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Website -Based Congregation Data Information System at the GKS Kaliuda Church

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Abstract

The congregational data collection at GKS Kaliuda is still carried out using the church master book, which causes various problems. Data inaccuracy often occurs because changes in the status of the congregation, such as births, deaths, relocations, and sacred events, are not always recorded correctly. The data recapitulation process takes a long time, around 3 months, and makes it difficult for church administrators to access information quickly. In addition, recording with different handwriting adds to the complexity of reading and understanding information. Data inaccuracy also causes problems in managing church services, such as scheduling weddings, baptisms, and other sacramental activities that do not match the congregation's real data. To overcome this problem, this study aims to develop a web-based congregational data information system to improve data efficiency and accuracy. System development is carried out using the waterfall method,

The test results using the black box method show that this system can run according to its function without any errors. Meanwhile, from the results of the SUS test that has been carried out on the level of user satisfaction with the church financial recording information system, the assessment given to 10 respondents produced a score of 77%. acceptance range " Acceptable " and " High". The value scale is in the class category "C". and in " Good " Adjective assessment These results indicate that the Web- based data recording information system at GKS Kaliuda can be accepted by its users.

Keywords: Information system, congregation data collection, GKS Kaliuda, website, waterfall

1. Introduction

The church is a fellowship in which Christians receive teaching about the Christian faith. The church has a duty and calling to teach (Ritonga, 2020). Church is an ecclesiological term used by various Christian denominations to describe the body of true Christian fellowship or the original institution founded by Jesus. The term "Church" is also used in the scientific realm as an expression of Christianity, even though in reality Christianity consists of many Churches or denominations, and many of them claim to be the "only true Church" to the exclusion of others. Churches also often collect data on members of new and existing congregations, to find out the number of congregations and personal data of church members.

Currently, congregational data collection in GKS Kaliuda is carried out directly by the Congregation Council Management Board (BPMJ) and the Head of the Congregation Environment by visiting members' homes to collect data and record it in the church's master book. However, this method causes various problems, especially when information is needed quickly. In addition, master books are often mixed with archives of other congregation environments, making it difficult to find the data needed later. The difficulty increases because the recording is done by several people with different handwriting, causing confusion and difficulty reading when the data must be accessed again. Furthermore, challenges arise from dynamic changes in congregational data, such as births, deaths, relocations, and sacred events such as baptisms, sidi, and marriages. All of these changes require periodic data updates, but are often not recorded accurately, so that the congregational data held does not always match actual conditions. The congregational data recapitulation process takes 3 months, this makes the data collection process very long, and there is often an accumulation of almost the same data in one book. This hinders BPMJ in making decisions and formulating policies that depend on accurate data. Therefore, with the existence of a data collection system that can be done by the congregation, it will help data management to be easier and will speed up the process of recapitulating congregation data to 1 week, to synchronize the data, this is because the congregation data is quite dynamic and very large. Every time there is a change in congregation data, for example marital status, the latest data needs to be recorded on a new sheet in the master book.

In addition, GKS Kaliuda still relies on delivering information through pulpit bulletins distributed every week before the service begins. These bulletins are printed in limited quantities and placed in church pews, so that not all congregations have access to complete information. The reading of the pulpit bulletins also only covers part of the content, so that much important information is not conveyed properly to the congregation.

Other obstacles in recording are also related to important church data, such as marriage, sidi, and baptism data. Inaccuracy or loss of this data has a significant impact on various aspects of church operations. Errors in data often cause conflicts in service scheduling, such as confusion in arranging the schedule for wedding blessings or baptism ceremonies, which can disappoint the congregation and create an unprofessional impression. In addition, inaccurate data makes the division of congregations per environment disproportionate, so that spiritual formation cannot be carried out evenly and in a targeted manner. The church also faces obstacles in designing spiritual activities that suit the needs of the congregation, such as special programs for those who have just been baptized or sidi, because the data does not reflect current conditions. The absence of a structured data recording system slows down the administrative process, requiring administrators to spend more time manually verifying data. This not only burdens administrators, but also slows down services to the congregation. In addition, difficulties in maintaining the accuracy of historical data, such as baptism or marriage history, cause obstacles in meeting administrative needs, such as issuing certificates or other documents.
Based on the background description above, the researcher proposes a website -based system that is expected to be able to increase the efficiency and accuracy of congregation data collection, as well as simplify the management of various data related to the congregation, sacraments so that church servants and BPMJ are more facilitated in accessing and presenting congregation information more quickly, accurately and in a structured manner.

