

# Web-Based Congregation Data Management Information System at Sumba Christian Church Kanjonga Bakul

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## Abstract

The rapid development of technology in the current era of globalization has provided many benefits in progress in various social aspects. Every action we take today is closely related to the use of technology, especially in the field of computerization and the internet. Data Management of the Sumba Christian Church (SCC) / Gereja Kristen Sumba (GKS) Kanjonga Bakul Congregation is one of the activities that must be carried out by the church every year, this activity is carried out by BPMJ officers or administrators and monitored by pastors. However, in GKS Kanjonga basket, the system for GKS Jamaat Data Management is still carried out by each congregation assembly to collect data conventionally by collecting photocopies of Family Cards and collecting data directly at each congregation house to recap back to the physical ledger. This process experienced various obstacles, including the difficulty in recapitulating the entire data managed, as well as the lack of efficiency in managing the data of the GKS Congregation. This conventional process leads to a waste of time and effort that should not be happening today, as well as a high risk of errors and inaccuracies in the recorded data. From the problem of data management of the GKS congregation in Kanjonga Bakul, this research will develop an Information System for the Management of Data of the Sumba Christian Church using the Rapid Application Development (RAD) method. The web development in this study will use the Hypertext Preprocessor (PHP) programming language with the CodeIgniter framework that implements the Model-View-Control (MVC) concept. This technology can optimize and improve the quality of data management of GKS congregations in Kanjonga Bakul..

**Keywords:** Information Systems, Church Data Management, GKS Kanjonga Bakul

## 1. Introduction

The rapid development of technology in the current era of globalization has provided many benefits in progress in various social aspects. Every action we take today is closely related to the use of technology, especially in the field of computerization and the internet. Computer technology plays an important role in meeting various human needs, be it individuals, government agencies, private sectors, or religious organizations. In terms of religion, technology is considered one of the resources that need to be utilized by the church related to good management in the face of technological changes [1]. Through technology we can find various latest information that happens throughout the day. GKS Kanjonga Bakul Jamaat is located in Nggaha Ori Angu District, Praihambuli Village, which was established in 2009 until now, has a total of 947 congregations, both eligible members and minor baptisms. The data collected is useful for finding out the development of GKS members of the Kanjonga Bakul congregation every year, as well as a guide for officers to make it easier to distribute services every week.

Information systems in daily activities are a series of processes that occur regularly without the awareness that accompanies this system can interact between humans and other humans. An information system is a collection of several elements, the system still has the same goal. The system referred to here is not about limb systems but about technological systems. A hint system on a series of interconnected and interacting entities to carry out certain activities to achieve a set goal. For example, in the context of computer systems, software components, hardware, and human factors (brainware) [2]. Information is a collection of news about something that has been proven true or incorrect. We can find information on social media or through direct communication between one human and another. However, in line with today's technological advancements, a lot of information can be accessed quickly and accurately through social media platforms without involving direct interaction between individuals. The data described here refers to a collection of information that has gone through an analysis process to produce valuable outputs, facilitating the recipient of information in receiving the content optimally [3].

With the aim of converting resources into comprehensive information to support the decision-making process within an organizational entity [4]. The relationship between one web page and another web page is called a hyperlink, with text acting as a connecting medium known as hypertext [5]. Planning refers to the process of setting targets or objectives to be achieved and setting the strategies needed to achieve these goals with the goal of optimal effectiveness. Design is the process of sketching in designing a system. In the form of a flow chart [7]. The goal is to describe the diverse interactions between the user of the system and the system itself through a narrative

description of how the user of the system is [8]. The RAD approach emphasizes on rapid and iterative development cycles. Time constraints are a key element in this framework, RAD adopts an interactive approach in system development, where a functional system model is introduced at an early stage to establish user needs. This model is used as the basis for the final design and implementation [6]. Implementation of the design application process of the system Built from writing program code adapted to the selected programming language [9]. Testing is an element of a series of tests that have been planned and systematically arranged to test or evaluate the expected corrections of the developed system. Testing activities consist of a series of steps or a series of actions in which the specified test cases can be implemented [10].

