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Development Of Information Systems Orphanage (E-Orphanage) Web-Based

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Abstract-This study aims to develop a Web-Based Orphanage Information System (e-Panti) at the Silaturrahmi Orphanage in Makassar City. The information system for the Orphanage (e-orphanage) is used as a tool in conveying information on the Silaturrahmi Orphanage in Makassar City to people who want to know the official information of the Silaturrahmi Orphanage and can make it easier for the public to donate online. This research belongs to the type of Research and Development (R&D) research. The information system is designed using a prototyping development model. The research subjects in the development of this system are the caretaker of the orphanage, the orphanage and the community. The data analysis technique tested uses the ISO 25010 testing standard which includes aspects of Functionality Suitability, Performance Efficiency, Portability and Usability. Based on the results of the research, a Web-Based Orphanage Information System (e-orphanage) was obtained. In testing the Functionality Suitability aspect in the very feasible category, the Performance Efficiency aspect using the Gtmetrix class in the good category, the Portability aspect using the browserstack.com software, where the system is said to have fulfilled the portability aspect because this system can run well without errors and in good category, the aspect Usability in the very good category. So it can be concluded that the Web-Based Orphanage Information System (e-orphanage) is suitable for use at the Silaturrahmi Toddopuli Orphanage in Makassar City and is in accordance with the ISO 25010 feasibility standard.

Keywords: e-orphanage, ISO 25010, Orphanage, Information System Development.

I. INTRODUCTION

The development of information technology at this time has driven changes in various fields of life. One of them is the need for quality information, namely information that is relevant, fast, accurate and timely, so that it can be the basis for making a decision. Many companies, agencies and social services are following technological developments, especially computer-based ones to meet the needs of information and services.

The use of the website has become a concern for many people, ranging from entrepreneurs, academics, marketing, mass media practitioners, companies, organizations, to government agencies. From this website, many people use it as a promotional medium, a sales tool, to provide information material related to a detailed picture of an agency or institution. As is the case in orphanages, almost all orphanages already have web-based information technology to package orphanage information and manage institutions in the social and humanitarian field. one of them is by managing funds for the needs of orphans and poor people.

The Silaturrahmi Orphanage is located at Jl. Toddopuli VIII Jl. Borong Raya No.19, RT.02/RW.06, Borong, Kec. Manggala, Makassar City, South Sulawesi. The Silaturrahmi Orphanage was established in 2015 and is led by Mr. Alimuddin as the head of the orphanage. Based on the results of an interview with the head of the orphanage, Mr. Alimuddin, the building or foundation of the orphanage is not yet fully finished and is still under construction. As for the number of children who are cared for in the orphanage as many as 63 children, but there are 16 children in the orphanage while the others in the family referred to as children in the family are children whose families are less able to be financed by the orphanage.

Problems that occur at the Silaturrahmi Orphanage in managing data for foster children and donations are not optimal. Part of the data administration management is still manual and uses Microsoft Word Office. However, it is not effective and efficient in presenting information on orphanage data such as data on orphans, orphans, education level, age, gender, donor data and orphanage management data because they are not integrated into the Foundation for the Chair of the Orphanage. So that they have difficulty when they need data for the Orphanage. In addition, the Social Service of South Sulawesi Province once

suggested to the Head of the Orphanage that managing the data of the Orphanage can be accessed by all interested and related parties and not dependent on computer operators.

Based on the problems above, this research was carried out so that the orphanage could obtain financial contributions so that it could prosper the orphans. Orphanages can also be exposed or better known by the public with an information system. And for donors or the public, they can also see the amount of funds going in and out of the orphanage.

II. THEORETICAL

A. *Information Systems*

Information system is a system within an organization that brings together the needs of daily transaction management, supports operations, is managerial, and strategic activities of an organization and provides certain outside parties with the required reports[1]. Information systems can be defined as:

a) A system created by humans consisting of components within the organization to achieve a goal of presenting information.
b) A set of organizational procedures for making decisions or for controlling the organization.
c) A system within an organization that meets the needs of transaction processing, supports operations, is managerial and strategic activities of an organization and provides certain outside parties and the necessary reports[2].

