSYANDU cadres involved in this test were 30 people. Testing is done with the initial stage is to test the system that has been developed. This test includes:

1. Ease of reading information, appropriate information content and information structure
2. The use of the menu on each page of the website in accordance with needs and easy to use
3. Design the user interface in accordance with the rules in Human and Computer Interaction
4. Performance and effectiveness of the application so as to facilitate cadres in the process of filling and reading data.

The results obtained based on the equation 1 in WEBUSE method are shown in Table 4.1.

**Table 4.1** The results of the test using WEBUSE

No	Test Variables	Point of usability (x)	Usability Level*
X <sub>1</sub>	Facilities in reading, information contents, and information structure	0.66	<b>Good</b>
X <sub>2</sub>	The use of menu	0.62	<b>Good</b>
X <sub>3</sub>	Design of user interface in application	0.79	<b>Good</b>
X <sub>4</sub>	Work performance and effectiveness of application	0.69	<b>Good</b>
<b>3</b>	<b>Total Average (x)</b>	<b>0.69</b>	<b>Good</b>

- \* **3** x is greater than 0, and x is less than 0.20, then usability level is Bad  
 2. **3** is greater than 0.20, and x is less than 0.40, then usability level is Poor  
 3. **3** is greater than 0.40, and x is less than 0.60, then usability level is Moderate  
 4. **3** is greater than 0.60, and x is less than 0.80, then usability level is Good  
 5. x is greater than 0.80, and x is less than 1.00, then usability level is Excellent

Based on the data obtained as shown in Table 4.1, the result on average towards 4 variables of test was 0.69 indicating that it was at the Good level. Thus, the system or application developed has met the needs of the users in this case the cadres of POSYANDU. For each test variable, it obtained the results of the usability point in the range of 0.62 to 0.79 meaning that it is at the **Good** level.

## 5. Conclusion **10**

Based on the analysis from the test results using WEBUSE, it can be concluded that the application of monitoring the growth and development of children had the Good level of usability. Thus, it can be concluded that the system can be accepted by the users. The acceptance includes the process in terms of learnability, efficiency, Memorability, Error and satisfaction with the average score of 0.69.

## 6. Acknowledgement

“This research has been funded by Directorate of Research and Community Service, Ministry of Research, Technology and Higher Education with the Scheme of PTUPT, Higher Education in the Budget Year of 2019”

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