## 2. Research Methodology

Sumba Christian Church (GKS) is one of the places of worship for Christians living in East Sumba Regency, Nggaha Ori Angu District, Praihambuli Village, which is located in Kanjonga Bakul, Opang Mandangu and Walakeri Umahapi. GKS Kanjonga Bakul was established on August 25, 2009 until now which is led by Pastor Dominggus Umbu Deta S.Th with a total of 947 congregations. Research steps are very important for researchers to be able to carry out in accordance with the predetermined research flow, the research flow is in the form of a flow chart.

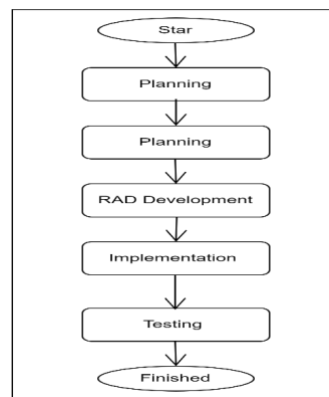


Fig. 1: Research Flow

Figure 1 illustrates the flow of research conducted by researchers at the GKS Kanjonga Bakul Jamaat to create a web-based system. The several stages used in this study start with the Planning, Design, RAD Development, Implementation, and Testing stages. In the stages used, the researcher conducts observations, interviews and documentation. In this phase, researchers also begin the process of analyzing existing systems to identify new systems. After completing the analysis to determine the needs of the new system, the next stage is the design process. In the design phase, the researcher developed a system model using UML to design use case diagrams, activity diagrams, sequence diagrams, and class diagrams as a guide in creating a planned new system structure. After designing, it will enter the RAD development stage.

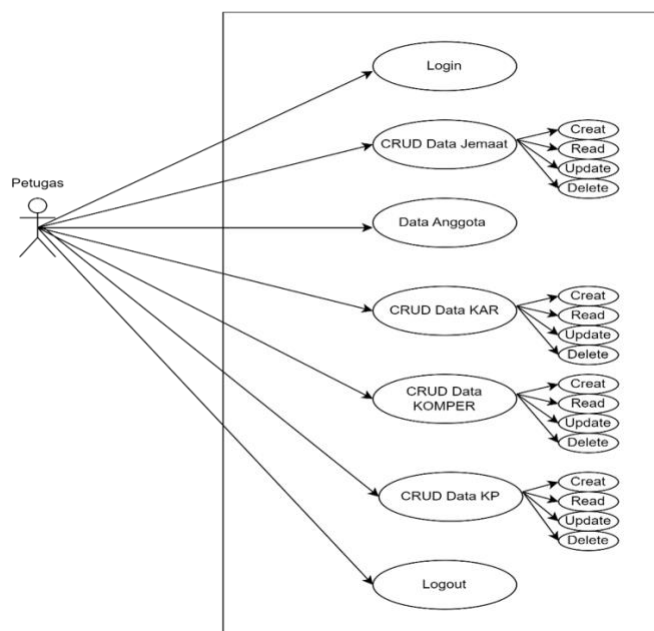


Fig. 2: Use Case Diagram

Users have access to log in to the system by entering credentials in the form of usernames and passwords. In addition to logging in, officers can also view all congregation data and Add, View, Edit and Delete congregation data, Youth Commission (KAR) data,

Women's Commission (KOMPER) data, and Youth Commission (KP) data in the system. After the officer finishes using the system, the officer can log out of the system.

### 3. Results and Discussion

The design of the congregation data management information system at GKS Kanjonga Bakul will be implemented into the software. The system that has been designed includes the Admin Login page, Homepage and various menus such as Head of Family Data, Congregational Data, Adolescent Commission Data (KAR), Women's Commission Data (KOMPER), Youth Commission Data (KP), and logout menu. In the family head data menu, admins have access to add, edit and delete data as needed.