Based on the above understanding, it can be concluded that the information system is a collection of data that has been collected and then processed by software, hardware and humans themselves so as to produce information that is used today and in the future. Information systems that involve computers are commonly referred to as computer-based information systems (CBIS)[3].

B. *Website*

Website is a number of web pages that have interrelated topics between one page and another, sometimes accompanied by images, videos, animations, or other types of objects. Web information is stored in a document known as a web page, and the web pages are stored on a computer which is usually called a web server, while the computer that reads web pages on the server is called a web client. Web Client in displaying web pages on the web client must use a program commonly called a web browser[4][5].

C. *Orphanage*

Orphanage is an institution or place that accepts, accommodates and cares for children who are abandoned by one or both parents, neglected or incapacitated children (dhuafa) so that these children can continue to go to school. Orphans have a very important position, especially in the teachings of Islam. Orphans are prohibited from being set aside, hurt, belittled and deprived of their rights. In Islam, orphans are children who have been abandoned by their parents and must be supported, honored and even considered for their future[6].

D. *HTML (Hypertext Markup Language)*

HTML is a language controlled by a web browser to display information more attractively than plain text writing. Hypertext Merkup Language (HTML) is the standard language used to display web pages[7]. Based on the opinions expressed above, it can be concluded that HTML is a very appropriate language used to display information on web pages. Because HTML displays information in the form of hypertext and also supports a set of commands that can be used to adjust the appearance of the information[8].

E. *Databases MySQL*

MySQL is one of the DBMS applications that has been widely used by web application programmers. MySQL can be used to manage databases ranging from small to very large. MySQL can also run SQL commands to manage the database it contains. Until now, MySQL has grown to version 5. MySQL 5 already supports triggers to facilitate the management of tables in the database[8].

F. *PHP (Personal Hypertext Processor)*

PHP is a script used to create dynamic website pages. Dynamic means that the page to be displayed is created when the page is requested by the client. This mechanism causes the information received by the client is always up-to-date. All PHP scripts are executed on the server where they are executed. One of the advantages of PHP is its ability to connect to various kinds of database management system software or Database Management System (DBMS), so that it can create dynamic web pages[4], [9].

G. *XAMPP*

Xampp is free software, which supports many operating systems, and is a compilation of several programs. Xammp functions as a stand-alone server (localhost), which consists of several programs, including Apache HTTP Server, MySQL database, and language translator written in PHP and Perl programming languages [10].

H. *CSS (Cascoding Style Sheet)*

CSS stands for cascading style sheets, which are scripts used to manage website design.

Although HTML has the ability to adjust the appearance of the website, its capabilities are very limited. *CSS*or what is called Cascading Style Sheet is one of the more structured and more uniform web programming languages[10]. CSS is like a style in the word processing application Microsoft Word which can set several styles, such as sub-chapters, headings, bodytext, footers, images, and other styles to be used together in several files. CSS is usually used to format the appearance of web pages created with HTML and XHTML languages.

III. RESEARCH METHODS

A. *Types of research*

The type of research used in this research is Research and Development (R&D). Research and Development (R&D) is a research method used to produce certain products and test the effectiveness of these products. Where from this research produces a software product in the form of a Web-based development of a data information system for the Silaturrahmi Orphanage.

B. *Research Sample*

To determine the sample/subject of the study using the simple random sampling method, by distributing questionnaires to the required respondents. Then wait for the return of the questionnaire from the respondent. In the usability characteristic, 30 respondents were used, namely 3 administrators of the orphanage and 27 communities.

C. *Development Method*

The method used in the development of this information system is the Prototyping development method which has stages, namely: Gathering requirements, building prototyping, evaluating prototyping, coding the system, testing the system, evaluating the system, and using the system.

IV. RESULTS AND DISCUSSION

In this research, the trial phase was carried out by Instrument Experts, System Experts and Content Experts. The following is the result of testing the orphanage information system that has been developed based on the ISO 25010 standard test which consists of aspects of functionality suitability, performance efficiency, portability and usability.

