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Design of a Web-Based Church Information System at The Glugur Congregation of the Indonesian Methodist Church

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Abstract

The church, as a religious institution, plays a vital role in nurturing the spiritual life of its congregation. In line with the development of information technology, churches are required to adapt to digital transformation in order to improve their services to the community. Indonesian Methodist Church Glugur Congregation still employs conventional methods for disseminating information and managing service data, such as manual records and verbal announcements, which are often ineffective and inefficient. Therefore, this study aims to design a web-based church information system to facilitate information distribution and support the structured management of church activities. The research methods used include literature study, observation, interviews, and documentation. The system developed includes key features such as congregation data management, worship schedules, church announcements, communication forums, and user access control based on roles (admin, church leaders, congregation). The implementation results show that this system improves data management efficiency and strengthens digital interaction between the church and its members. It is expected that this system will serve as an effective solution in supporting a more modern and adaptive church ministry.

Keywords: Church, Information System, Congregation, Ministry.

1. Introduction

The church, in response to the rapid advancement of technology, must be able to adapt in order to keep up with the times. This situation presents a challenge for church ministries to utilize technology as a means of serving the broader community. Therefore, with the development of information technology, particularly the internet, the church has the opportunity to take advantage of web-based information systems as a tool to enhance communication and services to the congregation. The purpose of this study is to facilitate easier access to information regarding church activities, worship schedules, announcements, and various other events.

2. Literature Review

2.1 System

A system is defined as a set of activities that are carried out repeatedly and continuously, working together in an integrated manner, designed to achieve a specific goal in accordance with a planned objective (Tyoso 2016).

2.2 Church Information System

A church information system is a highly useful tool for modern churches to manage operations and ministries more efficiently. With today's technological advancements, churches can take advantage of various features provided by information systems to enhance the effectiveness and efficiency of carrying out administrative tasks (Hendrik 2023).

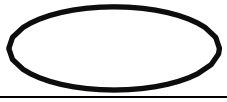
2.3 Church

The church is a fellowship of the saints, and for believers, this is something that must not be forgotten, as it is closely related to the redemptive work of Christ who has cleansed humanity from sin. Therefore, as believers, we are called to live in harmony and fellowship with God, to acknowledge the authority of the church, and to understand that we are members of the church, which is the fellowship of the saints (Kristi 2022).

2.4 Data Flow Diagram (DFD)

A Data Flow Diagram (DFD) illustrates the components of a system and the flow of data between these components, which include data sources, destinations, and data storage. The focus of a DFD lies in analyzing data flows and its logical design rather than its physical design. Before interpreting a DFD, we must first understand the symbols used. The following are the symbols commonly used in a DFD:

Table 2.1 Symbol Data Flow Diagram (DFD)

Symbol	Description
	Entity, data source or destination
	Process (Function being performed)
	Data Storage
	Data Flow

(References: Gunawan 2020)

2.5 Congregation

The gathering of believers is commonly referred to as the church congregation. This definition emphasizes that the congregation consists of those who dwell and have fellowship within a single church (Marbun 2015).

2.6 Database

A database is a collection of information stored in a computer in an organized manner, allowing it to be accessed through a computer program to retrieve information from the database (Effendy, Erwan, Elsa, Putri, and Ibnu 2023).

