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Church Management Information System of Syaloom Imandi Bolaang Mongondow

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Abstract

The GMIBM Syaloom Imandi Church is a community service organization under the GMIBM Synod, headquartered in Kotamobagu. However, the existing church information system is not yet computerized, leading to inefficiencies in managing church data such as congregation records, worship schedules, church inventory, and work programs. Information management relies solely on physical archives and announcements during services, making data retrieval difficult and increasing the risk of information loss. Therefore, a system is needed to present church information efficiently. This church management information system was developed using the Prototype system development method and implemented with PHP programming language and MySQL database. The system allows the church secretary to update information regularly, covering church history, organizational structure, vision and mission, worship schedules, church activities, congregation data, offerings, inventory, letters, and church-related news. The results of this study are a web-based church management information system that effectively disseminates information, enhances transparency, and optimizes administration at the GMIBM Syaloom Imandi Church. Future developments include adding a financial calculation feature (Congregation Fund), improving the user interface, integrating weekly devotionals, and expanding the system to an Android platform to enhance functionality, accessibility, and user experience.

Keywords*—information system, management, church, bolaang mongondow, GMIBM*

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1. INTRODUCTION

In today's digital era, information technology is crucial in enhancing operational efficiency and decision-making across various types of organizations, including religious institutions. A web-based Management Information System (MIS) is an innovative solution to optimize data management, improve communication, and strengthen data-driven decision-making processes. Implementing a web-based MIS in the Evangelical Church in Bolaang Mongondow (GMIBM) Syaloom Imandi represents a strategic initiative to address challenges in administrative management and church services.

Currently, GMIBM Syaloom Imandi relies on manual processes for information management, using physical archives and direct announcements. This approach results in inefficiencies and increases the risk of data loss and difficulties accessing essential information. Similar challenges are prevalent in other religious organizations, where resistance to technology adoption often arises due to cultural norms and traditional practices [1]. In this study, the technology adoption rate in church settings is relatively low, at only 41%, mainly due to a lack of understanding of its benefits and concerns about disrupting long-standing traditions. Thus, an approach that integrates technology while respecting organizational values is essential.

Previous studies provide a solid foundation for developing Management Information Systems (MIS) in organizations such as GMIBM Syaloom Imandi. Research shows that using Laravel frameworks and MySQL databases in telecommunication tower monitoring systems significantly improves data management and reporting efficiency[2]. In addition, applying the prototyping method in MIS development encourages close collaboration between developers and users, allowing the creation of systems that meet the specific needs of the organization [3]. This approach is particularly important for church management, which requires systems supporting administrative, financial, and congregation-

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related activities. Moreover, previous studies highlight the importance of systematic approaches in developing web-based applications for public services [4], which can also be effectively applied to religious organizations.

The prototype method in software development is an effective strategy for improving user engagement and refining system requirements. By creating preliminary system versions, developers facilitate early user interaction, ensuring the final product aligns with user needs ([5] [6]. Prototypes serve as tangible models of the system, allowing stakeholders to visualize features and provide feedback, reducing the risk of miscommunication. The iterative nature of prototyping supports agile methodologies, enabling continuous refinements and real-time adjustments for user-centred and high-quality solutions [5] [7]. This adaptability to changing requirements is crucial in today's dynamic development environments [6].

Implementing a web-based MIS not only aids in internal church management but also supports transparency and accountability, particularly in financial management. Many religious organizations face challenges in financial sustainability due to inadequate financial management systems [8]. A well-designed MIS that provides accurate financial data can enable churches to make better strategic decisions regarding resource allocation and fundraising efforts. Additionally, a web-based platform can enhance community engagement by providing real-time access to church information, promoting events, and offering relevant educational resources [9].

Given these challenges, this study aims to develop a web-based Management Information System for GMIBM Syaloom Imandi, using the prototype method for system development. This system aims to assist congregants in accessing various church-related information, such as the church's history, vision and mission, organizational structure, member details, worship schedules, worship activities, announcements, letters, and church inventory. Additionally, the system is intended to support the church secretary in efficiently processing and managing church data. The research seeks to address these needs by developing a comprehensive system that enhances information accessibility and administrative processes within the church.

2. METHODOLOGY

The approach used in this study is the Prototyping method [10]. This method develops a management information system (MIS) for iterative development and continuous user feedback. Creating a preliminary version of the system, allows it to be refined and improved based on the evolving needs of the Evangelical Christian Church of Bolaang Mongondow Syaloom Imandi.