2. Literature riview

2.1. Data collection

Data collection is a systematic process that includes collection , recording , and storage of data or relevant information with objective certain . This process aiming For organize data so that it can be accessed , managed , and used in a way efficient in taking decision or analysis more Continue . Data Collection can done with various method , good manually using tool write or based on technology information For increase efficiency and accuracy . In the context organization , good data collection support better data management structured and easy access required data For needs administration , evaluation , or policy (Kusnendi , 2017).

2.2. Information Systems

The system integrated into daily activities is a series of processes that occur routinely without the accompanying awareness. This system can interact between one human and another. Although the system consists of several elements, the system still has the same goal. The system referred to here is not about the body's limb system, but rather the technology system. The system refers to a series of entities that are interconnected and interact to carry out certain activities in order to achieve the stated goals. For example, in the context of a computer system, there are components of software, hardware, and human factors (brainware), which interact with each other in a technology ecosystem to carry out their functions optimally (Setiawan, 2015).

2.3. Website

A website is a digital platform that facilitates the presentation of information in various forms such as text, audio, animation, or a combination of them, either in static or dynamic formats. A website consists of a series of interconnected elements, forming a complex structure, where each is connected through a network of pages. The relationship between one web page and another is called a hyperlink, with text acting as a connecting medium known as hypertext (Elektro & Medan, 2018).

2.4. Xampp

XAMPP is an open source software that supports various operating systems and combines several applications. XAMPP acts as a local server (localhost) that includes Apache HTTP Server , MySQL database , and PHP and Perl language interpreters . The abbreviation XAMPP itself comes from X (various operating systems), Apache , MySQL , PHP , and Perl . This software can be accessed with the GNU General Public License , presenting a simple web server solution to present dynamic web pages (Laisina et al., 2018).

2.5. Waterfall method

The waterfall method is one of the SDLC methods that is often used in the development of information systems or software. This model uses a systematic and sequential approach. The stages in this model start from the planning stage to the management stage and are carried out in stages. The waterfall model describes the software development process in a linear sequential flow. This linear sequential model means that each stage in the development process will only start if the previous stage has been completed. The process also cannot go back or repeat to the previous stage. There are several stages of the Waterfall model (Sagala, 2021).

2.6. Blackbox testing

Black Box Testing is a software testing method that focuses on checking functions according to specifications without considering the details of the internal structure, model, or program code. The focus of this testing is to ensure that the features, inputs, and outputs of the software are in accordance with the requirements needed for the use of the system being developed (Cholifah et al., 2018). Black Box Testing is a trial process in a system that can show parts that still contain errors in the use of each function in the system with the aim of obtaining definite results. The results obtained from this study include findings of inappropriate or incomplete functions, incompatibility in the user interface, errors in data structures or database access, performance problems, errors in initialization, and the final target of the study. (Nur Ichsanudin et al., 2022).

2.7. System usability scale (SUS)

System Usability Scale (SUS) is a step in the evaluation that measures the level of ease of understanding and use of the system being

developed and the level of user satisfaction with the use of the system. In the selection of respondents, there are no definite criteria or standards that are used as references from the theoretical basis of SUS. SUS testing involves a rating 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 function as measurement indicators (Ependi et al., 2019).

3. Research methodology

3.1. Research object profile

GKS Jemaat Kaliuda bloomed or stood alone on December 12, 2008. Initially it was a Post Gospel Message (POS PI), which was opened in 1972, in Kaliuda village by GKS Jemaat Ngallu as the parent congregation. Thanks to the Power of God's presence through God's servants, especially a gospel helper, Mr. LHRadja as a POS PI servant in 1976, many families from Marapu gave themselves to be baptized as Christians.

3.2. Research flow

The research steps that are the initial stages carried out by researchers before starting research, the research steps are very important for researchers to be able to carry out research in accordance with the research flow that has been determined in the form of a flow chart .

