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To cite this article: M F Rizal *et al* 2020 *J. Phys.: Conf. Ser.* **1524** 012104

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Usability testing mozita application based on use questionnaire model

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Abstract. Mozita is an application used by midwives to record and report the toddler nutritional status in the local health center (Puskesmas). In addition to nutritional status information, Mozita can present information that is used by heads of puskesmas, district health offices and provincial health offices for monitoring and decision making in terms of health policy based on nutritional status. To be able to increase application usage, feedback from users is needed. With USE Questionnaire-based usability testing covering aspects of Usefulness, Satisfaction and Easy of Use. Usability testing is focused on the interaction part of the user interface (midwife), as the main source of data collection. This study used 15 midwife respondents who were randomly drawn from puskesmas in the city area of Semarang. The technique used to measure usability testing is to provide an explanation and guidelines for using the Mozita application before respondents fill in the questionnaire using a Likert scale from 1 to 7. The questionnaire used is equipped with in-depth interviews for question items whose Likert scale value is less than equal to 3. The in-depth interview aims to provide a focus on improving the Mozita application interface to suit user needs. The results of usability testing that has been done on the Mozita application shows that the value of the Usefulness component is 84.52%, Easy of Use is 83.53%, Easy of Learning is 80.95%, and Satisfaction is 85.03%. Based on the value of each component measured shows that the Mozita application has a high usability value that is equal to 83.52%, and makes it easy for users to carry out work more efficiently. Some user feedback related to satisfaction aspects, especially in the Mozita application layout section is still simple needs to be done for a better layout design.

1. Introduction

Mozita is an application used for the process of recording and reporting the toddler nutritional status involving midwives as a source of data collection, in addition to that application users also come from the district health office, and the provincial health office. Apart from recording and reporting the toddler nutritional status, the Mozita application is equipped with an early warning feature and dashboard for needs at the management level. To ensure that the Mozita application can meet user expectations, usability testing is carried out in this research.

Usability is one indicator that is used to measure the level of success in implementing an information system product [10]. An information system product has a high usability value if it is used continuously by the user because the user has a dependency to use the information system in order to support its



business activities [3]. Usability in general has a focus on 3 aspects, which include effectiveness, efficiency, and user satisfaction in using information systems [14]. The purpose of conducting usability testing is to determine the level of user acceptance of information systems and to provide feedback on the information system interface [5], as well as the addition of undefined features as a means of improvement to support business activities carried out by its users [7].

To measure usability, there are several models that can be used, including the USE Questionnaire model. The USE Questionnaire model is a fairly comprehensive usability model, because 3 main aspects of usability are already accommodated in each component of each questionnaire question item [3]. Therefore, in this study using the USE Questionnaire model with modifications, namely adding the in-depth interview component to each question item filled with questionnaires less than equal to 3 on the Likert scale of 1 to 7. The addition of the in-depth interview component aims to find out the reasons provides a low rating and is used as a means of improvement based on the results of reviews by users. Usability testing conducted in this study, is expected to provide an overview of the level of user confidence in utilizing the use of the Mozita application to support its business activities, and to improve interface interactions and add features to accommodate needs that have not been defined due to changes in applicable policies.

2. Literature review

2.1. Usability testing

Usability testing is one of the methods used to evaluate information system products [11]. This assessment is related to the level of utilization of information systems by users to support business activities. If the usability value is high, it can be concluded that the user has a dependency on information system products, and vice versa. Usability testing has the objective to measure the level of usefulness of an information system product that is pursued by the user. In addition, usability can be used to improve interface interactions or add features based on user needs that have not been accommodated [14]. The aspects that are focused on usability measurement include 3 aspects, namely effectiveness, efficiency, and user satisfaction [4]. For usability testing is to involve correspondents to use information systems [12]. The procedure is that the user is given an explanation to use the planned information system, then all activities carried out by the user are made observable to record its activities, then the user is assigned to fill out the questionnaire [10]. Some questionnaire packages that can be used in usability testing include System Usability Scale (SUS), Post-Study System Usability Questionnaire (PSSUQ), Single Easy Question (SEQ), and Usefulness Satisfaction Easy of Use (USE) Questionnaire [14]. Of the many questionnaire packages, in order to get the best results, an exact analysis of the characteristics of the information system will be carried out to measure usability testing to adjust the characteristics of the questionnaire package [9].

