User Interface Design for Citizen Data Grouping Information System Using Human Centered Design Method

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ABSTRACT

User Interface is the initial display seen by the user on a system, this research was conducted in the village of klambir lima kebun. Klambir lima village is one of the villages in the hamparan perak sub-district with an area of 22.38 Km2, Klambir lima kebun village is bordered by, to the north bordering klumpang kebun village, to the south bordering tanjung gusta, to the east bordering Helvetia, to the west bordering klambir lima kampung. The Information System for grouping data on residents of the village of Klambir Lima Kebun is a system that is built based on user interface design with a responsive mobile system that is tested based on usability with the uman centered design method. Uman centered design is a method of approach in developing and designing a system that focuses on users according to aspects of the needs and habits of users. In the village of Klambir Lima Kebun, information about the population has not been done optimally and does not have a program to support work in the office. Office employees have difficulty in categorizing population data, still using manual methods or still in paper form. With this system design, it can help village officials in the process of grouping citizen data and accelerating services to the community and providing more effective and accurate information.
Keywords: *Data, Village, Design and user interface, usability*

Introduction

Kelurahan is an administrative division in Indonesia below kecamatan. Kelurahan is led by a lurah who is a civil servant. Kelurahan hero is a government agency that handles all population data. To be able to improve the grouping of citizen data along with reports to higher agencies, namely the sub-district, it is necessary to take steps to develop a data grouping information system [1][2]. The management of data into information is one of the advantages of technological advances, especially computers. Computers have penetrated into one agency to another. In every agency always needs a system that can collect, manage, store, view back and distribute information [3]. With the computer as a data management tool, all fields in an agency can be computerized and well integrated and the results of a computerized information system can have more value than a manually processed system [4][5]. The system that runs so far allows errors, requires a long time in the data search process [6][7].

Information System is a system that has a place to store data, group data, collect data, and disseminate information. The development of technology which is now starting to develop rapidly, all aspects demand convenience, speed, and accuracy in obtaining and processing information [8][9]. The next research is about grouping the number of villages according to efforts to anticipate / mitigate natural disasters using the kmeans clustering method. Indonesia is a country that is very prone to natural disasters. Natural disaster management or mitigation is an ongoing effort to reduce the impact of disasters on people and property [10][11].

The Information System for clustering data on residents of the village of Klambir Lima Kebun is a system that is built based on user interface design with a responsive mobile system that is tested based on usability with the uman centered design method. Uman centered design is a method of approach in developing and designing a system that focuses on users according to aspects of the needs and habits of users, so far population information systems are often applied at the village government level to assist in the population registration process [12][13].

In the village of Klambir Lima Kebun, information about the population has not been done optimally and does not have a program to support work in the office. Office employees have difficulty in classifying population data, still using manual methods or still in paper form. With this system design, it can help village officials in the process of grouping citizen data and accelerating services to the community and providing more effective and accurate information [14].

Applications usually have an interface called User Interface (UI). This UI will be the link that bridges the relationship between the application and the user to be able to interact easily. UI design can affect user interest in using the application [12][15]. UI display design must adjust to user needs, because each user has different needs. UI can be done through touch, sight, hearing, two-way communication, and direct understanding. A good User Interface must be easy of learning and easy of use. An interface design that is too complex will make users find it difficult to operate the application and result in frequent errors in using the system [16][17].

User interface is a series of graphical displays that can be understood by computer users and programmed in such a way that it can be read by the computer operating system and operate properly. User interface is one of the factors that determine the increase in traffic on a website. Because users interact with programming logic through the user interface. And the user interface design itself is very important considering that the more effective and efficient a design is, the more comfortable the user is to linger on the website [18][19].

Data management consists of data storage and data handling activities." Data storage consists of filing, searching, and maintenance activities. Data handling includes various verifying activities, which include checking data that appears on various related lists or that comes from various sources, to find out the various sources and to find out differences and discrepancies this check is carried out by file maintenance activities [5][13].

Research Methods

This research requires a method used to conduct research so that it can answer the problems being studied and the research objectives. A study usually always starts with
a careful plan that follows a series of instructions that are arranged logically and systematically, so that the results can represent actual conditions and can be accounted for [8][9].