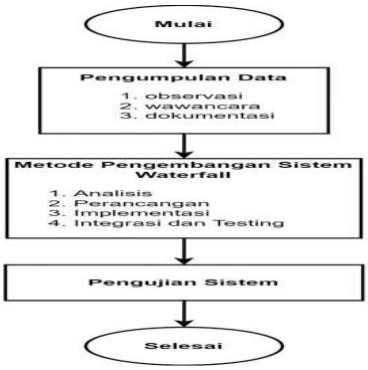


Figure 1: Research Flow

The following is an explanation of the research flow, namely:

1. Observation; Observation is the first step in building a system, this initial step will help by identifying the problems of a researcher who finds the problems that occur and produces various solutions.
2. Interview; After identifying the problem, the data collection process will begin through interviews. Interviews will be conducted by asking questions to trusted sources related to the case study being studied.
3. Documentation; In addition, a documentation process will also be carried out in the form of data on the running system and supporting components in the form of notes used.
4. Analysis; At this stage, after the data collection process is complete, an analysis process will be carried out to adjust to the existing problems, whether all the required components are complete or not, if not, they will be completed first before proceeding to the next stage.
5. Planning; After identifying the problem, then start designing the system design according to user needs. In addition, at this stage the researcher revised the previous system design with the aim of ensuring compliance with user needs.
6. Implementation; At this stage, after the system design process has been successful, it will be demonstrated on a local scale, namely localhost, to see whether the function and design of the system are built according to the needs or not. The program that has been adjusted to the current system design that has been successfully created needs to be tested.
7. Testing; After the program is applied, it is necessary to evaluate how far the program can run, then the process will be tested whether it is in accordance with the needs or not.

3.3. Use case diagram

Based on the image below, the congregation data collection process begins when the admin logs in to the website by filling in the username and password. After successfully logging in, the admin can input data on newly registered and exited congregations. In the congregation data collection section, the admin can edit, add, or delete as needed by the admin. Furthermore, the admin also has the ability to view and print reports on congregation data, both new and exited. In addition, pastors and BPMJ members can also log in to the website to access congregation reports. They can view information on incoming congregation data and print the report as needed. Thus, this system facilitates effective and efficient congregation data collection. In addition, the environmental admin is also tasked with assisting congregations who do not have devices for data collection, while congregations who have devices can register and log in directly.

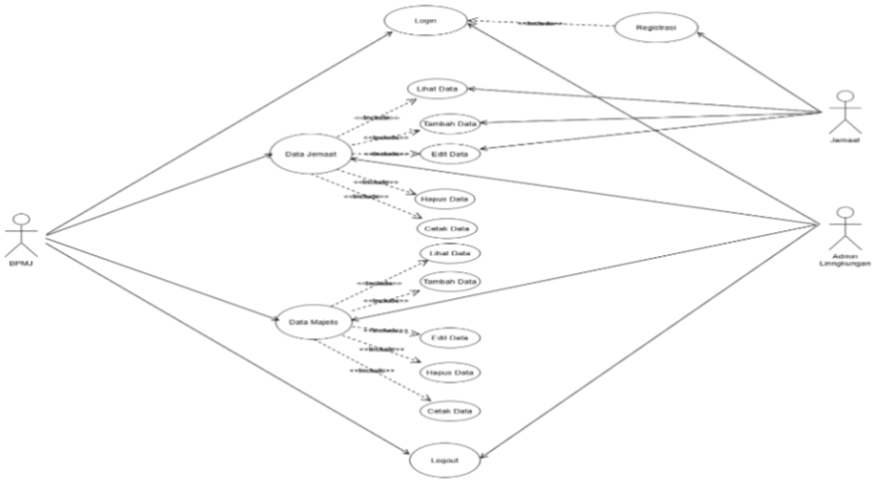


Figure 2: usecase diagram

3.4. Class diagram

Class diagram for information system in GKS Jemaat Kaliuda is a visual tool that describes the structure of congregation data, as well as how the data is managed and accessed by various parties, such as admins and environmental admins. This diagram not only shows the relationship between classes in the system, but also explains the data flow and access rights owned by each system user. .