A. *System planning*

The design is carried out as a process of the system to be built in the form of a database, display, system flow diagram and system design in this study as follows:

1. Context Diagram (Context Diagram)

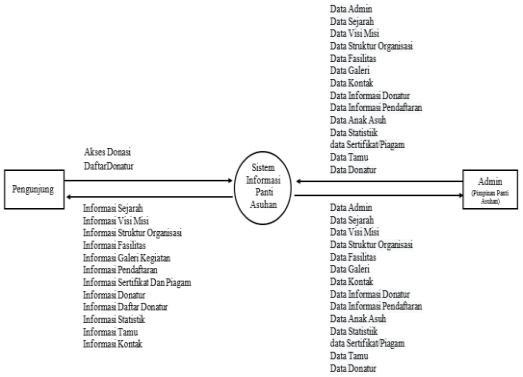

Figure 1 Context Diagram

Context diagrams describe the entire flow of processes that exist in the system being built. The diagram above describes the processes and actors involved in the Web-Based Orphanage (e-Panti) information system proposed in this study.

2. *Use Case Diagrams*

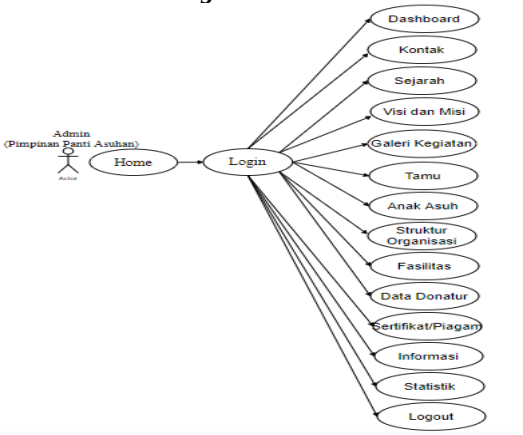

Figure 2 Use Case Admin

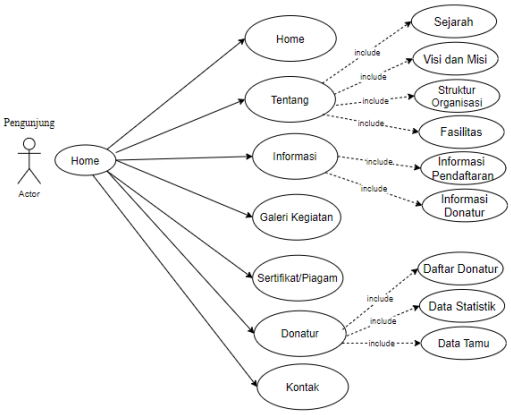

Figure 3 Visitor Use Case

Use Case is the interaction or dialogue between the system and actors, including the exchange of messages and actions performed by the system. This diagram describes the function of a system, and the interactions performed by actors with the system. This diagram emphasizes what the system can do and not how it does it.

3. Interface design

Interface design is used to create program interfaces according to user needs. If this design is user friendly enough, then the program can then be made so that if the program is used, the user will find it easy to use this program.

a. *Login Form* Admin

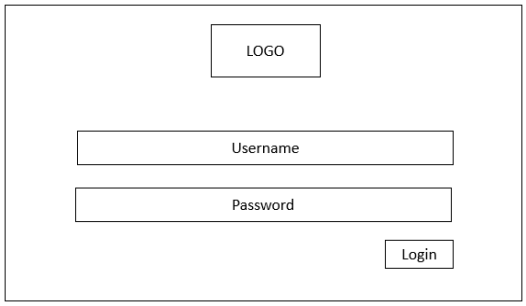

Figure 4 Login Page Design

b. Main View Admin Page

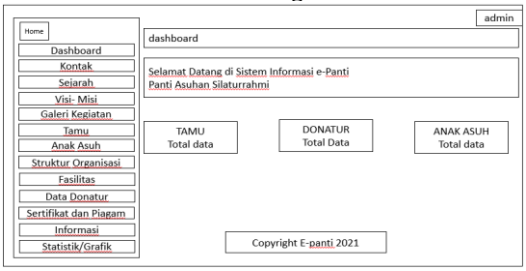

Figure 5 Admin Main Page Design

c. Visitor Page View

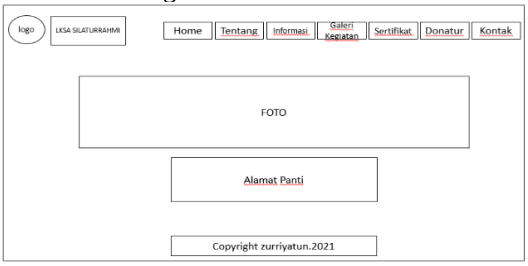

Figure 6 Design of Visitor Pages

B. Data collection technique

Data collection techniques used to obtain the required data are interviews, observations and questionnaires.

