Village Activity Management Information System with Mobile-Responsive User Interface Design and Usability Test

Fahmi Kurniawan¹, Randi Rian Putra², Cendra Wadisman³

¹ Department of Computer Systems, Faculty of Science and Technology, UNPAB Medan
Jl. Jend. Gatot Subroto Km. 4,5 Sei Sikambing 20122 Kota Medan
Email: Fahmikurniawan@dosen.pancabudi.ac.id

² Department of Information Technology, Faculty of Science and Technology, UNPAB Medan
Jl. Jend. Gatot Subroto Km. 4,5 Sei Sikambing 20122 Kota Medan
Email: Randirian@dosen.pancabudi.ac.id

³ Department of Information Systems, Faculty of Computer Science, University of Putra Indonesia
Jl. Raya Lubuk Begalung, Kota Padang, Sumatera Barat 25145, Indonesia
Email: cendra_wadisman@upiyptk.ac.id

ABSTRACT

The village is a small part of the city that manages and regulates the governance system in a smaller scope. In carrying out its work, the village has structured activities in realizing the results of these activities. Village activities include several parts. Activities are often carried out in the village both related to the village office, employees and activities related to the community. So that village activities can be monitored properly and can also be seen directly by the community, this activity needs to be informed to the community through an information system or website that can be accessed directly by the wider community. The current village activity management system still uses a manual system and is not optimal. This research aims to build a village activity management information system design that is responsive to mobile which can provide information about activities carried out through the village office to the public who live around the village or in other areas. Activity information will be managed by the village office admin directly so that it can read or follow up on feedback given by the community on village activities that have been, are being or will take place. The information system that is built is expected to be able to assist the village office in carrying out existing activities in the village of Klambir Lima Gardens so that it can be carried out to improve the quality of subsequent activities.

Keywords: Village, Design and information systems, Management

Introduction

The village is a small part of the city that manages and organizes the governance system in a smaller scope. In doing its work, the village has structured activities in realizing the results of these activities. Village activities include several parts. One of the village activities is the use of village funds. This is the choice of activities that take precedence over other activities to be financed with village funds. Prioritization of the Use of Village Funds (PPDD) every year always has its own regulatory reference (Permendesa)[4][5].

Activities are often carried out in the village both related to the village office, employees and activities related to the community. So that village activities can be monitored properly and can also be seen directly by the community, these activities need to be informed to the public through an information system or website that can be accessed directly by the wider community[6][7]. The village activity management system that is currently underway is still using a manual system and has not been maximized. User Interface is one of the most important parts of a computer system because the user interface is related to the user, can be seen, can be heard, and can be touched[8].

This research aims to create a system that can provide information about activities carried out through the village office to the general public who live around the village or in other areas. Activity information will be managed by the village office admin directly so that it can read or follow up on feedback given by the community on village activities that have been, are or will take place [9][4].
The Village Information System (SID) is part of the implementation of e-Government which is a tool for villages to solve problems that often arise when managing village data such as village administration, correspondence management, and management of villagers including indigenous and migrant populations. Villages have the right to access information through the village information system that has been developed. This system is an appropriate information system with the aim of advancing the community by simplifying the data management process at the village office [10].

Information Technology is a technology used to process data, including obtaining, compiling, processing, storing and manipulating data in various ways to produce quality information. The information produced must be relevant, accurate and timely so that it can be used for personal, business, education, government and used for decision making [11].

According to Law Number 23 of 2006 concerning Population Administration explains that "Population data is individual data and / or structured aggregate data as a result of Population Registration and Civil Registration activities[12]. The information system that was built is expected to assist the village office in carrying out activities in the village of Klambir Lima Kebun so that it can improve the quality of subsequent activities [13].

Literature study aims to broaden the author's knowledge about the basis of design, theories, and developments that are useful for the process of making designs and iterating prototypes [6][14]. Website is a way to present yourself on the Internet. It can be likened to a website is a place on the Internet, anyone in the world can visit it, at any time someone can find out about themselves, ask someone questions, and provide input or even find out and buy a product [1].

Research Methods

The research method is an important step in system preparation, especially for system design. The method used by researchers consists of two methods, namely software development methods and data collection methods [15][16]. Researchers use the software development method with the waterfall model as the basis for system design. the stages of the waterfall model consist of five (5) stages, but researchers only use two (2) stages of all stages, namely: Software Requirements Analysis and Design [17][18].

Research Flow

The flow of this research can be written as follows:

1. Problem Identification
   Problem identification is the first step taken in this research. At the problem identification stage, it is intended to be able to understand the problem to be studied, so that in the analysis and design stages it does not get out of the problem under study.

2. Problem Analysis
   The problem analysis step is a step to understand the problem that has determined the scope or limits. By analyzing the predetermined problem, it is hoped that the problem can be understood properly [19]. Web analysis is often used as part of customer relationship management analysis (CRM analytics) [20].