Research Flow

The research procedures carried out using the method designed to determine the flow of this research can be seen in the figure below [10][11]:
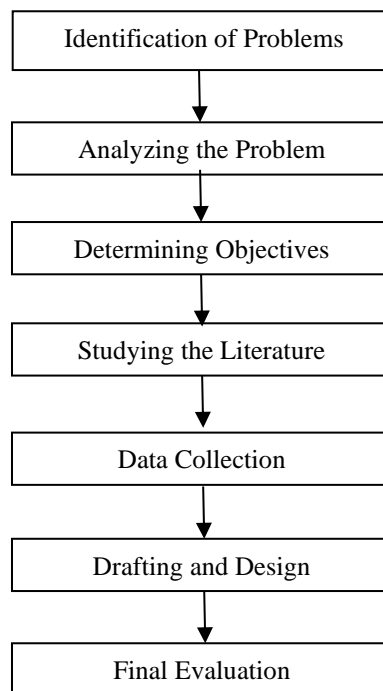

Figure 1: Research flow

At the contextual design stage, UI design enters the stage of validating the executed concept by considering the research results at the needs and solutions stage [12].

Stages of Research with Usability

The stages that can be carried out in measurements using system usability include four (4) stages, namely:

1. Questionnaire Selection: This stage includes the process of selecting a questionnaire package that will be used in usability measurements. Each questionnaire package that can be used in usablity measurement has certain basic assumptions, different frameworks and approaches.
2. Selecting Population or Participants: Population or participants are individuals who can be used as objects or samples in usability measurements. The selected population or participants must be representative, and also determine the characteristics of the population or participants, which can include age group, gender and other matters related to usability measurement.
3. Determine the sample size: Based on the characteristics that have been made in determining the population (Participants), a smaller and representative participant size can be determined to be the object of data collection.
4. Processing and interpreting data in accordance with the results of the study.

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 [13].

Results and Discussion

System Design Results with UML

System design with uml is a design used to describe the system to be built, there are four types of uml that will be used, namely use case diagrams, activity diagrams, squency diagrams and class diagrams [14][15][16].

Use Case Diagram Admin

The following is an admin use case diagram of the Information System for Grouping Citizen Data for the village of Klambir Five gardens. The picture below is an admin use case diagram of the design of the information system for grouping data on residents of the village of Klambir Five gardens. In the use case diagram below, the admin can enter the system by entering the username and password that has been provided. After successfully logging in, the admin can start entering family card data according to the form that has been determined by the system. After successfully entering all resident family card data, the admin can manage data such as changing data or deleting family card data. In addition to entering and managing data, the admin can also print family card reports on the system. As seen in the picture below:

Figure 2. Use Case Diagram Admin

Use Case Diagram of Citizens

The following is a citizen use case diagram of the Information System Design for Grouping Citizen Data for the village of Klambir Five gardens. The picture below is a citizen use case diagram of the information system for grouping data on residents of the village of Klambir Five gardens. In the use case diagram below, residents can enter the system by entering the username and password that has been given by the system admin. After successfully logging into the system, residents can view family card data that has been registered on the system in full starting from the head of the family to family members. As seen in the picture below:
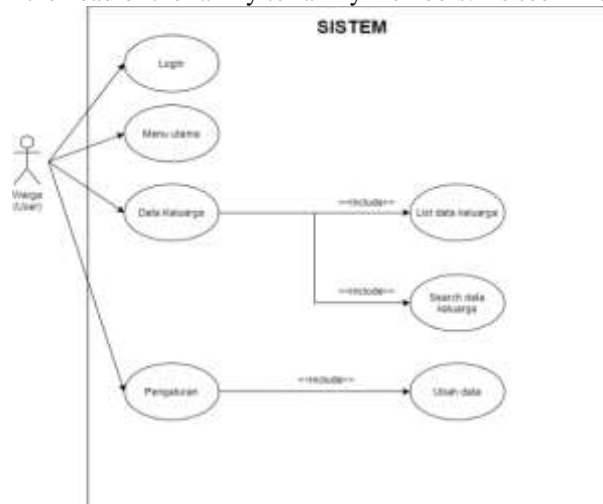

Figure 3. Use Case Diagram of Citizen

Admin Activity Diagram

The picture below is a description of the activity diagram of the information system for classifying data on residents of the village of Klambir Lima Kebun. In the activity diagram below, there are several activities that are passed by the admin and the system. 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 then the admin will be directed to the system home page.

