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DESIGN AND DEVELOPMENT OF AN ANDROID-BASED INFORMATION SYSTEM FOR THE INDONESIAN RED CROSS IN PRINGSEWU REGENCY AS A MEDIA FOR MANAGING MEMBER AND VOLUNTEER DATA

PERANCANGAN DAN PENGEMBANGAN SISTEM INFORMASI BERBASIS ANDROID UNTUK PALANG MERAH INDONESIA DI KABUPATEN PRINGSEWU SEBAGAI MEDIA PENGELOLAAN DATA ANGGOTA DAN RELAWAN

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Abstract

The Indonesian Red Cross (PMI) is an independent and neutral organization engaged in humanitarian work. The PMI in Pringsewu Regency faces challenges in managing member, staff, and attendance data, hindering the development of its Youth Red Cross (PMR) and Volunteer Corps (KSR) activities. Furthermore, public access to information about the PMI in Pringsewu Regency remains limited. Based on these challenges, this study aims to design and build an Android-based information system to manage PMI member and volunteer data in Pringsewu Regency. The research method used is the Waterfall method, encompassing the stages of needs analysis, system design, implementation, testing, and maintenance. The system is equipped with features for member management, volunteer attendance, staff information, and public access to information. Black Box testing results indicate that all system functions operate as required. With this information system, PMI member and volunteer data management in Pringsewu Regency becomes more effective, accurate, and integrated, while also facilitating public access to information about the PMI.

Keywords: Information Systems, Android, PMI, Volunteers, Waterfall.

Abstrak

Palang Merah Indonesia (PMI) adalah organisasi independen dan netral yang bergerak di bidang kemanusiaan. PMI di Kabupaten Pringsewu menghadapi tantangan dalam pengelolaan data anggota, staf, dan kehadiran, yang menghambat pengembangan kegiatan Palang Merah Remaja (PMR) dan Korps Relawan (KSR). Selain itu, akses publik terhadap informasi tentang PMI di Kabupaten Pringsewu masih terbatas. Berdasarkan tantangan tersebut, penelitian ini bertujuan untuk merancang dan membangun sistem informasi berbasis Android untuk mengelola data anggota dan relawan PMI di Kabupaten Pringsewu. Metode penelitian yang digunakan adalah metode Waterfall, yang meliputi tahapan analisis kebutuhan, desain sistem, implementasi, pengujian, dan pemeliharaan. Sistem ini dilengkapi dengan fitur untuk pengelolaan anggota, kehadiran relawan, informasi staf, dan akses publik terhadap informasi. Hasil pengujian Black Box menunjukkan bahwa semua fungsi sistem beroperasi sesuai kebutuhan. Dengan sistem informasi ini, pengelolaan data anggota dan relawan PMI di

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Kabupaten Pringsewu menjadi lebih efektif, akurat, dan terintegrasi, sekaligus mempermudah akses publik terhadap informasi tentang PMI.

Kata Kunci : Sistem Informasi, Android, PMI, Relawan, Waterfall.

1. INTRODUCTION

The rapid development of information technology is currently driving the transformation from manual to computerized systems. This increases efficiency, effectiveness, and accuracy in data processing, resulting in quality information for decision-making.

According to data from the Indonesian Red Cross (PMI) Lampung Province, there are 16 PMI offices spread across various regions: the Lampung Province PMI, Bandar Lampung City, Metro City, South Lampung Regency, East Lampung, North Lampung, Central Lampung, Tulang Bawang, Way Kanan, West Lampung, Tanggamus, West Tulang Bawang, Pringsewu, Pesawaran, West Pesisir, and Mesuji. In addition, there are seven Blood Transfusion Units (UTD): the Provincial UTDs in South Lampung, Central Lampung, Metro, North Lampung, Way Kanan, and Tulang Bawang (junaidi, 2022).

Research conducted by (Febriani et al., 2020) showed that an Android-based blood donor system effectively met user needs. Furthermore, (Khairatunnisa & Sari, 2021) suggested that a website-based system can improve the efficiency of donor data management and provide fast and accurate information on blood stock availability. Furthermore, (Lestari, 2019) stated that the use of a database-based information system contributes to increasing the effectiveness of data management, simplifying the search process, and minimizing the risk of data loss.