2.2. USE questionnaire

USE Questionnaire is one of the questionnaire packages used as a measurement tool for conducting usability testing [3]. The USE Questionnaire has 30 question items which are divided into 4 indicator components, namely Usefulness, Easy of Use, Easy of Learning, and Satisfaction [8]. All components of the indicator are focused on 3 aspects of usability which include effectiveness, efficiency, and user convenience. To be able to assess usability testing of an information system, the USE Questionnaire is made in the form of a Likert scale from 1 to 7. Then the measurement results are processed using descriptive statistical methods. Then an analysis of each component of the indicator or all component indicators is carried out. The USE Questionnaire is a non-commercial questionnaire package, so that it can be used freely to measure the usability of an information system [13].

2.3. Mozita application

Mozita is a web-based application that is used to record and report the toddler nutritional status based on the integrated hierarchy structure of health institutions, consisting of posyandu, puskesmas, city health offices, and provincial health offices. The main data source was obtained from midwives in the

local Posyandu area. Toddler nutritional status data entered by midwives includes data used as parameters for measuring the health of toddlers based on anthropometric tables, which contain height, weight, and body length. In the Mozita Application after receiving input of anthropometric data parameters entered by the midwife, the Mozita application will automatically display nutritional status values in accordance with the values in the anthropometric table. Equipped with a notification model as early notice to toddlers who have poor nutritional status. The process of inputting nutrition data for children under five is carried out by midwives (cadres) every month, so the mozita application can provide information on growth and development of infants that can be monitored properly. In addition to the recording process, the Mozita application is equipped with a tiered improvement to meet all stakeholder needs. The data entry method in the Mozita application is only once by the midwife (cadre), then for the hierarchy above it is no longer necessary to re-entry data, just use the data entered by the midwife (cadre). In general, the Mozita application can be seen in Figure 1 which is an anthropometric data parameter entry feature, and Figure 2 is a notification model if abnormal toddler problems occur according to the anthropometric table.

Figure 1. Parameter Data Entry

Figure 2. Early warning system form

3. Method

This research uses descriptive quantitative research type, with the purpose to determine the assessment of components in the usability testing of the Mozita application based on the description given by

respondents as users of the Mozita application. The number of respondents used was 15 midwives (cadres), divided into 3 groups. Data collection was carried out using a questionnaire filled out by respondents after being given an explanation of the technical operational instructions of the Mozita application. The questionnaire in this study used a USE Questionnaire consisting of 30 question items filled in using a Likert scale of 1 to 7. This study used a modified USE Questionnaire, by adding an in-depth interview to each question item that had a score less than equal to 3. In-depth interview aims to determine the user's wishes regarding improvements that must be given to the Mozita application. Analysis of the data used is quantitative and qualitative analysis. Quantitative analysis is used to measure the level of ease of use of the Mozita application which is presented in the form of a percentage. Qualitative analysis is used to present the constraints found by users and as a means for users to provide suggestions for improving the Mozita application in order to meet user needs. The formula for calculating percentages can be seen in equation (1).

$$Percentage = \frac{\text{Amount filled}}{\text{Total number}} \times 100\% \quad (1)$$

4. Analysis and result

Usability testing conducted in this research by giving questionnaires to 15 midwives (cadres) as respondents who use the Mozita application. Respondents were divided into 3 age groups, namely <30 years, 31-40 years, and > 40. The indicators in this questionnaire consist of 4 components, namely Usefulness, Easy of Use, Easy of Learning, and Satisfaction. Total questions on these 4 components were 30 items that were filled in by respondents with a Likert scale value of 1 to 7 to provide a quantitative assessment of each question item. The results and questionnaire data processing that has been filled out by respondents in each component are as follows:

The usability testing level of the Usefulness component obtained a value of 84.52%, this value is the average value of 3 age groups for 8 question items as given in Table 1. Based on this value it can be concluded that the Mozita application has a positive influence on users. Users can believe that the Mozita application can greatly assist in completing work in accordance with applicable business process activities. Users have a dependency on the Mozita application, because the Mozita application can provide effectiveness and efficiency to complete work in accordance with user requirements for the process of recording and reporting toddlers nutrition statistics. Mozita application functionally is in accordance with user needs, this is indicated by no proposed additional features. Based on the value of all age groups there is the smallest value is the age group of users > 40 years with a value of 80.36%. The usability component of usefulness results can be concluded that age has an influence even though the amount is not significant.