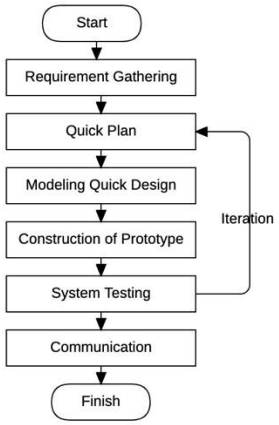

Figure 1. Research Flowchart

This iterative process ensures that the MIS aligns with the specific requirements of the church's operations, facilitating improved data management and administrative processes. The flowchart of the research process, as shown in the figure below, illustrates the key stages involved in developing and implementing of the MIS.

Here are the concise stages of the research process:

a. **Requirement Gathering**: Collect user needs, including church history, vision, mission, organizational structure, member details, worship schedules, activities, announcements, letters, and inventory information.
b. **Quick Plan**: Develop a basic plan outlining core features, such as access to schedules, member details, and inventory management, and gather stakeholder feedback.
c. **Modelling Quick Design**: Create initial wireframes and workflows for the system's features and gather stakeholder feedback to refine the design.
d. **Construction of Prototype**: Develop a functional prototype with key features like user authentication, member management, worship schedules, and inventory tracking, followed by internal testing.
e. **System Testing:** Deploy the prototype for user testing, gather feedback on usability and

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functionality, and refine the system based on the results.

f. **Communication**: Ensure continuous communication with stakeholders, incorporating feedback to make iterative improvements to the system.

3. RESULT AND DISCUSSION

This chapter provides an overview of the system's functionality, evaluates its effectiveness, and examines how well it meets the needs of the church community. It also discusses any challenges encountered during the development and testing phases, and offers insights into the improvements made to optimize the system for better user experience and performance.

3.1 Requirement Gathering

The initial stage involved collecting detailed user needs, which included gathering essential information such as the church's history, vision, mission, organizational structure, member details, worship schedules, activities, announcements, letters, and inventory. System analysis is performed to understand the processes within the existing system or current system. In the current system, congregants visit the church to seek information. The current system in operation can be seen in Figure 2.

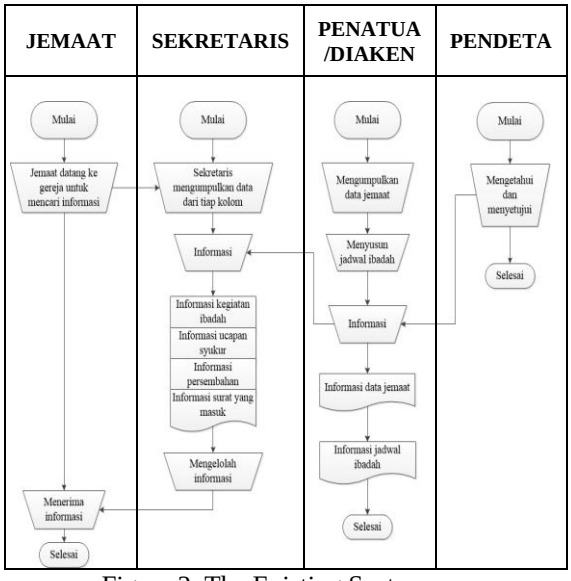

Figure 2. The Existing System

The existing issue in Figure 2 highlights that congregants visit the church to seek information, with the Secretary providing details collected from deacons/elders, such as worship schedules, thanksgiving cover information, offering details, and incoming letters. Based on this, the system's functional requirements can be analyzed as follows:

a. **User Authentication and Roles**: Support different user roles (e.g., secretary, deacon, congregant). The Secretary manages data, while congregants can view information without logging in.
b. **Information Management**: This will allow the Secretary to easily input, update, and manage church-related data such as like schedules, offering details, and incoming letters.
c. **Data Search and Access**: Provide a search function for the Secretary and congregants to find relevant information quickly.
d. **Information Display**: Display data clearly and organized so congregants can easily access it.
e. **Efficiency and Ease of Use**: Ensure the system is user-friendly for the Secretary and congregants.
f. **Data Security and Integrity**: This function ensures data accuracy and prevents unauthorized changes while allowing the Secretary to manage sensitive information.

These requirements aim to enhance efficiency and streamline information sharing between the church and its members.

3.2 Quick Plan

Based on the gathered requirements, a basic plan was developed outlining the core functionalities, such as access to worship schedules, member records, and inventory management. Feedback from church leaders and stakeholders ensured that the plan aligned with the church's specific needs and expectations.