Figure 4. Admin Activity Diagram

Activity Diagram of Citizen

The picture below is a description of the activity diagram of the information system for classifying data on residents of the village of Klambir Lima Kebun. In the activity diagram below, there are several activities that are passed by residents and the system.
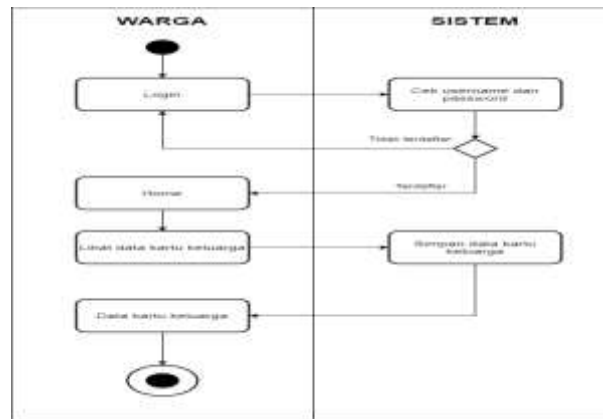
Figure 5. Activity Diagram of Citizen

Admin System Sequence Diagram

The picture below is a description of the admin sequence diagram of the information system for classifying data on residents of the village of Klambir Lima Kebun. In the admin sequence diagram, the admin has several main features in the system including login, main menu, family card input, viewing family card data, managing family card data and printing family card data reports.
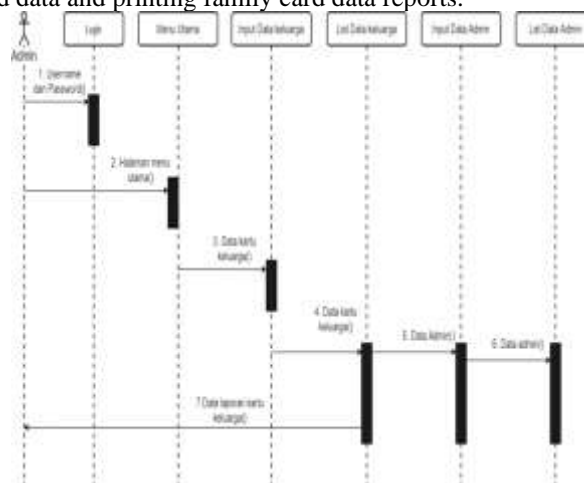

Figure 6. Admin Squency Diagram

Citizen System Sequence Diagram

The picture below is a description of the sequence diagram of the information system for grouping data on residents of the village of Klambir Lima Kebun. In the citizen sequence diagram, residents have several main features in the system including login, main menu, view family card data and settings.
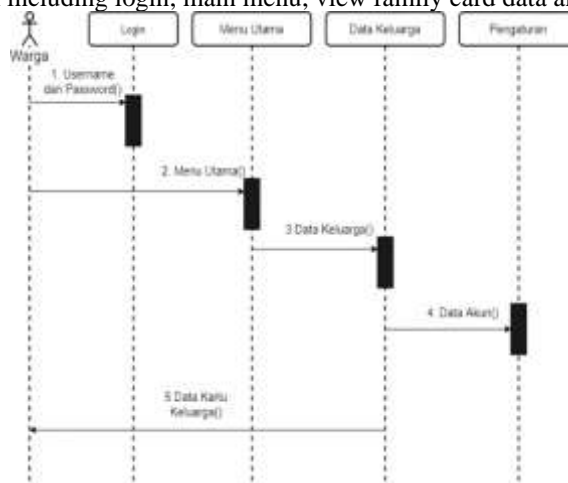

Figure 7. Squency Diagram Of Citizen

System Class Diagram

The figure below is a system class diagram of the klambir lima garden village data grouping design. In the class diagram above, the family card class becomes the main class because the admin will fill in the family card data based on the class concept that has been arranged in the family card class.

