Perancangan Sistem Informasi Gereja Toraja Jemaat Buntu Ambaang Berbasis Web

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Abstrak

Perkembangan teknologi informasi mendorong berbagai organisasi, termasuk lembaga keagamaan, untuk beradaptasi dalam pengelolaan data dan penyampaian informasi. Gereja Toraja Jemaat Buntu Ambaang masih menggunakan sistem manual dalam pengelolaan administrasi, jadwal ibadah, pengumuman kegiatan, serta pendaftaran pelayanan sakramen. Hal ini berpotensi menyebabkan keterlambatan informasi dan kesalahan pencatatan. Penelitian ini bertujuan merancang dan membangun sistem informasi administrasi berbasis web guna meningkatkan efektivitas pelayanan gereja. Metode pengembangan yang digunakan adalah Waterfall dengan tahapan analisis kebutuhan, desain, implementasi, pengujian, dan pemeliharaan. Perancangan sistem menggunakan UML dan ERD, sedangkan implementasi menggunakan Framework Laravel, PHP, dan MySQL. Pengujian dilakukan melalui Black Box Testing dan User Acceptance Testing dengan skala Likert untuk mengukur kelayakan sistem. Hasil penelitian diharapkan menghasilkan sistem yang terstruktur, efisien, dan mudah diakses sehingga mampu meningkatkan kualitas pelayanan dan komunikasi gereja secara digital.

Kata Kunci: Sistem Informasi, Website, Gereja, Waterfall, Karavel, UAT

Design and Development of a Web-Based Information System for Gereja Toraja Jemaat Buntu Ambaang

Abstract

The development of information technology encourages various organizations, including religious institutions, to adapt in managing data and delivering information. Gereja Toraja Jemaat Buntu Ambaang still uses a manual system for managing administration, worship schedules, activity announcements, and sacrament service registration, which may lead to delays in information dissemination and recording errors. This study aims to design and develop a web-based administrative information system to improve the effectiveness of church services. The development method used is the Waterfall model, consisting of requirements analysis, design, implementation, testing, and maintenance stages. The system is designed using UML and ERD, and implemented using the Laravel Framework, PHP, and MySQL. Testing is conducted through Black Box Testing and User Acceptance Testing (UAT) using a Likert scale to measure system feasibility. The expected outcome of this research is a structured, efficient, and easily accessible system that enhances the quality of church services and digital communication

Keywords*: Information System, Website, Church, Waterfall, Laravel, UAT*

I. INTRODUCTION

The rapid development of information technology in recent years has had a significant impact on information dissemination, communication, and data management across various sectors of society. Digital technology has become an essential part of modern life, enabling organizations to deliver information quickly, efficiently, and accessibly. Not only business and government sectors, but also religious institutions such as churches are required to adapt to these changes. Information technology has transformed the way organizations operate, interact, and conduct business, and it will continue to be a key factor in the development of modern businesses (Anggraeni & Maulani, n.d.). Gereja Toraja Jemaat Buntu Ambaang, located in the Rantepao Barat Classis, is one of the active congregations under the Toraja Church. This congregation serves various age groups through general worship services, Sunday school, youth worship services, and categorical activities such as prayer fellowships and family worship. Despite its strong commitment to spiritual services, the church still faces challenges in managing data and information. Currently, information such as worship schedules, announcements of OIG activities, and registrations for sacramental services, including baptisms and marriages, are still managed manually. These practices potentially lead to data duplication, delays in information dissemination, and even the loss of important records. To address these issues, the development of a web-based church information system is necessary. This system will enable church administrators to manage congregation data, distribute announcements, and provide online registration for church services. It will also improve accessibility for congregation members who live far from the church or have limited mobility. Consequently, the quality of church services and internal coordination can be improved through an efficient and well-structured digital platform. The development of a web-based church information system can serve as a solution to meet the information needs related to church activities (Fierencia & Simorangkir, 2024). In its development, this information system will be designed using the Waterfall method, which is a system development approach characterized by clearly defined and systematic stages. These stages include requirements analysis, system design, implementation, testing, and maintenance. This method is selected because it is suitable for projects with requirements that can be clearly defined from the beginning, such as the information system for Gereja Toraja Jemaat Buntu Ambaang. It is expected that this system will not only address existing technical issues but also serve as a digital foundation for the future development of church services.

II. METHOD

The Waterfall method was selected as the software development approach because it provides a systematic and sequential framework for developing the proposed system. Each phase is carried out in an orderly manner, starting from system design and continuing through implementation, integration and testing, and operation and maintenance. The stages of the Waterfall method are described as follows.