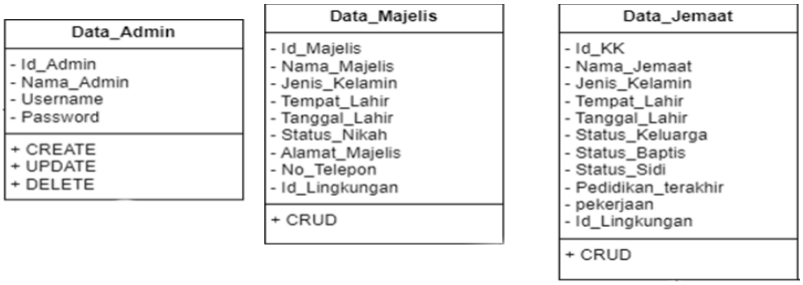


Figure 3: Class Diagram

The following is an explanation of the tables in the GKS Jemaat Kaliuda class diagram:

1. Admin data table

This table stores data about the admin who manages the system. The data in this table can only be seen and accessed by the admin himself. The admin is responsible for managing and verifying data in the system, as well as supervising all operations running in the GKS Jemaat Kaliuda system.

2. Congregation data table

This table contains congregation data, such as name, address, status, and other information needed to manage congregation data in GKS Jemaat Kaliuda. This congregation data can be accessed by admins and neighborhood admins, where neighborhood admins can manage congregation data in their respective neighborhoods. This table functions to store and manage congregation data systematically, support church services, and ensure that congregation information is always well organized.

4. Results

4.1. Implementation

Web -based congregational data information system at the GKS Kaliuda Church will be implemented on a computer program system that is built including the admin login page , admin dashboard , congregational data, add data, edit data and print data. There are 3 Admins who have access to log in and can manage and verify congregational data on the congregational data page such as

1. The church admin (BPMJ) is responsible for monitoring data, creating accounts for environmental admins, and printing and summarizing data in documents.
2. The environmental admin is tasked with helping to enter data for congregants who do not have electronic devices, as well as guiding congregants in filling in their own data, in this case congregants who have their own devices.
3. The congregation admin is tasked with ensuring that the congregation can register themselves and create an account using the link provided, but will still be supervised by the local admin so that it remains orderly and structured.

4.2. BPMJ admin login page view

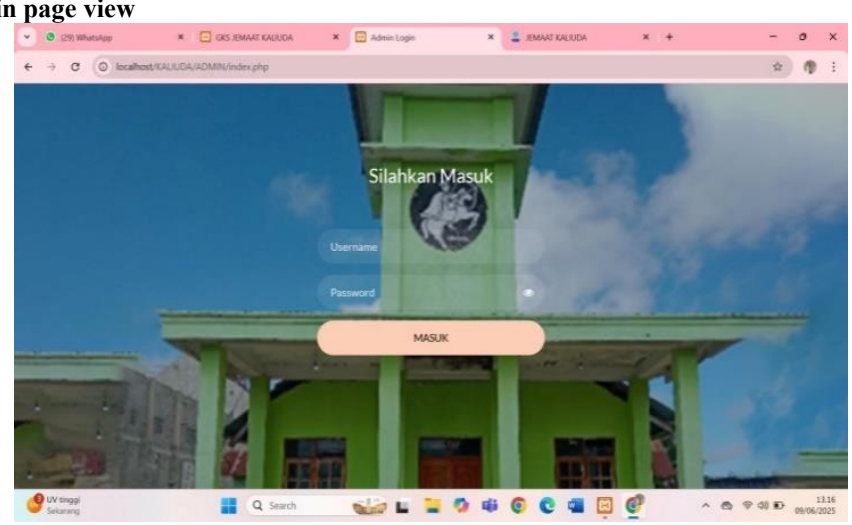


Figure 4: login page

Login page, which serves as an administrative login page where the administrator needs to login by entering the username and password. If the login is successful, a message will appear confirming that the login was successful. Then you can click ok to proceed to the website page. However, if the login fails, an error message will appear indicating that the login failed. In such a case, you need to go back to the initial state by providing the username and password again.