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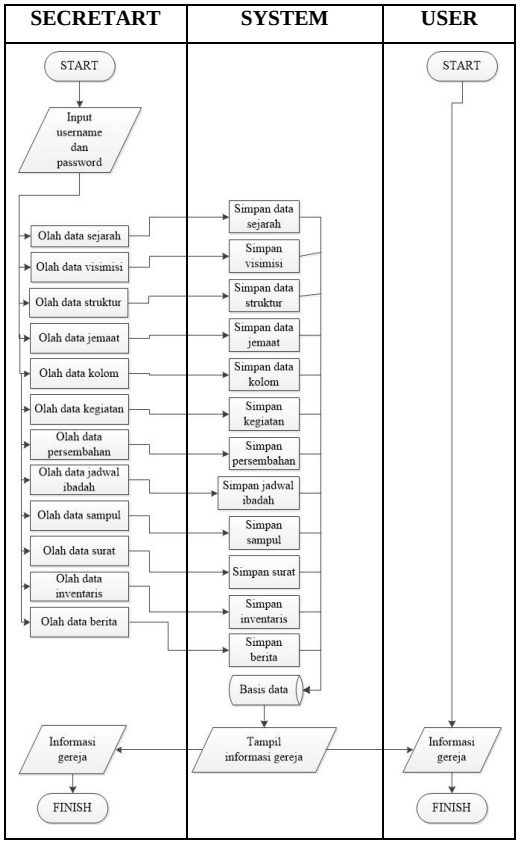

Figure 3. The Proposed System

Figure 3 illustrates the proposed new system. The Secretary, who serves as the admin, performs the login process. After logging in, the Secretary is given the secretary menu to manage data. Congregants and pastors do not log in and can directly access the church information entered by the secretary.

3.3 Modeling Quick Design

In this phase, the quick design modelling defines the system's core features and structure, including creating a context diagram to show interactions between the system and external entities. The database structure is also designed, detailing tables and their relationships to ensure efficient data organization and access. These components provide a clear foundation for the subsequent development stages. This context diagram will illustrate the relationship between the system and its external environment (external entities). The proposed context diagram for the Church Management Information System (CMIS) at GMIBM Syaloom Imandi can be seen in Figure 4.

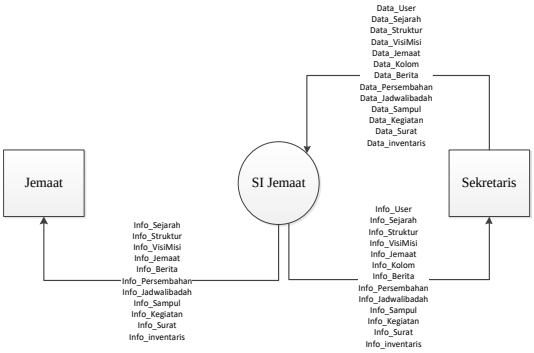

Figure 4. Diagram Context CMIS

Figure 4 illustrates the two users supporting the church information system: the Secretary and the Congregants. In the diagram, Congregants access the system to view information such as member data, history, vision and mission, structure, worship schedule, activities, offerings, covers, letters, inventory, and news. Like the Congregants, the Pastor can also view the system's information. In contrast, the Secretary functions as the admin, inputting data into the system, including user data, member details, history, vision and mission, structure, worship schedule, activities, offerings, covers, letters, inventory, and news.

The context diagram shows how users interact with the system, which manages various data such as member details, schedules, and inventory. The database structure, as shown in Table 1 supports these functions by storing and organizing the necessary data. The relationship between the context diagram and database ensures efficient data management, from input by the secretary to access by congregants.

Table 1. Database Structure

No	Table Name	Number of Fields	Description
1	tb_user	3	Stores user data
2	tb_jemaat	8	Stores congregant data
3	tb_sejarah	2	Stores historical data
4	tb_struktur	3	Stores organizational structure
5	tb_jadwalibadah	5	Stores worship schedule data
6	tb_kegiatan	6	Stores activity data
7	tb_persembahan	4	Stores offering data

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No	Table Name	Number of Fields	Description
8	tb_sampul	4	Stores thanksgiving envelope data
9	tb_surat	4	Stores letter data
10	tb_berita	4	Stores news data
11	tb_inventaris	5	Stores inventory data
12	tb_submenu	4	Stores submenu data
13	tb_menu	3	Stores menu data
14	tb_visimisi	3	Stores vision and mission data
15	tb_kolom	2	Stores church group data

Table 1 outlines the database structure for the Church's Management Information System, listing tables that store various data types such as user information, congregant details, church history, organizational structure, schedules, activities, offerings, and inventory. Each table has a specific number of fields corresponding to the data it stores. For example, the *tb_user* table holds user data in three fields, while the *tb_jemaat* table stores detailed member information in eight fields. These tables enable efficient data management and retrieval within the system.