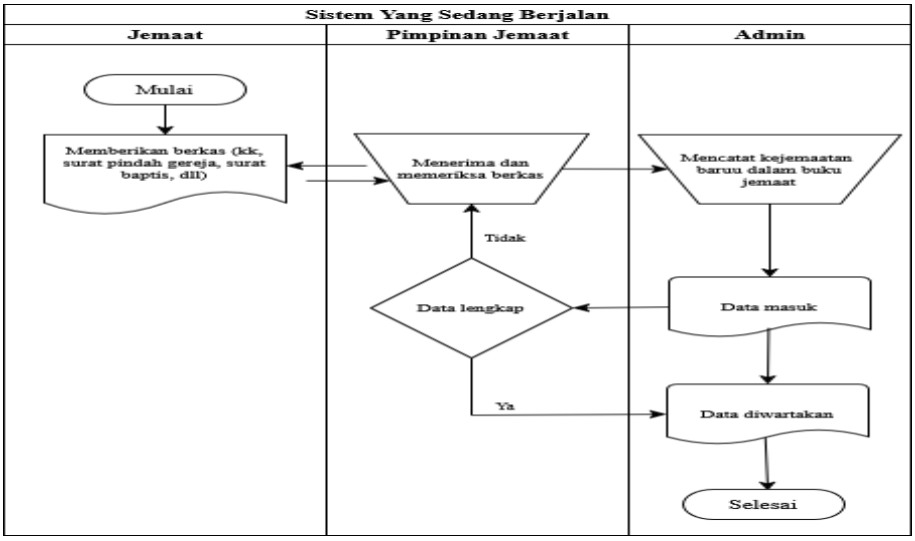
2.7 Website

The web is also a facility accessed through the internet. It is accessible because it has a server that provides web pages. The web also includes a domain that contains pages with information (Elsa 2024).

3. System Analysis and Design

3.1 Current System Flowchart

The current system analysis involves examining the ongoing issues at the Methodist Church Jemaat Glugur. Based on the results of observations, interviews, and collected documentation, the current problem lies in the recording of new congregation data and other related information, which is still done manually. To ensure that spiritual service information is effectively disseminated, the author illustrates the current workflow in the form of a flow map (Royani, Ivana, Penidas, and Dwi 2022). The process of recording new congregation data at the Methodist Church Jemaat Glugur can be seen in the flow map figures 3.1 below.



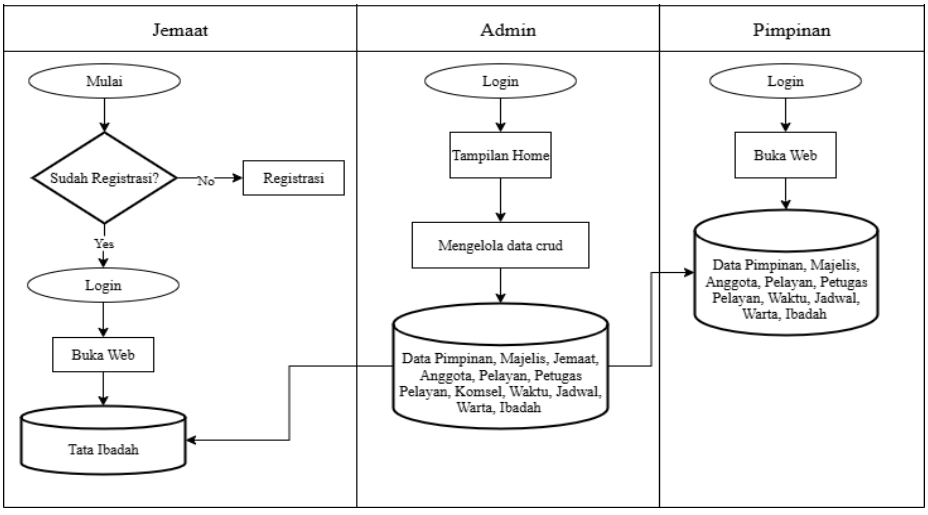
Figures 3.1 Flow Map for Recording New Congregation Data

The following is an explanation of the new congregation data flow map above:

1. The new congregation member submits documents such as the family card, church transfer letter, baptism certificate, etc., to the church leader. The church leader reviews the documents and then hands them over to the admin to be recorded in the congregation book.
2. The admin receives the new congregation data documents and records them in the congregation book. Once the data is entered, the admin confirms the information with the church leader. If the data is complete, it is immediately announced. Process completed.