4.3. BPMJ admin dashboard page view

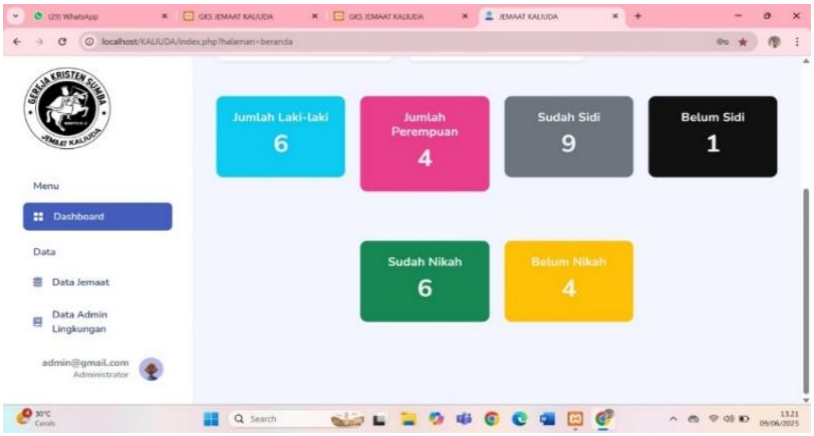


Figure 5: BPMJ Admin Dashboard Page View

The image above is a display of the main page that can display the total data of the congregation as a whole, the number of congregations per environment, men and women, congregants who are already married and not yet married, and congregants who are married and not yet married. The data has been classified so that users can easily read the number of congregants registered in the GKS Kaliuda Church.

4.4. View the BPMJ admin congregation data page

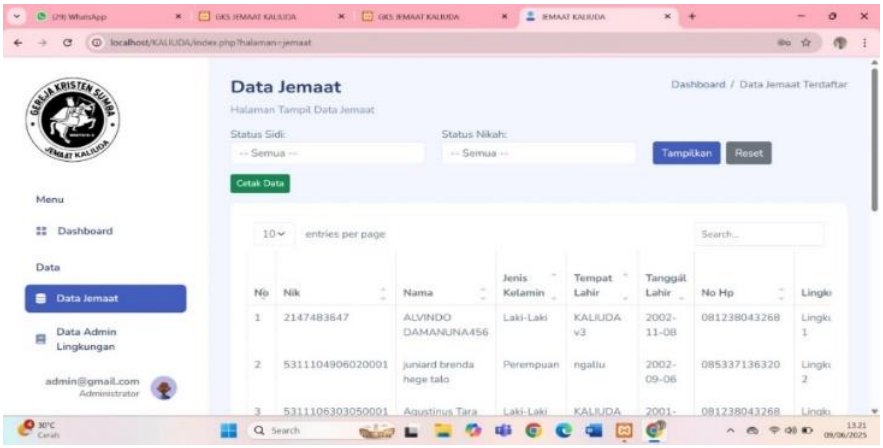


Figure 6: Congregation Data Page

The image above is a display of the individual congregation data page consisting of NIK, gender, place and date of birth, cellphone number, neighborhood number and congregation status. Where the admin can see the details of each congregation's data in the form of a table and the admin can change and delete congregation data. The admin can also print congregation data if at some point the admin needs congregation data to be printed and save congregation data in pdf format.

4.5. View the congregation data print page on the BPMJ admin

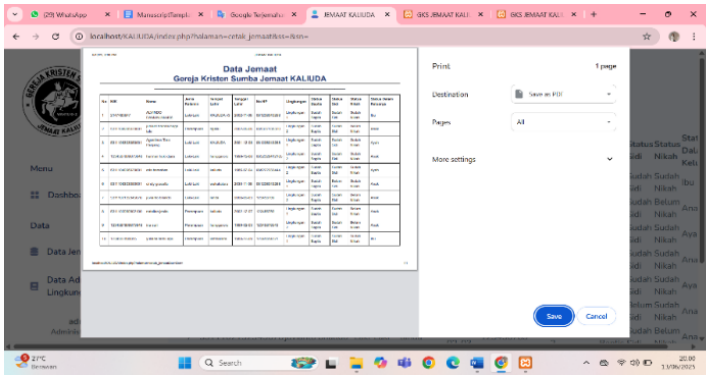
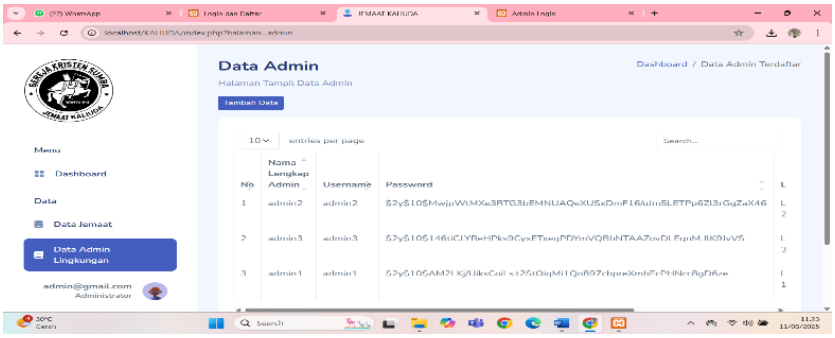


Figure 7: Print Data Page

On the print data page, the congregation data that has been summarized and will be printed or saved as PDF is displayed, and at the bottom right of the page there are save and cancel options.