As detailed in the previous section, the database structure outlines the various tables designed to store church-related data. These tables are interconnected to allow efficient data retrieval and management. For instance, the "*tb_jemaat*" table stores member information, while the "*tb_persembahan*" table tracks offerings, linked through relevant fields. The relationships among these tables are visually represented in the table relationship diagram, as shown in Figure 5, illustrates how each table connects to ensure smooth data flow and retrieval.

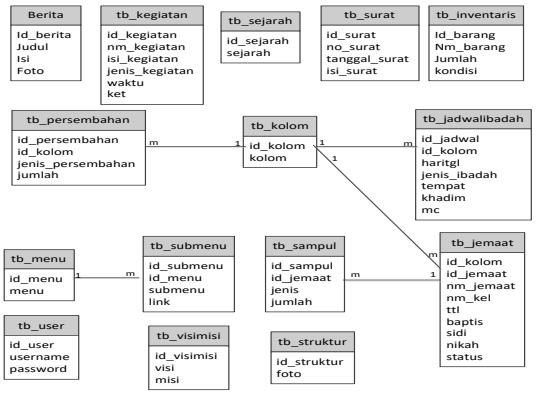

Figure 5. Table Relationship Diagram

The relationships between the tables in the system are structured to ensure efficient data management and retrieval. The *tb_jemaat* table stores congregant details, which can be associated with the *tb_sampul* and *td_kolom* table to display each member's relevant Thanksgiving envelopes and church groups. The *tb_kolom* and *tb_persembahan* tables are connected to a store offering information in each church group. Other tables, such as *tb_sampul*, *tb_surat*, and *tb_inventaris*, also interact to manage specific church-related data. The *tb_menu* and *tb_submenu* tables organize and display navigation options, ensuring a user-friendly interface for the system's various users.

3.4 Construction of Prototype

A functional prototype was developed with features like authentication, member management, worship schedules, and inventory. System implementation involves applying the design to create a usable system. The main page, shown in Figure 6, serves as the user interface, offering menus for home, congregation, member profiles, activities, bulletin, inventory, login, and worship schedules.

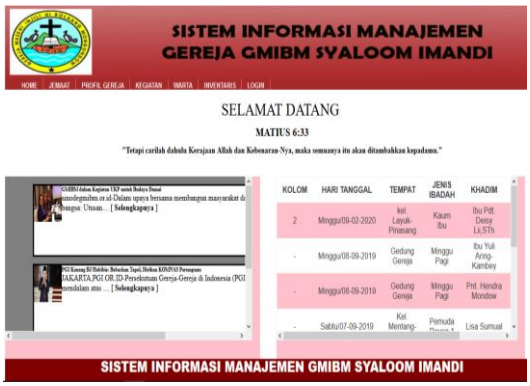

Figure 6. Main Page

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The login page allows registered users to authenticate with their username and password. Only the church secretary can log in as an admin, while congregants can access the system without logging in. The login page is shown in Figure 7.

Figure 7. Login Page

The admin page is accessible to logged-in users, such as the Secretary, who can manage data, as shown in Figure 8.

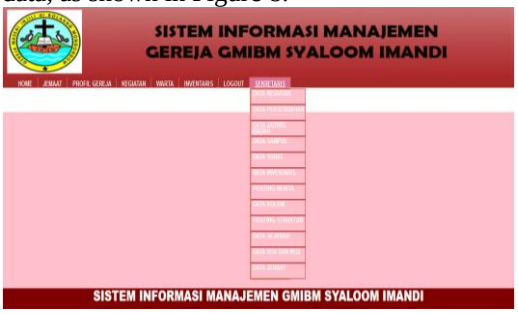

Figure 8. Admin Page

The Congregation page displays details like name, family name, column, date of birth, baptism, confirmation, marriage, and status, with a search form to find members. The page is shown in Figure 9.

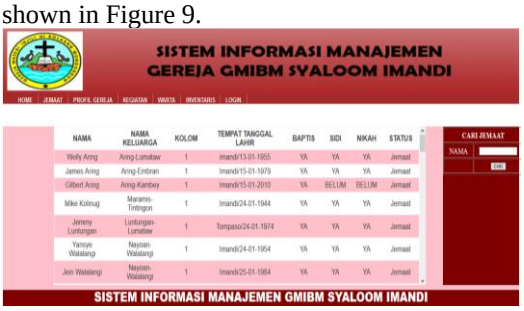

Figure 9. Congregation Page

The Activities page displays the name, content, type, time, and notes of activities for users. The appearance of the Activities page is shown in Figure 10.