Table 1. Usefulness component

Item	Age		
	<30	31-40	>40
1	6	6	6
2	7	7	6
3	6	5	5
4	7	6	6
5	6	6	6
6	5	5	5
7	6	7	6
8	6	6	5
Sum	49	48	45
Percentage	87.50	85.71	80.36
Average	84.52		

The level of usability testing of the Easy of use component obtained a value of 83.55%, this value is the average value of 3 age groups for 11 question items as given in Table 2. Based on this value it can be concluded that the Mozita application as a whole has ease in its operation, although the lowest value is in the age group > 40 years with a value of 77.92%. In general, users give a fairly high usability rating, but there are user input related to the layout design of the Mozita application to make it more innovative so that users feel more comfortable operating it.

Table 2. Easy of use component

Item	Age		
	<30	31-40	>40
9	6	6	6
10	7	7	6
11	6	5	5
12	7	6	6
13	6	6	6
14	5	5	5
15	6	7	6
16	6	6	5
17	6	6	5
18	6	6	5
19	6	6	5
Sum	67	66	60
Percentage	87.01	85.71	77.92
Average	83.55		

The usability testing level of the Easy of learning component obtained a value of 80.95%, this value is the average of 3 age groups for 3 question items as given in Table 3. Based on this value it can be concluded that the Mozita application as a whole has the ease of learning, so users can quickly adapt to run Mozita applications. Although the learning processes of all age groups differ in accepting the process of technology transfer, this difference is not significant.

Table 3. Easy of learning component

Item	Age		
	<30	31-40	>40
21	6	5	5
22	6	6	5
23	6	6	6
Sum	18	17	16
Percentage	85.71	80.95	76.19
Average	80.95		

The level of usability testing of the Satisfaction component obtained a value of 85.03%, this value is an average of 3 age groups for 7 question items as given in Table 4. Based on this value it can be concluded that the Mozita application as a whole can provide satisfaction to all users in all age group.

Although the age factor influences the assessment of satisfaction, the difference in the value of satisfaction is not significant.

Table 4. Satisfaction component

Item	Age		
	<30	31-40	>40
24	6	6	6
25	7	7	6
26	6	5	5
27	7	6	6
28	6	6	6
29	5	5	5
30	6	7	6
Sum	43	42	40
Percentage	87.76	85.71	81.63
Average	85.03		

Overall the value of usability testing Mozita application obtained a value of 83.52% as given in Table 5. The value of 83.52% is the average value of the components of Usefulness, Easy of use, Easy of learning, and Satisfaction. The usability value of 83.52% can be concluded that the Mozita application by usability has been able to provide midwife satisfaction (cadres) as users to help complete the process of recording and reporting the toddler nutritional status, with functionalities that have met the needs of the midwife. Midwives have a dependency with the Mozita application, because the Mozita application can complete the work of recording and reporting toddler nutritional status more effectively and efficiently. The lowest value is in the Easy of learning component with a value of 80.95%, this is due to the process of providing technical operational instructions for the application only in the form of a manual book, and is equipped with power point material for each feature section that must be executed by the user. So that the value of the Easy of learning components is higher, the learning process should be made of material in an interactive video format so that users can more easily do the learning process of the Mozita application.

Table 5. Usability testing result

USE	
Component	Percentage
Usefulness	84.52
Easy of use	83.55
Easy of learning	80.95
Satisfaction	85.03
Average	83.52

5. Conclusions

The results of usability testing measurements performed on the Mozita application obtained a Usefulness value of 84.52%, Easy of Use at 83.53%, Easy of Learning at 80.95%, and Satisfaction at 85.03%. Based on the value of each component measured shows that the Mozita application has a high usability value of 83.52%, so it can be concluded that the Mozita application by usability has met the needs of midwives (cadres) as users to assist in completing their work. However, some input given by users is related to the layout design of the Mozita application to better provide the user comfort in operating.

Acknowledgments

This work was supported by Research Funding Riset Pengembangan dan Penerapan (RPP) Diponegoro University 2019.

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