4.6. View the environmental admin data page on the BPMJ admin



Picture. 8: Environmental Admin Data Page

On the following page is a display of the Environmental admin data page, on this page there is the name of the environmental admin, creating a username and password and can add data, change and delete data.

4.7. Environment admin login page view

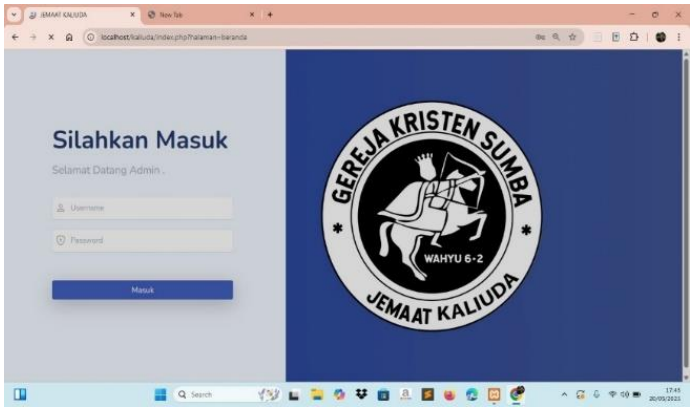


Figure 9: Environmental Admin Login Page

Login page, which serves as the admin login page Environment needs to login by entering the username and password. If the login is successful, a message will appear confirming that the login was successful. Then you can click ok to proceed to the website page. However, if the login fails, an error message will appear indicating that the login failed. In such a case, you have to go back to the initial state by providing the username and password again.

4.8. View data page on environment admin

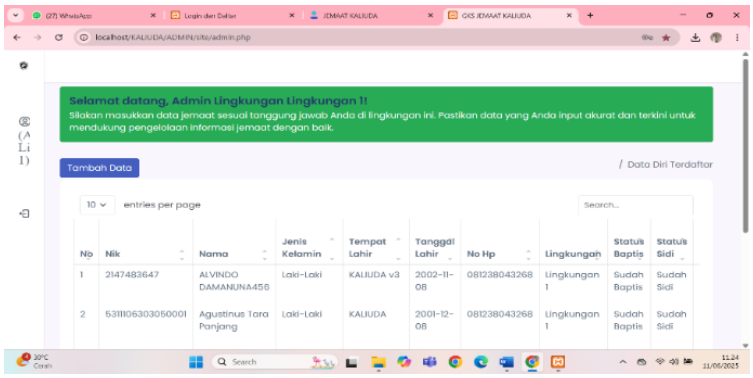


Figure 10: Congregation Data Page in Environmental Admin

The display on the environmental admin page contains congregation data such as NIK, Name, Gender, Place of Birth, Date of Birth, Mobile No., Environment, Baptismal Status, Sidi Status, Family Status, change and delete data. The purpose of the environmental admin has their own account to help the congregation and BPMJ in collecting data on congregations who do not have electronic devices.

4.9. View congregation login page

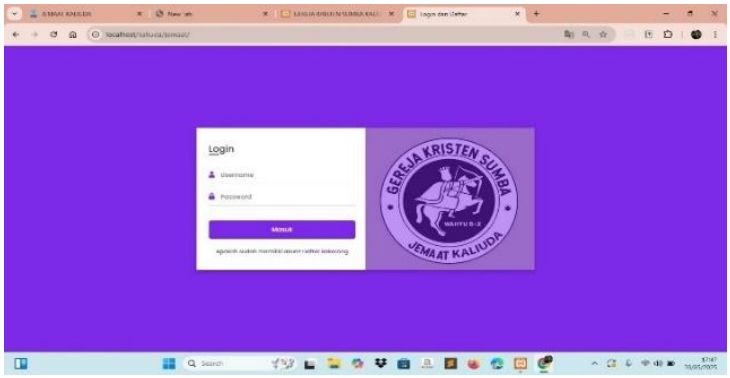


Figure 11: Congregation Login Page

The login page, which serves as the congregation login page, needs to login by entering the username and password. If the login is successful, a message will appear confirming that the login was successful. Then you can click ok to proceed to the website page. However, if the login fails, an error message will appear indicating that the login failed. In such cases, you need to go back to the initial state by providing the username and password again. For congregations who do not have an account, they can create an account on the register now option at the bottom of the page to fill in the data.