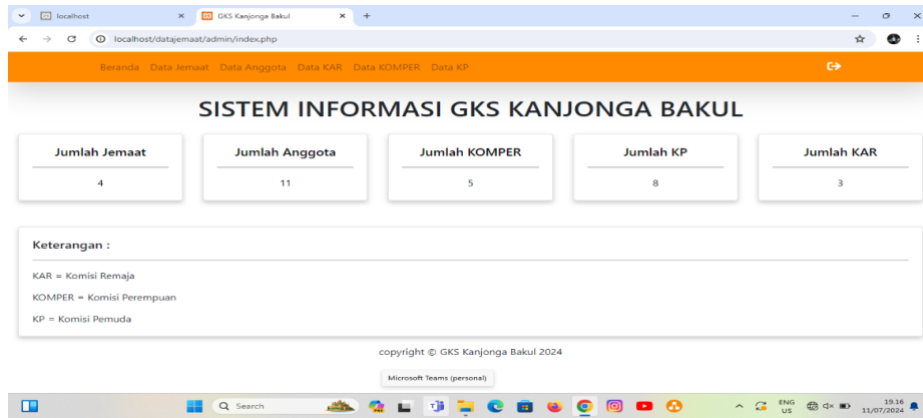


Fig. 3: Home Page

Figure 3 shows the home page interface, which appears after successful authentication with the appropriate username and password. The home page displays a series of menus that can be accessed by admins, including the family head data menu, congregation data, KAR data menu, KOMPPER data menu, and KP data menu.

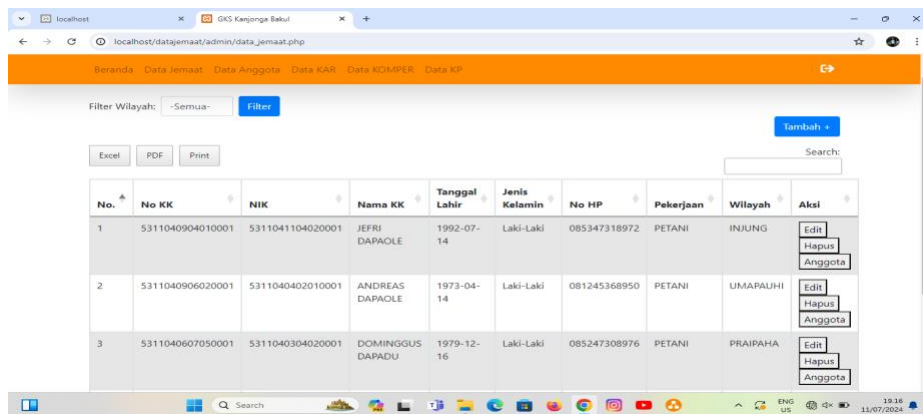


Fig. 4: Head of Family Data

Figure 4 is the display of the Family Data menu accessed by the admin. The family head data menu consists of KK Number, NIK, Name, Date of Birth, Gender, Cellphone Number, Occupation and Region admins can also add congregation data, edit congregation data, delete congregation data, and member access menus from each family card number.