3.2 Proposed System Analysis

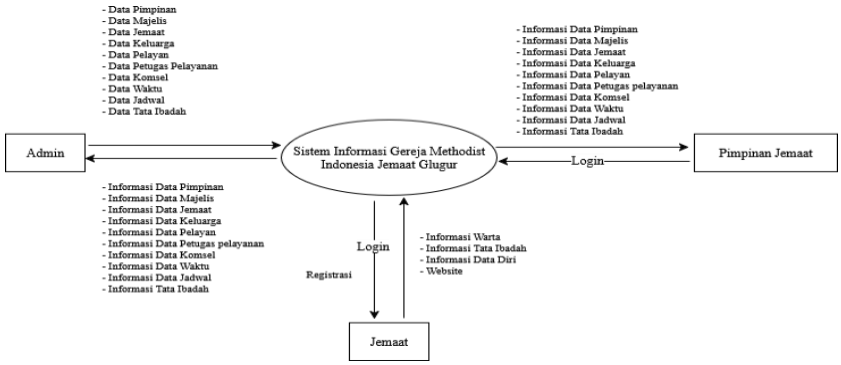
To address the ongoing issues at the Methodist Church Jemaat Glugur, the author has developed the following proposed web-based system design:



Figures 3.2 Proposed System Flow Map

3.3 Context Diagram

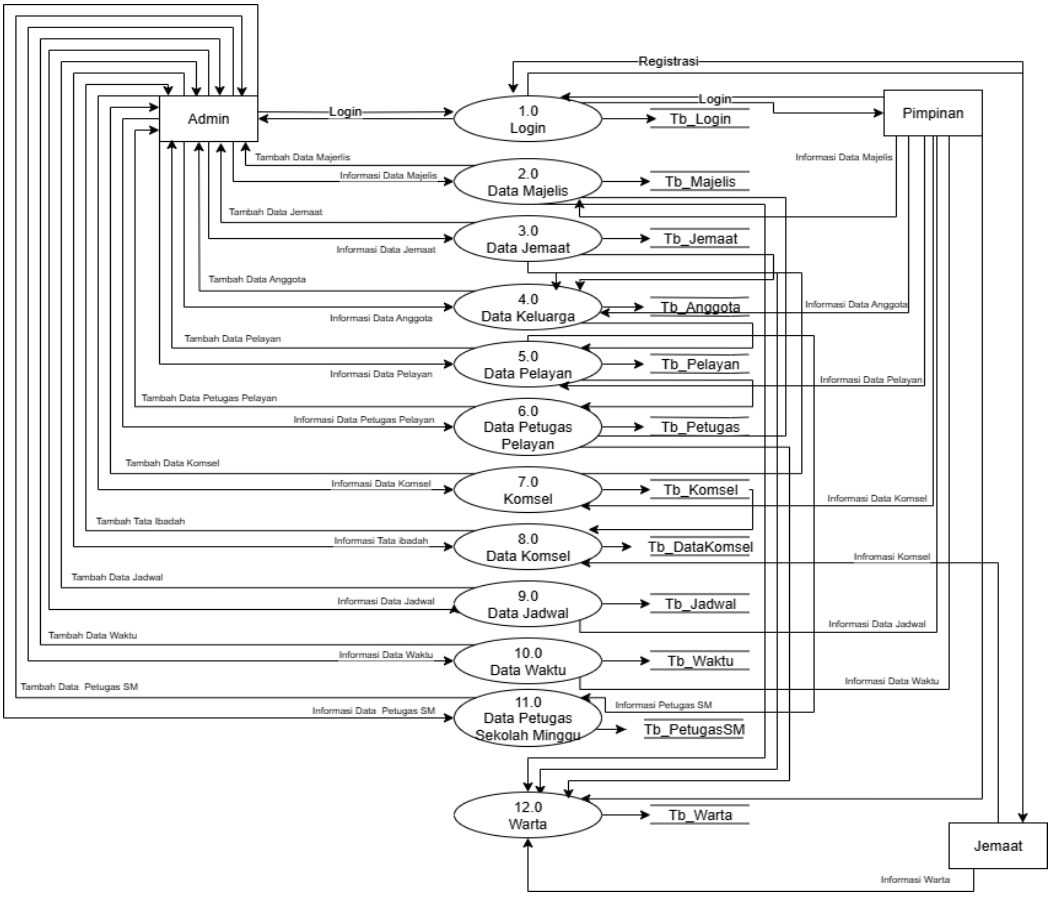
A context diagram is a simple diagram that describes the relationship between external entities, inputs and outputs of a system (Yoga 2023).



