Designing Management Information System for Al-Ikhlas Mosque Activities in Kota Pari Village Using Waterfall Method

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A B S T R A C T

This research aims to address the issues faced in the management of activities at Al-Ikhlas Mosque in Kota Pari Village. Currently, the management of mosque activities is still done manually using notebooks and notice boards, which often lead to errors and delays in providing information to the congregation. Additionally, the management of mosque funds and activities is also less effective due to a lack of coordination between the mosque administrators and the congregation. To overcome these problems, this research is expected to produce a mosque activity management information system that can be used to manage mosque funds, activity schedules, and others. The Waterfall method is chosen as it is suitable for structured and well-defined system development projects. This method consists of stages such as analysis, design, implementation, testing, and maintenance. The result of this research is a management information system for Al-Ikhlas Mosque in Kota Pari Village, which can be used to manage mosque funds, activity schedules, and others. The system is designed to facilitate the management of mosque activities and provide accurate and timely information to the mosque congregation. Moreover, the system can also be utilized to enhance coordination between mosque administrators and the congregation. It is expected that the implementation of this system will improve efficiency and effectiveness in managing mosque activities.

Keyword : Mosque Activity Management, Innovation, Website, Waterfall

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1. INTRODUCTION

Mosques serve as centers for religious activities for the community and other Muslim communities. Zakat and almsgiving, cash information (mosque financing), development, education, learning, community empowerment, holiday celebrations, and other activities are some common practices. Despite the crucial role of mosques in social activities, they do not align with the demands of modern society that require immediate information. This indicates that mosque development in the current technological era is still not optimal.

The functionality of a mosque as a center for community activities is not due to a simple social context but rather due to the social management process in the mosque that serves as a social bond[1]. The mosque profile also represents a comprehensive picture of a mosque's character and is useful as an information center to determine steps in enriching the mosque [2]. A well-managed mosque will yield positive results - the physical condition of the mosque will be well-maintained, mosque activities will run smoothly, the congregation will be well-nurtured, and the mosque will prosper [3]. In the current Industry 4.0 era, management information systems are widely used in mosque management. When this technology can control and manage information in a structured and organized manner, it becomes a reference for relevant parties to create policies and effectively communicate information to the surrounding community[4]. The public needs to access the management information system, activities, and mosque finances anytime and anywhere. As a result, this study uses a web-based mosque management information system (SIM) that can be accessed through a browser without the need for installation. A website is a method to display information on the internet, including text, images, sound, and interactive videos, which can connect one document to another through hypertext and can be accessed via a browser [5].

Based on observations at Al-Ikhlas Mosque in Kota Pari Village regarding the manual management of activities using notebooks and information boards, it often leads to errors and delays in providing information to the congregation. Another issue is the lack of coordination between the mosque administrators and the congregation in managing mosque funds and activities, as well as the limitations in providing timely and accurate information to the congregation regarding mosque funds and activities, resulting in ineffective and inefficient mosque management.

To address these problems, a system is needed to manage mosque funds and activity schedules. The Waterfall method was chosen as it is suitable for projects that require clear and structured stages, thus producing an effective and efficient system in managing mosque activities. The development of the Al-Ikhlas mosque management information system in Kota Pari Village using the Waterfall method is expected to facilitate the management of mosque activities and provide accurate and timely information to the mosque congregation. Additionally, the system can enhance coordination between mosque administrators and the congregation, as well as improve the efficiency and effectiveness of mosque activities. Al-Ikhlas Mosque is also a religious organization that requires better data processing by BKM Al-Ikhlas [6]. Therefore, this research aims to develop a web-based application for managing Al-Ikhlas Mosque in Kota Pari Village, which can be used by mosque administrators to manage mosque funds and activity schedules. The application is also expected to address the challenges faced in mosque management and enhance efficiency and effectiveness in managing mosque activities, making it easier for the congregation to obtain necessary information at the mosque.

To achieve these objectives, this research will conduct an analysis of user needs and desires, as well as the development of the Al-Ikhlas mosque management website using the Waterfall method. Additionally, the research will conduct testing and evaluation of the developed application to assess its success in improving the efficiency and effectiveness of mosque management. The research method will use the Waterfall method[7] as in previous studies. The researcher will integrate information between mosque administrators and the community/congregation around Al-Ikhlas Mosque in Kota Pari Village. The researcher will collaborate with BKM Masjid Al-Ikhlas Desa Kota Pari and the community to gather information on mosque activities in the village of Kota Pari. Through the implementation of a web-based information system, it is expected that the community of Kota Pari Village will obtain information on all mosque activities, especially at Al-Ikhlas Mosque in Kota Pari Village.