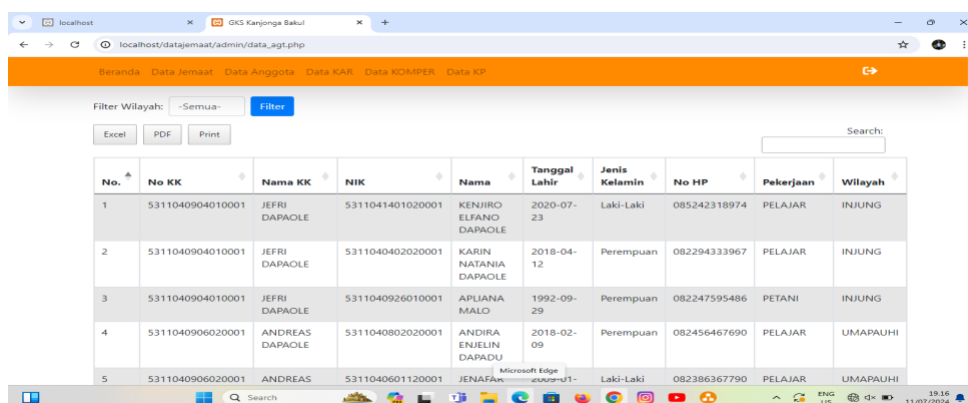


Fig. 5: Church Data

Figure 5 is a display of the entire list of congregation data that has been accessed by the admin. The congregation's data can be opened via Pdf, Exel, and can be printed. The congregation's data consists of KK Number, NIK, Name, Date of Birth, Gender, Cellphone Number, Occupation, and Region.

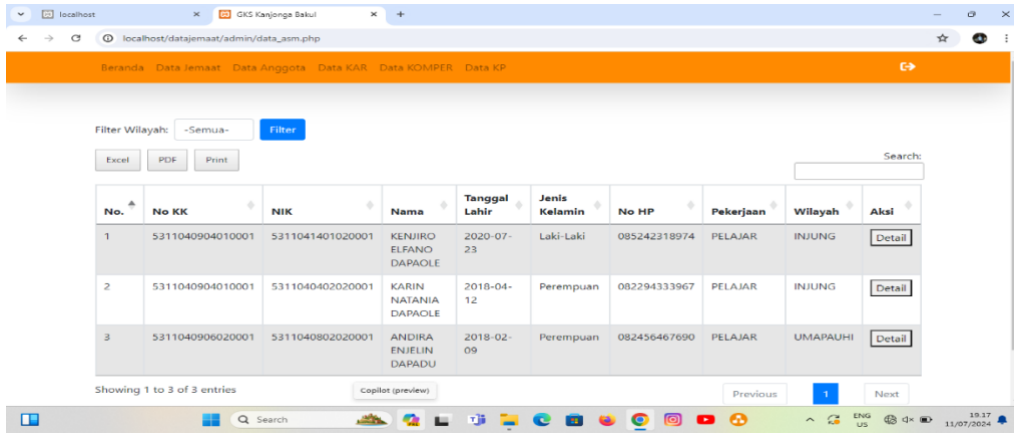


Fig. 6: Data KAR

Figure 6 is the display of the KAR data menu that was successfully accessed by the admin. The KAR data menu consists of KK Number, NIK, Name, Date of Birth, Gender, Cellphone Number, Occupation, and Region.

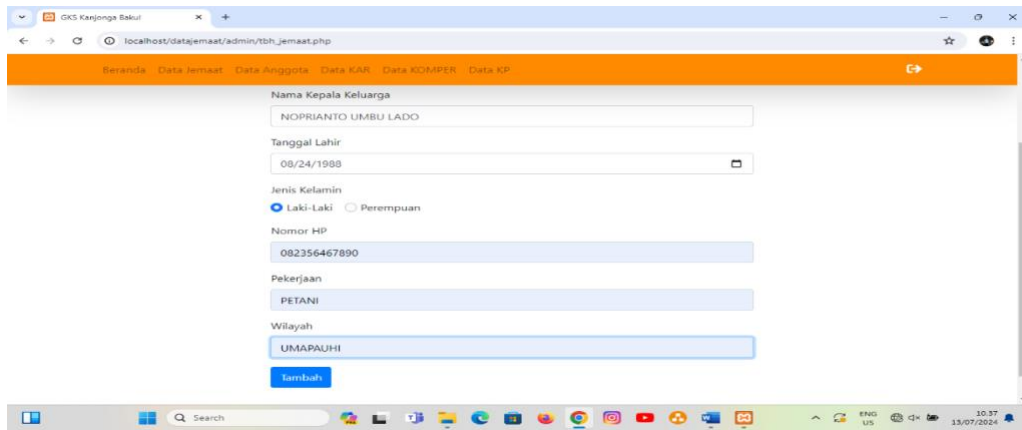


Fig. 7: Add Data

The illustration in figure 7 shows the process of adding data. When admins want to add data, they can choose what data they want to add. The system can then display the appropriate data addition form. The admin can then fill out the form according to the required details.