Figure 8. System Class Diagram

System Results

The results of this system are the results of the system design that was built based on the user interface design and user experience on the information system for grouping citizen data in the village of Klambir Lima Kebun, which has been adjusted according to applicable regulations.

System Login Page

The picture below is the login page. On this login page, admins and residents can enter the system by entering the username and password that has been determined.

Figure 9. System Login Page

Admin Home Page

The picture below is the admin home page. On this admin home page, the admin can select menus that have been provided by the system.

Figure 10. Admin Home Page

Citizen Data Upload Page

The picture below is the citizen data upload page. On this citizen data upload page, the admin can enter citizen data by filling out the form provided by the system.

Figure 11. Citizen Data Upload Page

Citizen Data Page

The image below is the citizen data page. On this citizen data page, the admin can see citizen data that has been successfully uploaded. In this implementation, the admin can also change and delete citizen data.
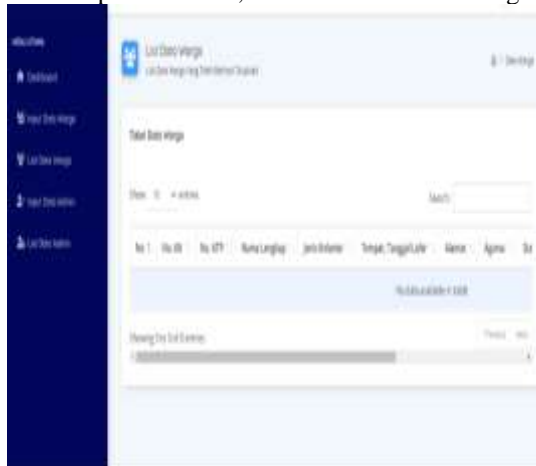

Figure 12. Citizen Data Page

Admin Upload Page

The image below is the admin upload page. On this admin upload page, the admin can enter other admin data by filling out the form provided.
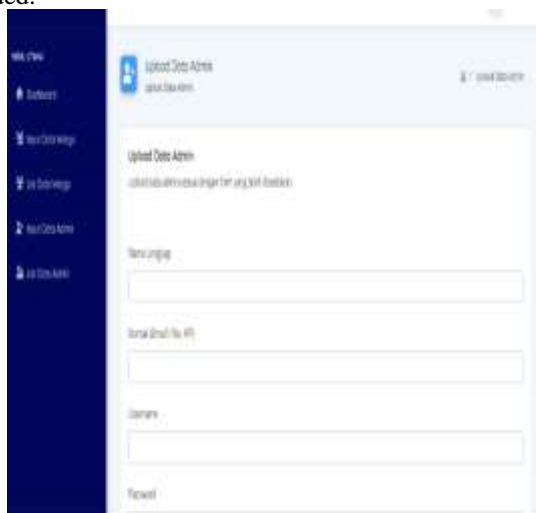
Figure 13. Admin Upload Page

Admin Data Page
The picture below is the admin data page. On this admin data page, the admin can see other admin data that has been entered into the system.

Figure 14. Admin Data Page

Citizen Home Page
The picture below is the citizen's Home page. On this citizen's Home page, residents can select menus that have been provided by the system.

Figure 15. Citizen Home Page

Citizen Family Data Page
The picture below is the citizen family data page. On this citizen family data page, residents can see family data that has been registered in the system based on the data listed on the citizen's family card.

Figure 16. Citizen Family Data Page

Citizen Account Settings Page
The image below is the citizen account settings page. On this citizen account settings page, residents can change accounts by changing the contents of the form provided by the system.

Figure 17. Citizen Account Settings Page

Conclusion

With the information system for grouping citizen data, the village no longer needs to store family card data files and citizen ID cards so that it can save paper usage and save budget, Recording citizen data information in the village of klambir lima kebun can make it easier for the village to store and process citizen data so that the entire state administration process can run effectively and efficiently, The use of citizen data grouping information systems is considered appropriate because the government can keep up with technological developments by utilizing the web system as a means of collecting citizen data.

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