2. RESEARCH METHOD

The research methodology describes the design of the research, which consists of procedures or steps that need to be followed. The research method applied at Al-Ikhlas Mosque in Kota Pari Village, Pantai Cermin, Serdang Bedagai Regency, North Sumatra, is the Waterfall model of the SDLC method. The Waterfall method is a software development approach that focuses on a linear and sequential process [8]. The waterfall model is also commonly referred to as the sequential linear model or classic life cycle model. It provides a sequential or ordered approach to software development [9]. In this method, each phase must be completed before starting the next phase. Here is a general overview of the Waterfall method in the context of mosque activity management application:

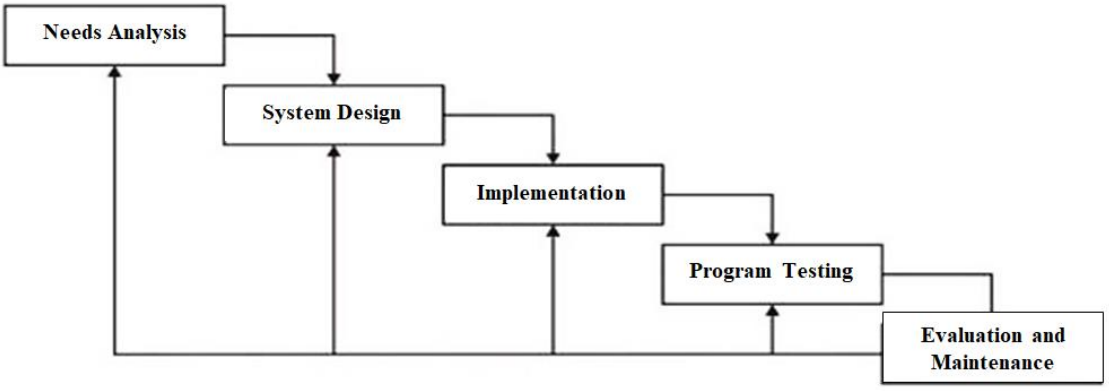

Figure 1. System Development Life Cycle (SDLC) Waterfall

a) Needs Analysis: This stage involves gathering information about the requirements and expectations of users related to the mosque activity management application. Here, the researcher conducts a needs analysis process. Firstly, data is collected through direct research observations at Al-Ikhlas Mosque to gather information about activities, finances, photos, etc. Secondly, interviews are conducted through face-to-face interactions and direct questioning between the researcher and the interviewees, which includes the administrators of Al-Ikhlas Mosque in Kota Pari Village.
b) System Design: This stage involves planning and designing the system, including technology selection, user interface design, and database selection. To facilitate the development of the system, the researcher needs several designs, including creating system designs using the Unified Modeling Language (UML) diagrams.
c) Implementation: This stage involves coding and system implementation according to the design.
d) Program Testing: This stage involves testing the system to ensure that it functions according to specifications and user expectations.
e) Evaluation and Maintenance: This stage involves system installation and data migration to the production environment with system maintenance to ensure that the system continues to function well and meets changing user needs.

3. RESULTS AND DISCUSSION

The Management Information System for Al-Ikhlas Mosque Activities in Kota Pari Village, based on a website, is designed according to the needs of the mosque administrators and the community/congregation in the village of Kota Pari to facilitate the planning and organization of activities, as well as improve efficiency and effectiveness in managing mosque activities. It aims to enhance communication between stakeholders and provide accurate and up-to-date information. Following the life cycle described above, the research consists of several stages adapted to the Waterfall method, as follows:

3.1. Use Case Diagram

A use case diagram is one of the types of diagrams used in software development methods to illustrate scenarios or activities that can be performed by the system [10]. Below is the use case diagram for the Management Information System of Al-Ikhlas Mosque based on a website:

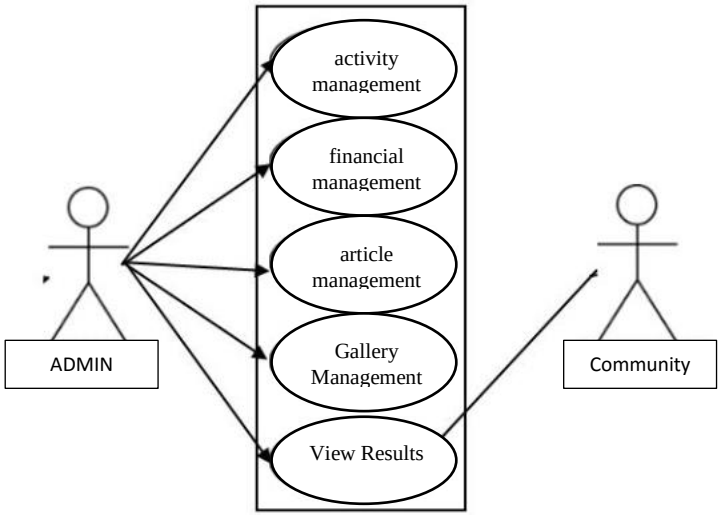

Figure 2. Use Case Diagram for the Management Information System of Al-Ikhlas Mosque

In the use case diagram above, it shows that the admin has access to all functions, including login, news/activity management, financial management, gallery management, article management, and logout. On the other hand, users or the community can only access and view the displayed reports on the website.