Figures 3.3 Context Diagram

3.4 Data Flow Diagram Level 1

A level diagram is a breakdown of the processes shown in the previous diagram to provide a more detailed explanation of the activities within those processes. The Level 1 diagram of the proposed church information system design for the Methodist Church Jemaat Glugur is presented as follows:



Figures 3.4 Data Flow Diagram Level 1

4. Results and Discussion

4.1 Results

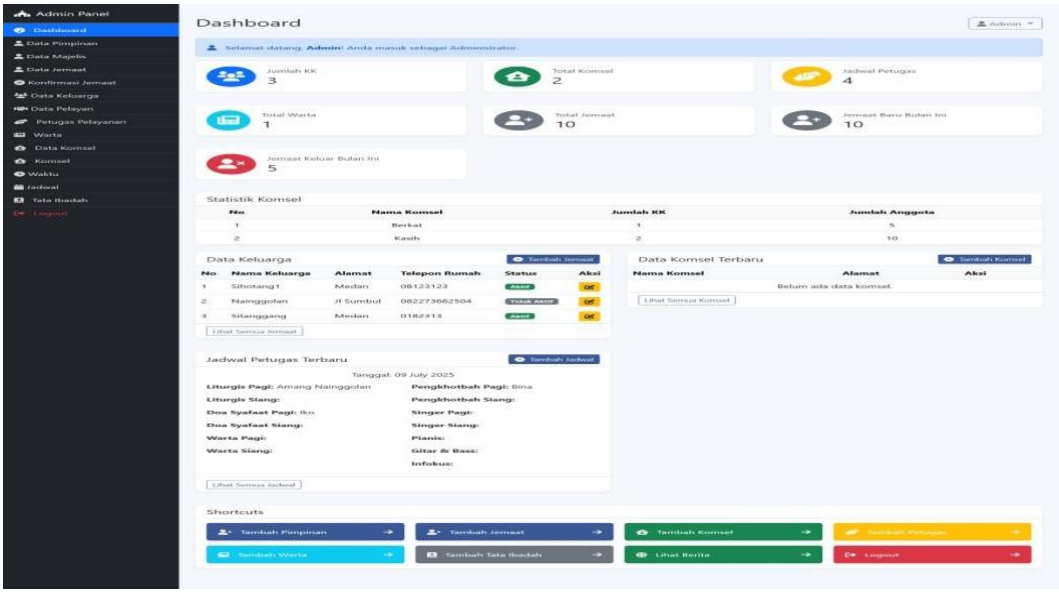
1. Login Page

The login feature is used to access the website dashboard. Users must enter a username and password to log in to the dashboard. If they do not have an account, they must first complete the registration process, and the system can only be accessed once the admin has confirmed the registration data. The login can be accessed by the admin, congregation members, and church leaders by entering their username and password.