Based on previous research, the system in research (Febriani et al., 2020) has advantages in providing Android-based blood stock information, but is still limited to this information without presenting data on PMI officers and members. Research (Khairatunnisa & Sari, 2021) shows advantages in presenting website-based blood stock information, but is not yet able to provide comprehensive information regarding the PMI UTD profile. Meanwhile, research (Lestari, 2019) excels in supporting member data registration and management, but does not provide detailed information regarding PMI offices.

Based on these limitations, this study proposes the development of an integrated Android-based PMI Information System in Pringsewu Regency, including volunteer attendance features, information on administrators, volunteers, and staff, and comprehensive activity information presentation. This system is designed to address issues related to member data reporting, attendance records, and limited information on duty schedules, which have hampered member management and development. Furthermore, this system is expected to improve public access to information regarding the existence and activities of the PMI in Pringsewu Regency.

The purpose of this research is to analyze and design an attendance and scheduling system at the PMI in Pringsewu Regency, as well as to develop a computerized system that can simplify member data management and information dissemination. This system is also expected to assist volunteers in reporting membership data more effectively and efficiently.

2. RESEARCH METHOD

a) Research methods

This study employed a qualitative research method. This approach aims to understand the phenomena in depth through descriptive data collection in the field. Data collection in this study was conducted using several methods, as follows:

a. Interviews

Interviews were conducted through a direct question-and-answer process with PMI Pringsewu Regency staff to obtain information relevant to the research needs.

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b. Observations

Observations were conducted by directly observing activities at the PMI Pringsewu Regency office to identify emerging problems and obtain necessary data.

c. Literature Review

A literature review was conducted by reviewing various written sources, such as books, scientific journals, and documents or archives related to the research, to support the theoretical basis and analysis.

b) System development methods

In this study, the researcher used the software engineering method with the Waterfall model as an approach in system development.

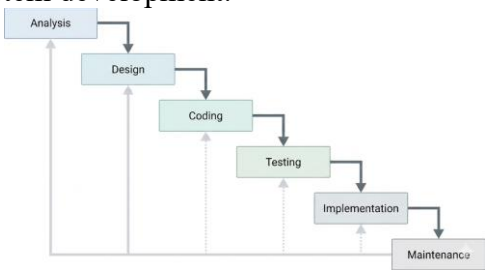

Figure 1. Waterfall Design Model

Source: https://www.researchgate.net/figure/Picture-2-Tahapan-method waterfall_fig1_344068999

Broadly speaking, the Waterfall method consists of the following stages:

1. Needs Analysis

This stage is the process of identifying and analyzing system requirements.

2. Data collection

This stage is conducted through interviews, observations, and literature studies to obtain relevant information.

3. System Design

This stage is the process of designing the system based on the results of the needs analysis, with the goal of producing a solution that meets the problem at hand.

4. Coding

This stage is the process of implementing the design into a programming language so that the system can be run by a computer.

5. System Testing

This stage is conducted to test system performance, identify errors, and ensure the system runs according to predetermined requirements.

6. System Implementation and Maintenance

This stage is the process of implementing the system to users and conducting periodic maintenance to maintain optimal system performance.

c) Thinking Framework

In this research, a research flow framework is used in the form of a flowchart which functions to visualize the stages of the research process in a systematic and structured manner.

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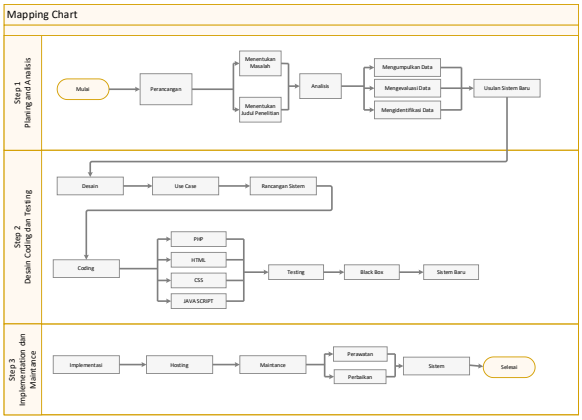

Figure 2. Thinking Framework

Source: Author

This research process consists of three stages. The first stage includes problem identification, title determination, and data analysis through data collection and evaluation to propose system solutions.The second stage includes system design using use cases and system design, followed by implementation through writing program code using PHP, Java, HTML, and CSS, and system testing using Black Box Testing methods. The third stage is the implementation stage, which involves hosting and maintaining the system until it is ready for use by users.