3.2. Activity Diagram Design

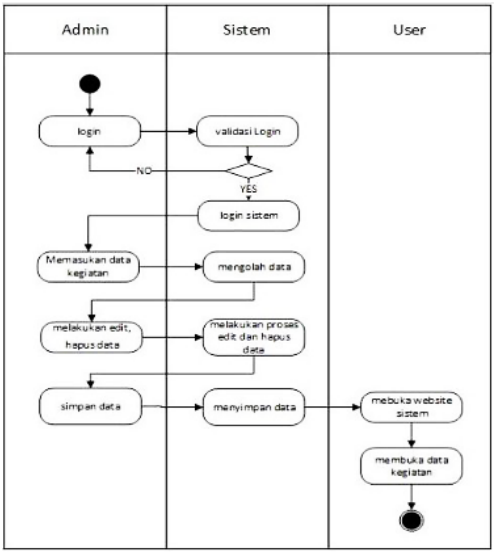

Figure 3. Activity Diagram for the Management Information System of Al-Ikhlas Mosque

The activity diagram above illustrates the activities performed by the admin, starting from logging into the system to entering activity data, until the data becomes visible to the user.

3.3. Square Diagram Design

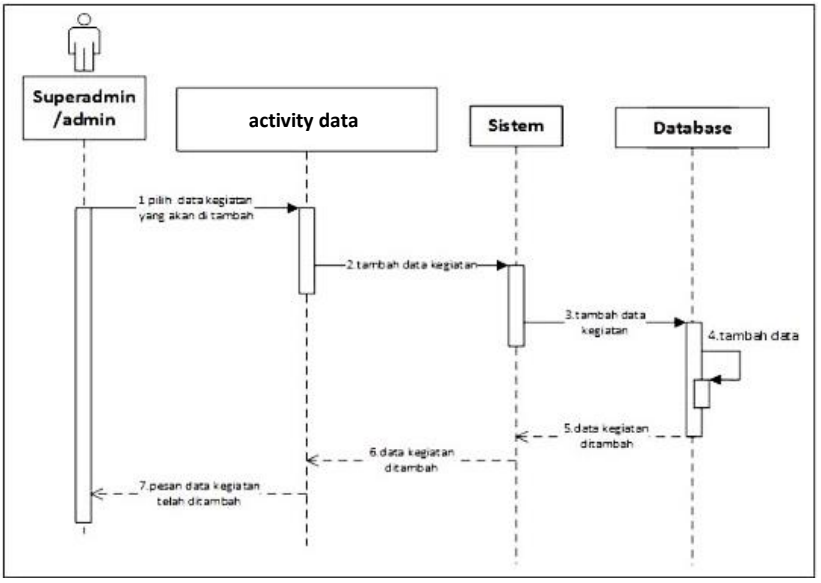

Figure 4. Sequence Diagram for the Management Information System of Al-Ikhlas

The sequence diagram above depicts the process carried out by the admin, including selecting data to add/modify/delete, adding/modifying/deleting activity data, and sending a message when the activity data has been added/modified/deleted.