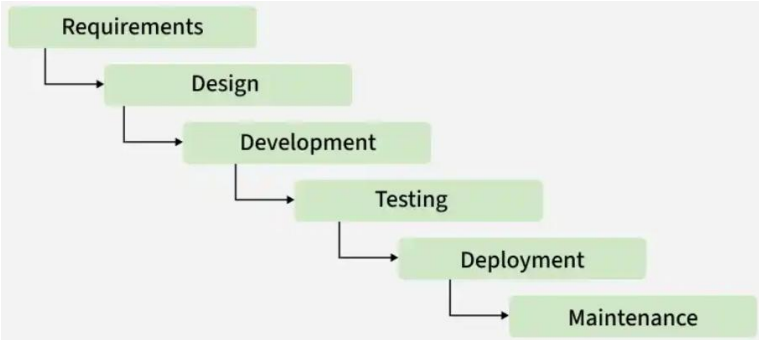

Figure 1. Waterfall Method

1. Waterfall Method

The Waterfall method is a linear and sequential software development model in which each development phase must be completed before proceeding to the next phase. This approach provides a structured development process, ensuring that each stage is carried out systematically. The following are the stages of the Waterfall method:

2. System Design

The System Design phase translates the identified software requirements into a system design specification before the coding process begins. This phase defines the system architecture, database structure, interfaces, and overall system functionality. It provides a clear blueprint of what needs to be developed and how the system will operate and appear to users [16].

3. Implementation

The Implementation phase involves translating the system design into program code. The software is developed by dividing the system into smaller modules, each of which is implemented according to the specifications established during the design phase. These modules are subsequently prepared for integration.

4. Integration and Testing

The Integration and Testing phase involves combining the previously developed modules into a unified system. After integration, testing is conducted to identify errors, verify that each component functions correctly, and ensure that the system meets the specified requirements.

5. Operation and Maintenance

The Operation and Maintenance phase begins after the software has been deployed and is ready for use. During this phase, the system is operated in its intended environment and maintained to ensure its continued functionality. Maintenance activities may include fixing errors, improving performance, and making necessary adjustments to accommodate changing requirements.

III. RESULTS AND DISCUSSION

The proposed system is a web-based church information system designed to support integrated data management and information dissemination at Gereja Toraja Jemaat Buntu Ambaang. Through this system, church administrators can manage congregation data, church activities, announcements, and administrative archives within a centralized platform. The website also enables congregants to independently access church-related information anytime and anywhere using internet-connected devices.

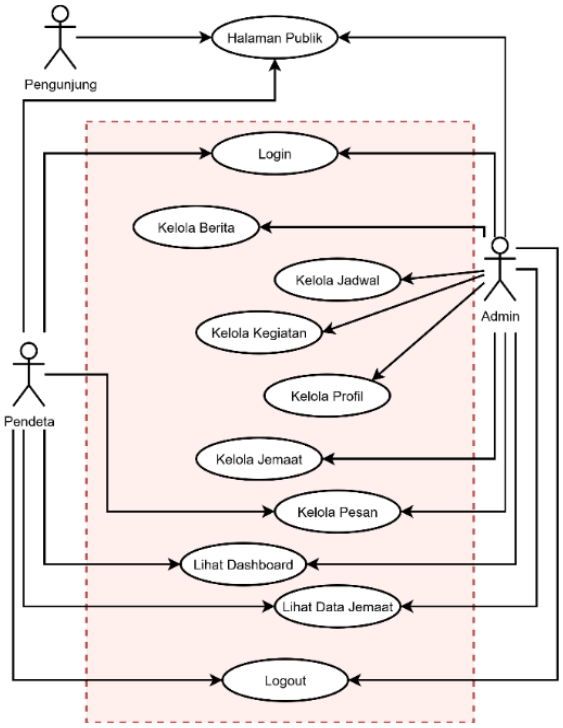

Figure 2. Use Case Diagram

Based on the results of the User Acceptance Test (UAT) conducted on the web-based Church Information System of Gereja Toraja Jemaat Buntu Ambaang, which was developed using the Laravel framework, an assessment of user acceptance of the implemented system was obtained. The evaluation involved 50 respondents who completed a questionnaire using a five-point Likert scale. The responses were subsequently processed through a weighted scoring method to calculate the percentage index for each questionnaire item. The results indicate that the aspects of accessibility and system performance, represented by questions P1 and P4, each obtained a percentage index of 78.4%. These findings indicate that most respondents considered the system easily accessible, with relatively fast loading times and an interface that adapts well to both desktop computers and mobile devices. Therefore, the system has adequately addressed user requirements regarding accessibility and responsive design. Regarding menu structure and interface design, represented by questions P2 and P3, the system obtained percentage indices of 79.2% and 79.6%, respectively. These results indicate that the menu structure was considered well-organized and helped users locate the information they needed. Furthermore, the interface design was perceived as visually appealing, clean, and comfortable to use, thereby supporting a positive user experience when accessing church-related information.