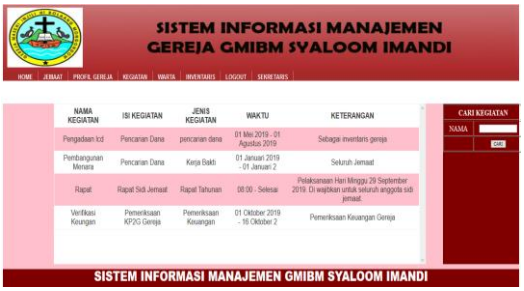

Figure 10. Activities Page

The Inventory page displays the name, quantity, and condition of items for users. The appearance of the Inventory page is shown in Figure 11.

Figure 11. Inventory Page

3.5 System Testing

The developed system prototype was thoroughly evaluated through system testing to ensure its functionality, reliability, and alignment with user requirements. The prototype was deployed for user testing, as shown in Table 2.

Table 2. System Testing

No	Test Case	Expected Outcome	Result
1	Login Page	Display the main admin page	✓
2	News Page	Add, edit, delete, view, and search news with a limit of four news items, and include a "Read More" button	✓
3	Congrega-tion Page	Add, edit, delete, view, and search congregation data	✓
4	Church Profile Page	Display information on history, vision and mission, organizational structure	✓
5	History Page	Add, edit, delete, view, and search history data.	✓
6	Vision & Mission Page	Add, edit, delete, view, and search vision and mission data	✓
7	Organiza-tional Structure Page	Add, edit, delete, view, and search structure, position, and name	✓

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No	Test Case	Expected Outcome	Result
8	Activities Page	Add, edit, delete, view, and search church activity data	✓
9	Bulletin Page	Display information on offerings, worship schedules, cover pages, and letters	✓
10	Offering Page	Add, edit, delete, view, and search offering data	✓
11	Worship Schedule Page	Add, edit, delete, view, and search worship schedule data	✓
12	Sampul Page	Add, edit, delete, view, and search guest and congregation Thanksgiving envelope data	✓
13	Letter Page	Add, edit, delete, view, and search incoming and outgoing letter data	✓
14	Letter Content Page	Display letter photos.	✓
15	Inventory Page	Add, edit, delete, view, and search church inventory data	✓
16	Kolom Page	Add, edit, delete, view, and search church group data	✓

Table 2 highlights the essential functionalities of the church management system, detailing the various pages and their expected outcomes. The functional requirements were tested using black box testing, and successful testing was conducted for all functional needs. This ensures the system effectively supports the church's operations, improving organizational efficiency and member engagement.

3.6 Communication

Continuous communication with stakeholders ensured that the final system met their expectations. Based on the feedback received, further iterative improvements were made, ensuring that the system's final version effectively addressed the church's information management needs.

4. CONCLUSION

This research concludes with two significant findings:

The implemented Church Management Information System (CMIS) effectively facilitates the dissemination of critical church-related information within the Evangelical Christian Church in Bolaang Mongondow. This encompasses vital data such as church profiles, member demographics, worship schedules, event calendars, inventory management, Sampul records, Offering contributions, and incoming communications. The accessibility of this information through the CMIS enhances communication channels and fosters transparency amongst church staff and congregants.

The CMIS significantly augments the administrative capabilities of the church secretary. The system streamlines data processing by automating the management of church profiles, member records, worship schedules, inventory tracking, Sampul records, Offering records, Church activities, and incoming Letters. This automation substantially reduces administrative burden while simultaneously improving data accuracy and operational efficiency, ultimately contributing to optimized overall church management.

The system's functionalities were validated through black box testing, confirming reliable performance. Table 2 outlines the core features of the CMIS, ensuring it meets requirements. This enhances organizational efficiency and member engagement by providing seamless access to essential church information.

5. RECCOMENDATION

Several recommendations for future development of the system include adding a financial calculation feature to provide more detailed insights into church finances and improving the user interface to make it more visually appealing and user-friendly. Additionally, incorporating a feature for weekly devotional materials accessible to congregants would enhance the system's value. Lastly, expanding the system to an Android-based platform would improve accessibility, enabling users to access the information more conveniently. These improvements would enhance the system's functionality, user experience, and accessibility for church members and administrators.

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