4.10. View the congregation data entry page

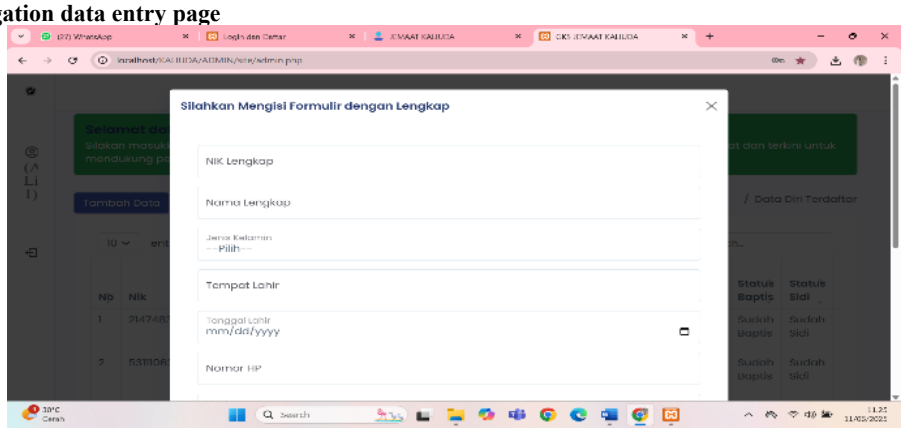


Figure 12: Data entry page display

On this page, the congregation can fill in their personal data with NIK, Full Name, Place of Birth, Date of Birth, Mobile Number, Baptismal Status, Sidi Status, Marital Status, Family Status. After filling it in, the congregation can press the Submit button at the bottom of the form.

4.11. View congregation data page

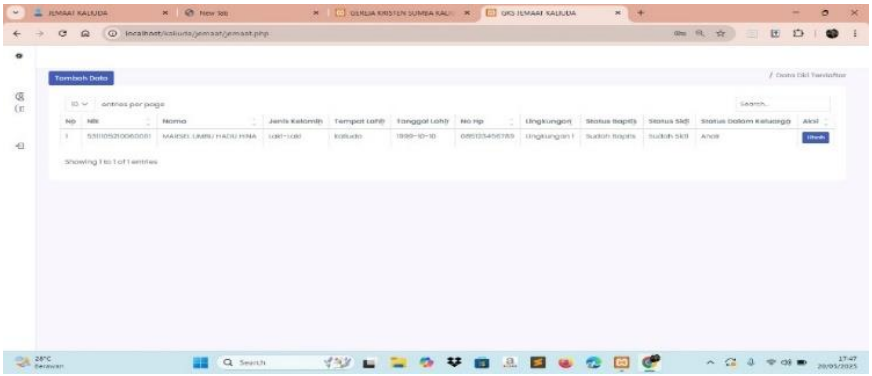


Figure 13: Congregation data page

The following is a display after the congregation data has been successfully filled in by the congregation, there is a display of NIK, Name, Gender, Place of Birth, Date of Birth, Cell Phone Number, Environment, baptismal status, sidi status, marital status, family status, the congregation can also change and delete data.

4.12. Black box testing

At this stage, all features in the system will be tested to identify any errors. Black box testing is used to assess the functional performance of each feature and button in the system that has been developed whether it is in accordance with user needs or not.
The following is a black box test table of test results on the GKS Kaliuda Congregation

Table 1: Black box testing admin

No	Function that was tested	Expected results	Information
1.	Admin login	After the login is accepted, the system displays the admin home page. If the input is incorrect, the system denies login access.	Succeed
2.	Main course	System display page main admin	Succeed
3.	Congregation data	Displays information related to the congregation	Succeed
4.	Print data	Can manage congregation data and print data	Succeed
5.	verification	Can do verification	Succeed
6.	Logout	Can logout	Succeed

The test results were declared 100% successful, tested in every function and there were no errors in every test tested. The test results have met the standards expected by customer needs.