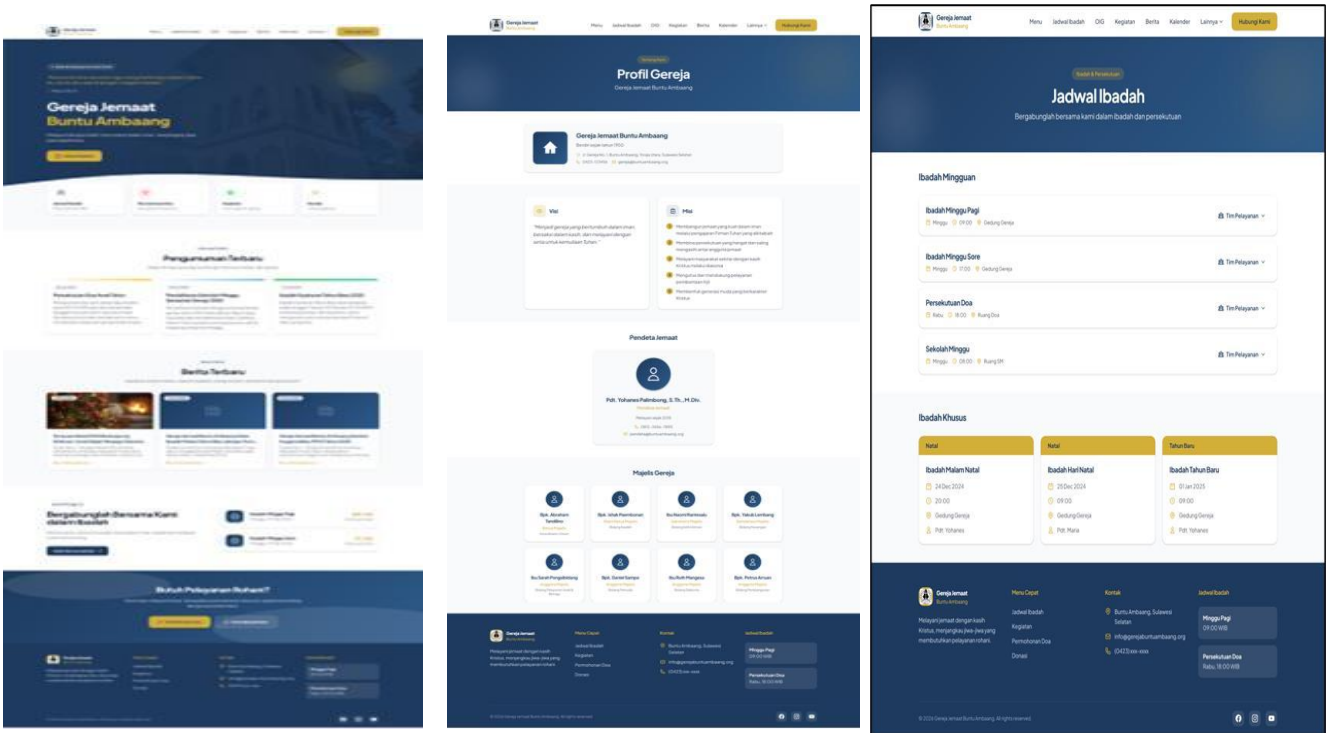

Figure 3. Designed User Interface

The aspects of information completeness and clarity, represented by questions P5 and P6, obtained percentage indices of 76.4% and 79.2%, respectively. These findings suggest that information concerning worship schedules, church news, and announcements was presented with sufficient completeness and clarity. Regular information updates were also considered helpful in enabling congregants to obtain the latest information about church activities. Furthermore, the aspects of feature usability and instruction clarity, represented by questions P7 and P8, obtained percentage indices of 72% and 76%, respectively. Although both results indicate a generally positive assessment, they also reveal opportunities for further improvement, particularly in simplifying the online form submission process and providing clearer instructions for using the system's features. These findings can serve as an evaluation basis for future system development.

IV. CONCLUSION

Based on the results of the User Acceptance Test (UAT) conducted on the development of the web-based Church Information System for Gereja Toraja Jemaat Buntu Ambaang using the Laravel framework, it can be concluded that the developed system was well accepted by users. This is supported by the questionnaire results, which yielded percentage indices ranging from 72% to 81.2% across all questions (P1–P10). These results reflect positive user evaluations of the system's accessibility, ease of use, user interface, and the completeness and clarity of the information provided. The highest percentage index was obtained for question P10, indicating that, overall, the church information system was considered helpful in supporting congregants' worship activities and access to church-related information. Therefore, the church information system developed using the Laravel framework is considered suitable for use and implementation as a digital platform for church services and information dissemination at Gereja Toraja Jemaat Buntu Ambaang.

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