Figures 4.1 Login Page

2. Administrator Dashboard Page

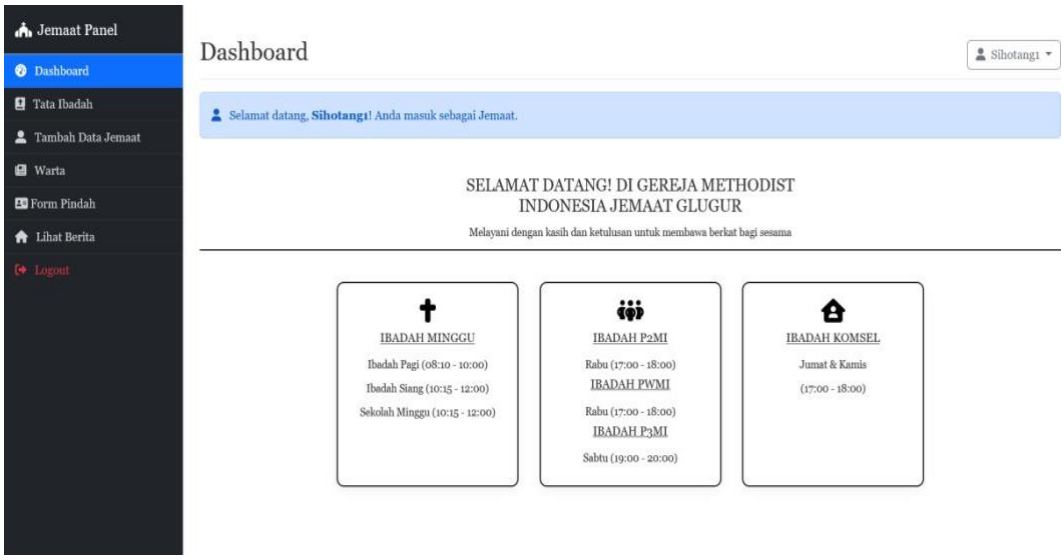
The administrator dashboard page is used to display the administrator interface. On this page, the administrator can view all available menus.



Figures 4.2 Administrator Dashboard Page

3. Congregation Dashboard Page

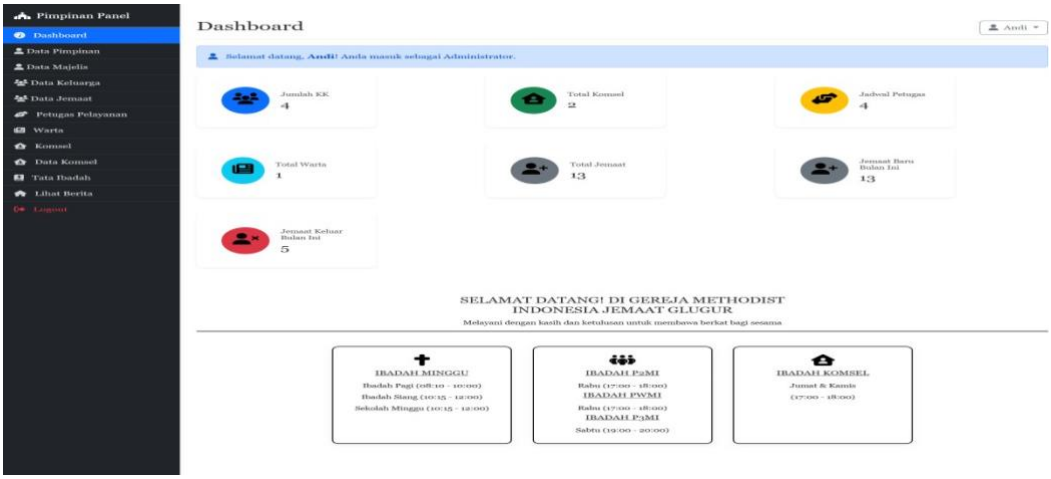
The congregation dashboard page is used to display the congregation interface. On this page, congregation members can view all available menus, including worship, announcements, website, and congregation profile.



Figures 4.3 Congregation Dashboard page

4. Leadership Dashboard Page

The leader dashboard page is used to display the leader interface. On this page, the leader can view all available menus, including leader data, council data, congregation data, ministry data, service personnel data, worship, announcements, and website.