C. Data analysis technique

In this information system development research, only 4 quality characters are tested based on the ISO 25010 software testing standard.

1. Functionality Suitability Analysis

In the aspect of functionality suitability, the test is determined from the test results of the percentage score for each instrument. On the answer sheet for each question item using Guttman. This type of measurement scale will get clear answers, namely yes-no, true-false, never-never and positive-negative. The answer can be made in the form of a checklist with the highest score (yes) worth 1 and the lowest score (no) worth 0. To find out the position of the percentage of "yes" answers obtained from the data, it is calculated first by conversion (Drs. Iskani, 2013) as follows :

The value of the answer "Yes" = 1
Answer value "No" = 0
Converted in percentage:
Answer “Yes”: 1 x 100% = 100%
Answer "No": 0 x 100% = 0% (so no need to count).

The system criteria will meet the functionality suitability aspect if all the functions contained in the system can run as expected without any errors.

Here is the formula for calculating featute completenes.

X = I/P

Information :
I = Number of features successfully implemented
P = Number of designed features
X = Feature Completenes

1. Performance Efficiency Test

This test is done by calculating the average score of all pages and the response time tested using GTMetrix. Considerations using GTMetrix because the advantages of GTMetrix are stable analysis with a valid level of measurement consistency (Mansyur, 2014). GTMetrix report results must meet load times of less than 10 seconds. The response time is declared good if it is less than 10 seconds.

2. Portability Analysis

Portability testing is done with the help of a web testing tool, namely browserstack.com where testing is done by cross browser testing or checking the system using various browsers on the desktop. If it runs well on cross browser testing, it can be concluded that the application has met the portability characteristics.

3. Usability Analysis

This test is carried out using a questionnaire or questionnaire. Questionnaires are distributed to the public or the administrators of the orphanage website as a research process from the usability aspect. Conversion of scores from the Likert scale on usability testing using the Likert scale conversion in the following table:

Table 1 Conversion of Likert Scale Scores

Answer	Score
Strongly agree	5
Agree	4
Disagree	3
Do not agree	2
Strongly Disagree	1

Source: [11]

The score is calculated using the conversion formula to score presentation to find the interpretation criteria for the usability test score.

The scores obtained from the respondents were then searched to obtain the criteria for usability test results with the feasibility presentation formula according to Sugiyono (2011: 297)[12].

$$\text{Persentase Skor} = \frac{skor\ perolehan}{skor\ maksimal} x\ 100\%$$

After obtaining the presentation of answers, the respondent is then given an interpretation or assessment of the research results. The results of the presentation are used to provide answers to the feasibility of the aspects studied. There are five eligibility categories. This scale considers the range of percentage numbers. The maximum value expected is 100% and the minimum is 0%. The division of the range of eligibility categories can be seen in the following table:

Table 2 Quantitative conversion of eligibility presentation

No	Percentage (%)	Category
1	81% - 100%	Very good
2	61% - 80%	Well
3	41% - 60%	Pretty good
4	21% - 40%	Not good
5	< 21%	Very Not Good

Source: [12]

D. System Implementation

Presentation of Development Results

To access the admin menu page, visit panti-asuhan.silaturrahmi.com/login. The results of the system design can be seen in the following figure:

1. Admin Login Page

to enter as admin must enter the password and username to enter the system.

Figure 7 Admin Login Page

Contains menus for setting data and entering news on the Silaturrahmi Orphanage website.

Figure 8 Admin Menu Page

2. Main Menu Display

The main menu is the first page for visitors after opening the application and can access the system to manage donor data according to the access rights they have.