3.4. Application Database Design

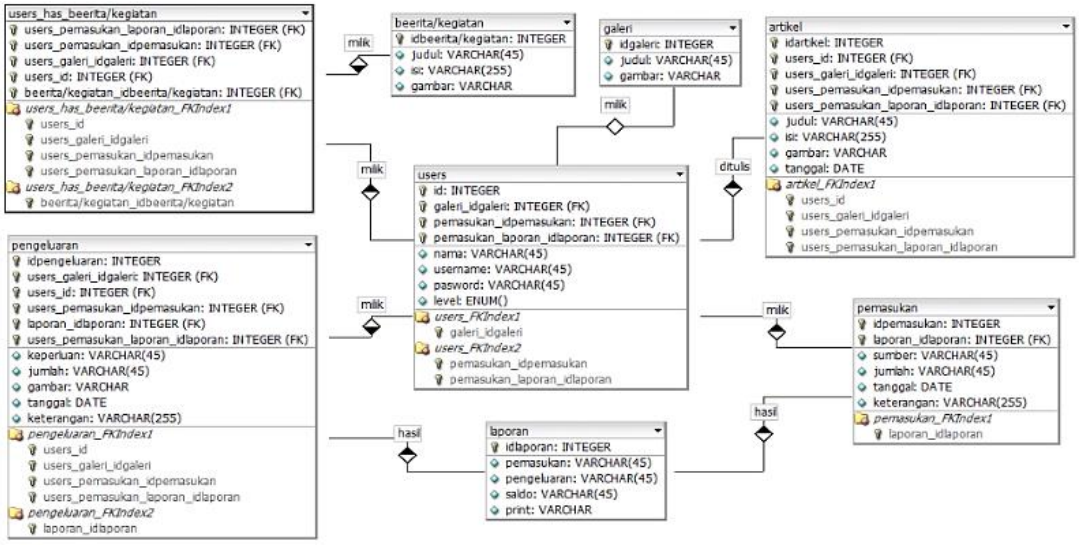

Figure 5. Database Design for the Management Information System of Al-Ikhlas Mosque

This database consists of user tables, activity/news tables, article tables, gallery tables, income tables, and expenditure tables. The database design was created using DB designer.

3.5. User Interface Design

This user interface design is used as the final model of the website for the Management Information System of Al-Ikhlas Mosque in Kota Pari Village. The homepage design includes a header image, photos, latest activity information, articles, the latest news list, and a brief history of Al-Ikhlas Mosque in Kota Pari Village. The homepage also features several menu options, such as home, mosque profile, activities, gallery, finance, and login. The design of other pages is similar to the homepage but differs in content. Some of the design concepts can be seen in the image below.

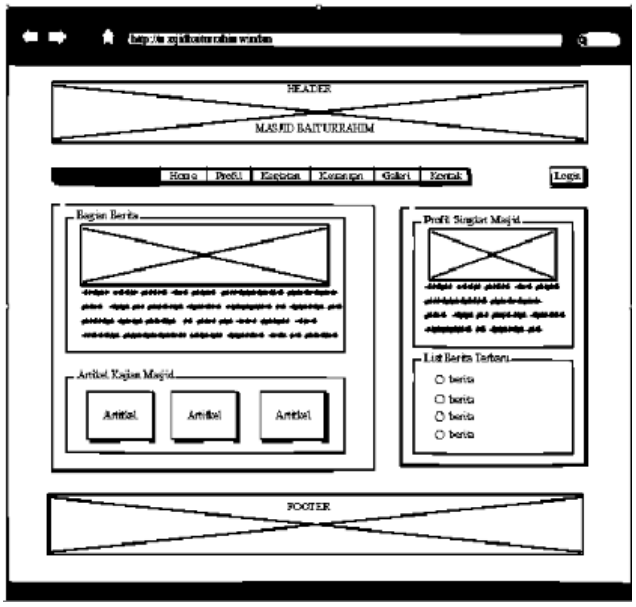

Figure 6. Homepage Design

4. CONCLUSION

From the above exposition, it can be concluded that the design of the Management Information System for Mosque Activities based on a website is an important process that requires careful attention and analysis to ensure that the system meets the needs of mosque administrators and helps them manage mosque activities more efficiently and effectively, as well as facilitate tasks related to planning, organizing, and controlling.

Therefore, there are suggestions that can potentially enhance the Management Information System for Al-Ikhlas Mosque in Kota Pari Village based on the web design, including:

a) Conducting a thorough analysis of system requirements and specifications by identifying and understanding the main goals and features needed in the system.
b) Utilizing modern and responsive website design and technology to ensure that the system can be accessed through mobile devices and user-friendly for all community members around Al-Ikhlas Mosque.
c) Ensuring that the system is equipped with features such as member registration, activity management, and financial management to enable mosque administrators to manage all aspects of mosque activities easily.
d) Providing easy and intuitive access to data and information, ensuring that the system has a clean and user-friendly interface design.
e) Continuously conducting testing and validation to ensure that the system works well and meets the needs of mosque administrators.

By considering these suggestions, mosque administrators can ensure that the web-based Management Information System design meets quality standards and assists them in managing mosque activities more efficiently and effectively.

ACKNOWLEDGEMENTS

Thanks to the Study Center Research Institute (LPPS) for funding this research through the Internal Grant scheme for the 2023 fiscal year. The author also thanks the village head of Kota Pari and the management of BKM Al-Ikhlas in Kota Pari village who are committed as partners in implementing a website-based Al-Ikhlas Mosque Activity Management Information System.

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