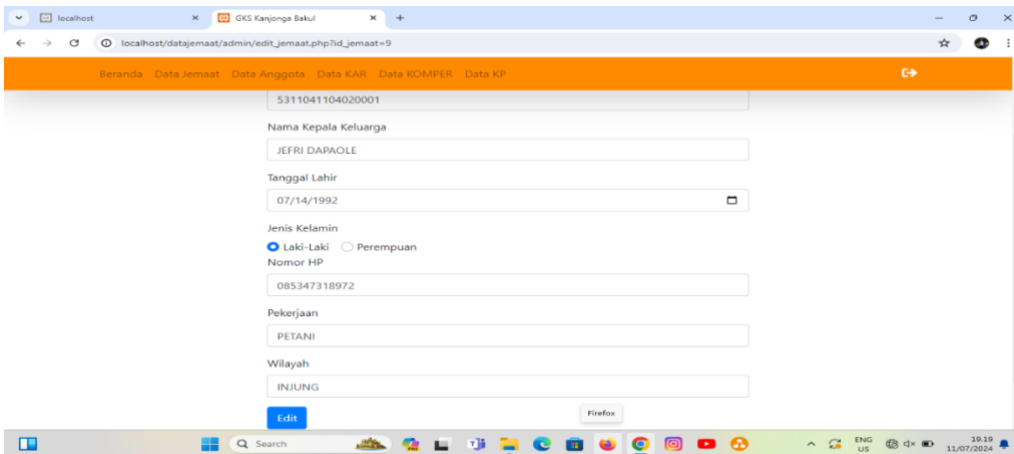


Fig. 8: Edit Data

Figure 8 shows the editing process. When admins intend to change data, they can select the data they want to change. After selecting the data in question, the system will display the appropriate data editing form. The admin can then change the information as needed. Once the editing process is complete, the system will notify you that the changes were successful.

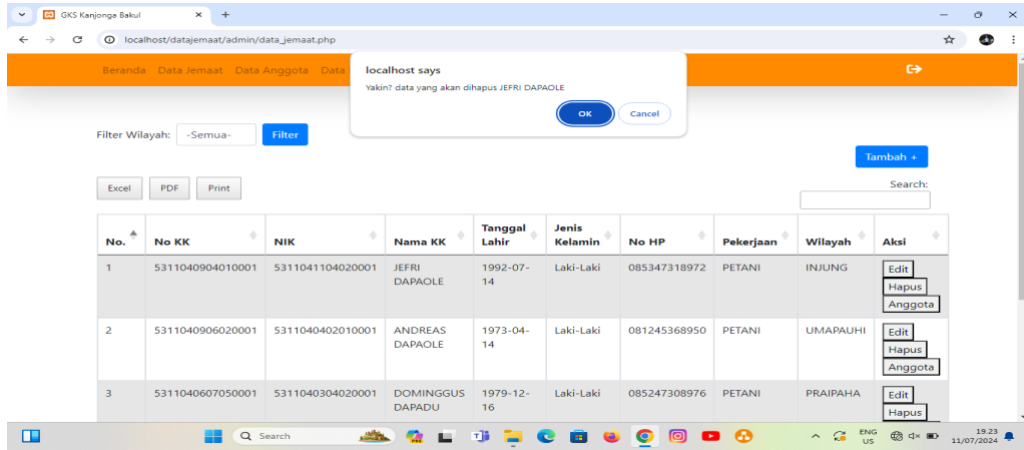


Fig. 9: Delete Data

Figure 9 shows the interface for deleting data. When an administrator intends to delete data, they can choose what type of data they want to delete. After selecting the data in question, the system will ask for confirmation from the administrator. If the administrator approves the deletion of the data, the system deletes the data. Once the deletion process is complete, the system will provide a notification that the data deletion has been successful.