Figures 4.2 Leadership Dashboard Page

4.2 Result

Based on the results of the testing conducted on the web-based church information system at the Methodist Church Indonesia Jemaat Glugur, it can be concluded that the system operates according to the specified requirements and functionalities. The following are the test results:

1. Administrator Testing

Table 4.1 Testing on Administrator

No.	Function Tested	Result	Description
1	Login	Administrator can log in as Admin using username and password.	Valid
2	Fill in leader data form	Admin can add, edit, and delete data in the form.	Valid
3	Fill in council data form	Admin can add, edit, and delete data in the form.	Valid
4	Confirm congregation	Admin can confirm congregation data.	Valid
5	Fill in congregation data form	Admin can add, edit, and delete data in the form.	Valid
6	Fill in service personnel data form	Admin can add, edit, and delete data in the form.	Valid
7	Fill in announcement form	Admin can add, edit, and delete data in the form.	Valid
8	Fill in cell group form	Admin can add, edit, and delete data in the form.	Valid
9	Fill in cell group data form	Admin can add, edit, and delete data in the form.	Valid
10	Fill in time form	Admin can add, edit, and delete data in the form.	Valid
11	Fill in schedule form	Admin can add, edit, and delete data in the form.	Valid
12	Fill in worship order form	Admin can add, edit, and delete data in the form.	Valid

2. Congregation Testing

Table 4.2 Testing on the Congregation

No.	Function Tested	Result	Description
1	Login	Congregation members can log in if they have an account.	Valid
2	Registration	Congregation members without an account can register.	Valid
3	Access "My Biodata"	System displays congregation member's biodata.	Valid
4	Access worship order	System displays the worship order.	Valid
5	Access cell group	System displays the cell group.	Valid
6	Access cell group data	System displays cell group data.	Valid
7	Access add congregation data	System displays form to add congregation data.	Valid
8	Access announcements	System displays announcements.	Valid
9	Access transfer form	System displays church transfer form.	Valid
10	View website	System displays the website.	Valid

3. Church Leader Testing

Table 4.2 Testing on leadership

No.	Function Tested	Result	Description
1	Login	Church leaders can log in if they have an account.	Valid
2	Access leader data	System displays leader data.	Valid
3	Access council data	System displays council data.	Valid
4	Access congregation data	System displays congregation data.	Valid
5	Access family data	System displays family data.	Valid
6	Access service personnel	System displays service personnel data.	Valid
7	Access announcements	System displays announcements.	Valid
8	Access cell group data	System displays cell group data.	Valid
9	Access worship order	System displays the worship order.	Valid
10	View website	System displays the website.	Valid

5. Conclusion and Suggestions

5.1 Conclusion

Based on the analysis and design of the web-based church information system conducted at the Methodist Church Indonesia Jemaat Glugur, the following conclusions can be drawn:

1. The information needs of both the congregation and the church administrators were successfully identified through observation, interviews, and documentation. These included data such as congregation membership, worship schedules, church activities, and service personnel.
2. The designed web-based church information system accommodates the main information needs of the congregation and administrators through features such as congregation data management, worship schedule announcements, and service-related information.
3. The implementation of security principles, such as user authentication and access rights restrictions, has successfully enhanced data security and integrity, ensuring that important church data is stored and managed more securely and systematically.

5.2 Suggestions

Based on the results of the analysis, several suggestions can be put forward to improve the web-based church information system at the Indonesian Methodist Church, Glugur Congregation, as follows:

1. Additional Feature Development: Although the current system meets the primary needs, it is recommended to add complementary features in the future, such as real-time service reports, online donation forms, and an automatic notification system.
2. Regular Evaluation: It is recommended that the church conduct periodic evaluations of the system to assess performance and efficiency, and to adapt to the congregation's needs and technological developments.
3. Advanced System Integration: In the future, this system can be further developed to integrate with the church's financial system and external communication platforms such as WhatsApp or email newsletters.
4. Enhanced Security: The system should continue to be developed with more advanced digital data security features such as automatic backups, data encryption, and user activity monitoring.
5. Application Development: Although the current system meets the primary needs, it is recommended that the system be further developed into a mobile-based application, such as an Android app.

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