3. RESULT AND DISCCUSSION

a) Discussion

a) Information Systems Concept

According to (DAVIS, 1991, p. 91), an information system is a system that processes data and instructions into information. Meanwhile, (Yakub, 2012, p. 1)Yakub (2012:1) defines a system as a collection of elements integrated to achieve a specific goal [12].

Thus, an information system can be defined as a system that manages and presents data into information that supports the planning, organizing, operational, and decision-making processes within an organization.

b) Indonesian Red Cross, Pringsewu Regency

The Indonesian Red Cross (PMI) is a national organization engaged in social and humanitarian work. Founded on September 17, 1945, with Mohammad Hatta as its chairman, the PMI is committed to providing neutral services without discrimination based on political background, ethnicity, race, or religion.

The Pringsewu Regency PMI was established in 2015 and is led by Dr. H. Fauzi. The organization engages in various humanitarian activities, such as blood donations, disaster management, health services, and first aid. It is supported by a continuously developing human resource pool of volunteers.

3. Android

According to Yuniar Supardi (2017:1), Android is a Linux-based mobile operating system that includes an operating system, middleware, and applications. Meanwhile, Yosef Murya (2014:3) defines Android as a Linux-based operating system used on mobile devices such as smartphones and tablets.

Android is an open software platform for mobile devices that supports rapid application development and allows flexible integration of various applications.

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2. Programming language

The programming languages used in developing this system include Hypertext Preprocessor (PHP), Cascading Style Sheets (CSS), and Java, which play a role in data processing, display settings, and overall application development.

b) Results

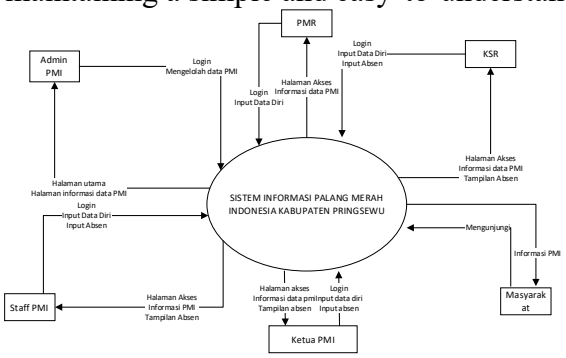
The system development was carried out through a series of research stages. The resulting system is expected to improve access to information related to the Pringsewu Regency PMI and support the effective, integrated management of PMR and KSR member data.

a) System design

System design is a problem-solving method that complements the system analysis stage by reassembling components into a complete system. Furthermore, system design serves as a blueprint, providing a comprehensive overview and serving as a guide for programmers in developing applications.

b) Context Diagram

A context diagram is a graphical representation that depicts an entire system as a single process. It shows the relationships between the system and external entities without displaying data storage details, thus maintaining a simple and easy-to-understand format.



Firugure 3. Context Diagram

Source: Author

c) Data Flow Diagram (DFD)

A Data Flow Diagram (DFD) is a graphical representation of a system that describes the system components, data flow between components, and the sources, destinations, and storage of data in the system.