#### 4. Testing and Analysis

The testing stage is carried out after all the system design processes are completed. Testing is an element of a series of tests that have been planned and systematically arranged to test or evaluate the expected corrections of the developed system. Testing activities consist of a series of steps or a series of actions in which the specified test case can be implemented. At this stage of testing, the writing applies Black Box Testing and System Usability Scale (SUS) as evaluation methods. Black box testing is a testing process in the system that can show the parts that still have errors in the use of each function in the system with the aim of getting certain results. The results obtained from this study include findings of inappropriate or incomplete functions, incompatibilities in the user interface, errors in data structures or database access, performance problems, errors in initialization, in the final goal of the study.

SUS testing involves a scoring scale as an evaluation metric. The scale adopts a rating range from 1 to 5, where the number 1 reflects strong disagreement with the statement being tested and the number 5 indicates strong agreement with the statement. The SUS evaluation instrument consists of ten statements that serve as measurement indicators.

Table 1: Statement

No.	Statement	Scale
1.	I plan to intensify the use of this app.	1-5
2.	I don't think this app should be made this complicated	1-5
3.	I argue that the app should be designed for ease Use	1-5
4.	To operate this app, I need help from an expert technical.	1-5
5.	I found that the features in the app connect well	1-5
6.	I noticed an inconsistency in this app	1-5
7.	I believe that the majority of people can quickly understand This app	1-5
8.	This app feels very complex to me	1-5
9.	I feel confident in using it	1-5
10.	Before using this app, I need time to Learn first	1-5

The results of the analysis and evaluation on Black Box Testing show that the navigation or functionality of the system has run smoothly without experiencing obstacles. The results of the assessment in the SUS test involving 5 respondents achieved a total score of 73.

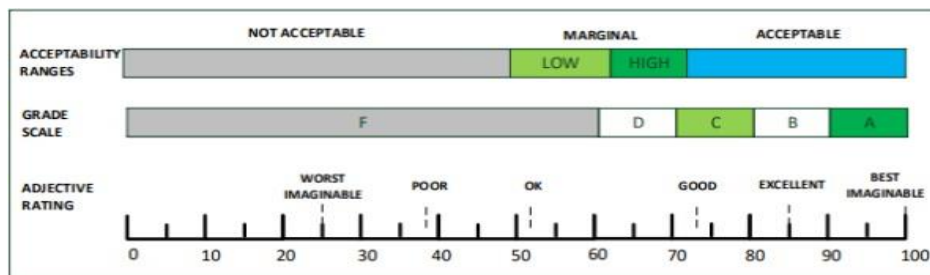


Fig. 10: SUS Scor

From the average evaluation generated through calculations using the SUS method, the next step is to establish the Acceptance Range, Value Scale, and Adjective Assessment. With an average score of 73, the system obtained an Acceptance Range in the "High" category, a Grade Scale in the "C" category, and an Adjective Assessment in the "Good" category. By considering the value categories obtained, it

can be concluded that the Web-Based Community Data Collection Information System at GKS Kanjonga Bakul is well designed and can be used effectively by admins.

## 5. Conclusions

Research related to the Web-Based Community Data Management Information System at GKS Kanjonga Bakul has been carried out with various series of research, starting from implementation and testing. Based on the findings of the research conducted, it can be concluded that the information system that has been created has successfully handled the challenges faced in the research environment. This system is able to present congregational data information with better speed and accuracy. The system built also makes it easier for officers to search and record congregation data, without having to search and record in the ledger which of course will have many risks such as misrecording and prone to damage to books. In addition to development, the system has undergone two stages of testing: a black box trial and a SUS (System Usability Scale) trial to evaluate the system's capabilities. The findings from the black box trial show that the system did not experience navigation malfunctions. The SUS test conducted resulted in an average score of 73, placing the system in the "High" Acceptance Range, "C" Grade Scale, and "Good" Adjective Assessment. Therefore, based on the results of this test, the Web-Based Church Data Management Information System at GKS Kanjonga Bakul is considered to meet the standards for use by system users.

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