Figure 9 Display of the Visitor Menu Halaman

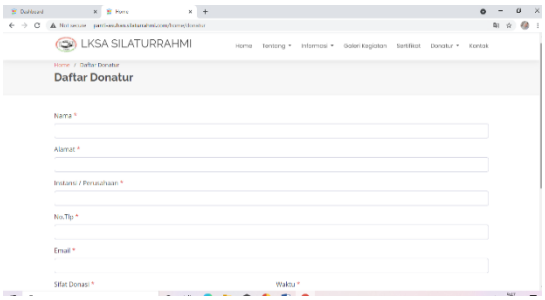

Figure 10 Display of Donor List Menu

E. System Test Results Using ISO 25010 Software Standards

a. Functionality Suitability Test

The system expert validation test serves to determine the feasibility of the Silaturrahmi Orphanage information system. Instrument validation data can be obtained from the results of filling out questionnaires by instrument experts. The validation of this research instrument was carried out by 2 experts to test the instrument. The instrument used to validate the instrument of this system consists of 10 questions which are divided into 3 aspects. answer each question using the Likert scale formula. Data from instrument validation are presented in Table 3 and Table 4.

Table 3 Data Validation of Instruments functionality suitability

No	Validator	Aspect			Earning Score	Number of Questions	Average	Category
		A	B	C				
1	Validator I	15	15	19	49	10	4.9	Worthy
2	Validator II	15	14	20	49	10	4.9	Worthy

Average	49	10	4.9	Worthy

Table 4 Data of Usability Instrument Validation Results

No	Validator	Aspect			Earning Score	Number of Questions	Average	Category
		A	B	C				
1	Validator I	15	15	19	49	10	4.9	Worthy
2	Validator II	15	14	20	49	10	4.9	Worthy
Average					49	10	4.9	Worthy

The above aspects show the average results of the presentation of each assessment instrument. In Table 3, an average of 4.9 is obtained and is in the proper category. For Table 4 obtained an average score of 4.9 with a decent category. By looking at the results of the average of each instrument, it can be concluded that the instrument used in the study is included in the appropriate category for use.

b. Performance Efficiency Test

This test is done by calculating the average score of all pages and the response time tested using GTMetrix. The results obtained by the GTMetrix class get a B value with 84% performance, 85% structure with a score of 1.7 seconds in the very good category, aspects that affect system speed in GTMetrix testing are system folders, css, and java script. The web is said to be good if the load is at least less than 10 seconds. From these results, it can be concluded that the web-based orphanage information system (e-orphanage) developed has met the characteristics of performance efficiency.

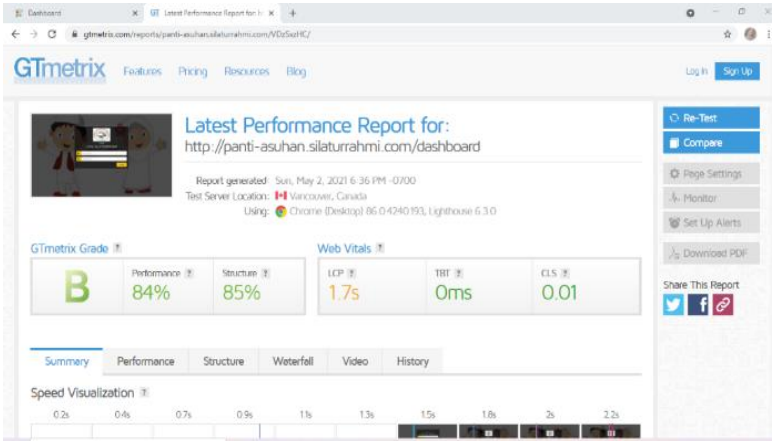

Figure 6 Results of Performance Efficiency Testing using GTMetrix

c. Portability Testing

Portability testing is carried out using the help of a web testing tool, namely browserstack.com where testing is done by cross browser testing or system checking using various bowsers on desktop and mobile IOS. The portability test results can be seen in the following table:

Table 5 Recapitulation of Portability Test Results

No.	Device	Browser	Succeed	Fail
1	Mac	chrome	1	0
2	Mac	Safari	1	0
3	iPhone 11	Safari	1	0
4	Vivo	chrome	1	0
5	Samsung	chrome	1	0
6	Ipad	Safari	1	0
7	Windows 10	Mozilla Firefox	1	0
8	Windows 10	Microsoft Edge	1	0
9	Windows 8	chrome	1	0
10	Windows 8	Opera	1	0
Total			10	-
X			1	-
Category			Well	-

d. Usability Test

Usability testing uses a questionnaire/questionnaire containing 30 questions about computer software. This questionnaire was distributed to 3 caretakers of the orphanage and to 27 local and foreign communities, and obtained the following results

Table 6 Recapitulation of Usability User Response Test Results

No. Respondent	Score	Maximum Score	Percentage
1	141	150	94
2	138	150	92
3	140	150	93.3
4	139	150	92.7
5	140	150	93.3
6	140	150	93.3
7	138	150	92
8	143	150	95.3
9	139	150	92.7
10	141	150	94
11	138	150	92
12	137	150	91.3
13	142	150	94.7
14	138	150	92
15	135	150	90
16	137	150	91.3
17	137	150	91.3
18	138	150	92
19	141	150	94
20	138	150	92
21	139	150	92.7
22	142	150	94.7
23	141	150	94
24	138	150	92
25	141	150	94
26	137	150	91.3
27	138	150	92
28	133	150	88.7
29	141	150	94
30	140	150	93.3
Average	139	150	92.7

$$\text{Persentasi kelayakan } (\%) = \frac{skor\ yang\ diobservasi}{skor\ yang\ diharapkan} x\ 100\%$$

$$\text{Persentasi kelayakan } (\%) = \frac{4170}{4500} x\ 100\%$$

$$\text{Persentasi kelayakan } (\%) = 92{,}7\%$$

Based on the analysis of the final calculation obtained a presentation of 92.7% in usability testing. The score indicates that the quality of the software from the usability aspect is appropriate and if it is interpreted with a Likert scale, it is in the very good category.

F. Discussion

The Silaturrahmi Orphanage information system was developed using the PHP programming language due to the advantages of the PHP programming language and using the CSS framework so that the appearance of this application can adjust when accessed using a desktop browser or a mobile browser. The development of information systems with PHP and CSS is made using sublime text applications with the help of XAMMP and PHPMyadmin applications, database management systems using MySQL. The testing in this study uses the ISO 25010 model software which focuses on 4 aspects, namely functionality suitability, performance efficiency, portability and usability.

V. CONCLUSIONS AND SUGGESTIONS

A. Conclusion

Before this web-based orphanage data information system was developed, the system used was still manual in managing foster child data, financial management and donor data. The web-based orphanage information system is one solution to be able to disseminate information about orphanages without being limited by space, distance and time. With this system, orphanages can be better known through complete information on the website. The public or donors can view the profile of the orphanage, the list of foster children, the activities of the orphanage, and how to make a donation. The results of the development resulted in an information system for the Silaturrahmi Toddopuli orphanage which was managed online.

The results of software testing based on the ISO 25010 standard obtained the following results: a) The functionality suitability aspect is in the very good category; b) Aspects of performance efficiency, the results obtained by the GTMetrix class get a B value with 84% performance, 85% structure with 1.7 seconds and are in the very good category; c) The portability aspect is in the very good category or has a value of 1, which means that the system testing on the device being tested is successful because it can be run in different browser types.

User responses to the development of a web-based orphanage information system (e-orphanage) at the Silaturrahmi Orphanage in Makassar City based on ISO 25010 testing on usability aspects resulted in a very good interpretation with a presentation of 92.7%. This indicates that users can accept the development of an orphanage information system. the.

B. Suggestion

The suggestions that can be given as recommendations for the development of an orphanage information system (e-orphanage) are as follows:

1. It is hoped that this system can make it easier for orphanage administrators to complete orphanage data, donor data and data in the orphanage.
2. Adding a transaction management feature, the donation process can work with banks, so that the process of checking the success of the transaction can be done automatically.
3. Improve system security to maintain data security from irresponsible parties.

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