4.13. System usability scale (SUS) testing

System Usability Scale (SUS) testing is an evaluation stage carried out after the system has been tested. This evaluation aims to determine the extent to which users are satisfied with the system that has been developed. This stage is important because it can provide an overview of whether the application created is in accordance with user needs or not .
The following is about the actions or scores obtained from respondents in testing the website -based Congregation Data Information System at the GKS Kaliuda Church using the System Usability Scale (SUS) testing method.

Table 2: SUS testing

N0	Question											
	Q 1	Q2	Q3	Q 4	Q 5	Q 6	Q 7	Q 8	Q 9	Q 10	X	X*2.5
1.	3	4	3	4	2	2	3	4	5	2	32	80
2.	4	3	3	4	3	3	4	2	2	4	32	80
3.	5	4	4	1	2	4	2	4	5	4	35	87.5
4.	3	2	5	2	3	3	4	5	1	2	30	75
5.	5	4	3	2	2	2	1	4	4	3	30	75
6.	4	4	3	2	2	3	4	5	3	4	34	85
7.	5	2	2	3	1	2	3	3	4	4	29	72.5
8.	3	2	2	3	5	1	1	2	4	3	26	65
9.	4	2	2	3	1	2	4	5	5	5	33	82.5
10.	4	3	3	5	5	2	1	1	1	2	27	67.5
	Average value											770

The following is the average formula for calculating SUS:

$$\bar{x} = \sum \frac{x = 80 + 80 + 87.5 + 75 + 75 + 85 + 72.5 + 65 + 82.5 + 67.5 + 95 + 70 + 67.5}{n = 10}$$

$$x = 770$$

$$\bar{x} = \sum \frac{}{n = 10}$$

$$= 77$$

Information :
R = Respond
Q = Question
$\bar{x}$= Average score
$\sum$ = Total SUS scores
n = Number of respondents

4.14. Analysis of test results

The results of the analysis of the black box testing showed that all features and functionality of the system functioned well without any problems. The results of the tests carried out were declared 100% successful, having been tested in every function and feature and there were no errors in every test tested. The assessment of the SUS test involving 10 respondents resulted in a total score of 77%S

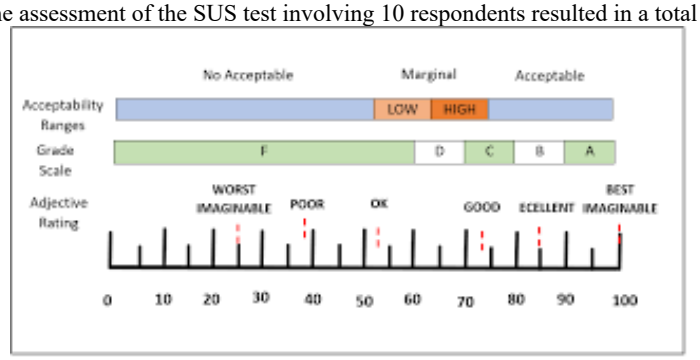


Figure 13: SUS Score

Based on the average calculation results of the SUS test, the next step is to determine the acceptance range, assessment scale, and evaluation based on adjectives. With an average score of 77, this system falls into the category of the “high” acceptance range, is on the “C” value scale, and gets a “Good” adjective assessment. Looking at the assessment categories, it can be concluded that the website -based congregation data information system at the GKS Kaliuda Church was built in the right way and can be used effectively by the admin and the community.

5. Conclusion

This study successfully developed a website- based congregational data collection information system at the GKS Kaliuda Church using the Waterfall method . By utilizing web technologies such as XAMPP, Bootstrap , JavaScript , and PHP, it makes it easier, congregational data collection is better with the feature of independent data input by the congregation. System testing with the black box method shows that the system functions optimally, where each feature is able to run well and has high torque. While the SUS test confirmed good acceptance from users from 10 statements answered by 10 respondents to determine the level of user satisfaction with the designed system, producing a value of 77 and reaching a range of acceptance that is included in the "High" category, with a scale value in the "C" category.

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2. Beloved father (Yunus Barnabas Talo) and mother (Erlin Merianti Natalia Andreas) who have contributed to the author's success.
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