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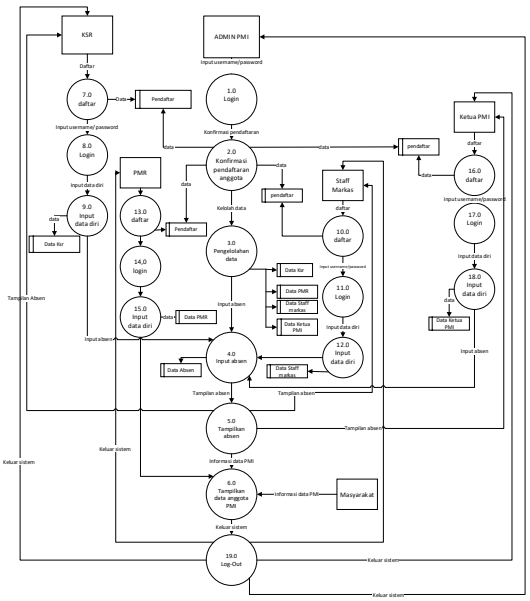
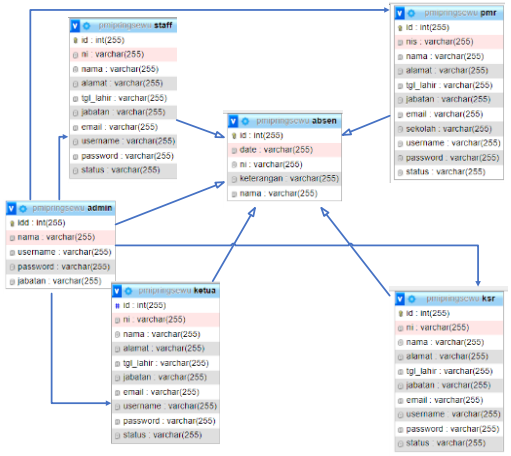


Firgure 4. Data Flow Diagram (DFD)
Source: Author

d) ERD (Entity Relationship Diagram)

Entity Relationship Diagram (ERD) is a diagram used in database design to describe the relationships between entities and their attributes in a structured and detailed manner.



Firgure 5. Entity Relationship Diagram
Source: Author

e) Program Implementation

The system implementation phase is carried out to evaluate system performance and ensure that each function and feature is running as planned. The system is designed with multiple interface pages to make it easier for users to access the information they need.

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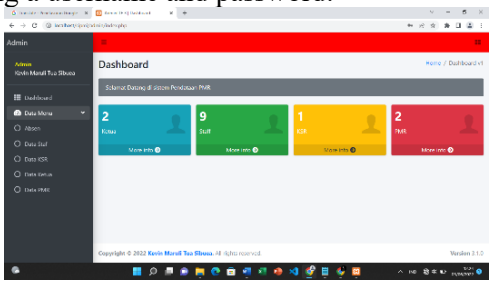
Firgure 6. Login Page

The admin login page is an interface used to access the Android-based Indonesian Red Cross Information System by entering a username and password.



Firgure 7. Admin Dashboard View

After successfully logging in, users will be directed to the admin dashboard. This page displays information regarding member data and attendance records for each member.

Firgure 8. Absence View

The attendance page is an interface for recording and managing member attendance, as well as displaying attendance history to support the systematic monitoring process.

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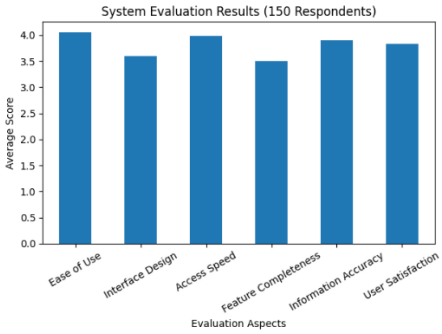
Firgure 9. Home Page

This page is part of a system that can be accessed by the general public to obtain available information.

6. System Test Results Analysis

Based on the results of the Black Box testing, all menus and system functions functioned as expected. A questionnaire survey of 150 respondents showed that the system received good ratings across all aspects, with the highest scores for ease of use and speed of access. However, the feature completeness aspect received a relatively lower score, making it a point of evaluation for further development. Overall, the system has successfully met user needs and provided a high level of satisfaction.



Firgure 10. Respondent Results

4. CONCLUSION

Based on the research results, it can be concluded that the Android-based information system of the Indonesian Red Cross (PMI) in Pringsewu Regency can improve the effectiveness and efficiency of organizational data management. This system simplifies staff's integrated management of PMI (Indonesian Red Cross) member data, KSR (Indonesian Red Cross), headquarters staff, and management data.

Furthermore, the developed system reduces reliance on manual processes, minimizes the risk of data loss through the use of a database, and accelerates search and report preparation. Furthermore, this system also facilitates faster and more accurate public access to information related to the PMI in Pringsewu Regency.

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