3. Determine Objectives
   Based on the understanding of the problem from the problem, the objectives to be achieved in this study are determined. In this goal, the target to be achieved is determined, especially those that can overcome existing problems.

4. Studying Literature Related to the Title
   To achieve the goal, some literature that is expected to be used is studied. Then the literature studied was selected to determine which literature would be used in this study. Literature sources are obtained from the Pancabudi Development University library, books that discuss web-based information systems.

5. Data Collection
   The data needed is data on village activities that have been carried out in Klambir Lima village where the data taken is manual data.

6. Design and design
   At this stage the author will design a new system proposal, the author uses a system design method with the Prototype model. Prototype is a software design method that is widely used by developers so that they can interact with customers during the system development process and consists of 5 interrelated stages.
7. Final evaluation

Make a report of the research that contains a research report on the problems and solutions that exist in the object studied by the author [17].

This type of research is descriptive qualitative research, which is a research method carried out with the main objective of creating a picture or description of the situation [1]. The Human-Centered Design method is an approach method in developing and designing a system that focuses on users according to aspects of the needs and habits of users. Difficulty in accessing information on the website is a problem faced by users and in terms of visual the website cannot be responsive when accessed via mobile [20].

Results and Discussion

System Design with UML

System design in research serves to determine the interface form of the information system built for ease of building the system, the design of this system uses UML which consists of use case diagrams, activity diagrams and sequence diagrams [21][22].

Use Case Diagram

Use case is a description of the function of the budget recording information system to be built [23]. The picture below is a use case design for research on budget recording information systems. As seen in the picture below:

![Use Case Diagram](image)

Figure 1: Use Case Diagram

Admin Activity Diagram

The picture below is an activity diagram of the information system. In the activity diagram below, there are several activities that are passed by the admin and the system [24]. In the admin, the admin can log in to the system using the username and password that has been determined, at this time, the system will verify whether the account is registered or not, if registered, the admin will be directed to the system home page.

![Activity Diagram](image)

Figure 2. Activity Diagram Admin
Sequence Diagram of Admin System
The following is a sequence diagram used in this study. This diagram explains the flow of the main menu program so that it shows several submenus [25]. The picture below is the Sequence Diagram used.

System Interface Design
Interface design is a display design that will be made using Wireframe Pro software. Interface design consists of several pages so that the information system to be created will be more structured and easy to use. The following are the stages of designing an information system [16].

Home Menu Design
The home menu design is the display that appears when the website is first run. The home menu has several components consisting of several parts [26]. As seen in the picture below:

Login Menu Design
The login menu is a menu for giving access to information system admins or authorized people. As seen in the picture below:
**Gallery Menu Design**
The gallery menu design serves to display photos of activities that take place and are organized by the Minta Kasih village office. The picture below is the result of the gallery menu design.

![Gallery Menu Design](image)

**Figure 6. Gallery Menu Design**

**Activity Menu Design**
The activities menu is a menu that will function to record data on activities organized by the Minta Kasih village office. As in the picture below:

![Activity Menu Design](image)

**Figure 7. Activity Menu Design**

**Activity Data Menu Design**
The admin menu design functions to manage activity data that will be entered into the information system. As seen in the picture below:

![Activity Data Menu Design](image)

**Figure 8. Activity Data Menu Design**
System Results
The result of this system is the implementation of an information system that has several menus that can provide functions and uses. This interface is made using the PHP and CSS programming languages which are designed according to user needs.

Home Menu Display Results
The home menu serves to provide the first appearance when the activity information system is accessed. The home menu has another menu located on the left, as seen in the picture below:

![Figure 9. Menu Home](image)

Login Menu Page
The login menu functions to give users access to the system. Admins can enter the system that has been provided using a username and password. As seen in the picture below:

![Figure 10. Login Menu Page](image)

Gallery Menu Page
The gallery menu serves to display photos of activities that take place and are organized by the village office, as seen in the picture below:

![Figure 11. Gallery Menu Page](image)
Activity Menu Page
This menu serves to view activities organized by the village office, as shown below:

[Image: Activity Menu Page]

Figure 12. Activity Menu Page

Contact Menu Display Page
The contact menu serves to convey aspirations or constructive criticism and suggestions. This menu will be used by people who want to comment on activities organized by the village office. As seen in the picture below:

[Image: Contact Menu Display Page]

Figure 13. Contact Menu Display Page

Activity Data Menu Page
The activity data menu functions to add and manage activity data that takes place at the village office, as shown below:

[Image: Activity Data Menu Page]

Figure 14. Activity Data Menu Page
Conclusion

The information system in recording activity data at the Minta Kasih village office was designed using Wireframe Pro, then built using the PHP programming language and web-based which can be used by users. The function of criticism and suggestions can be submitted through the contact media in the information system.

Bibliography


