Journal of Artificial Intelligence and Engineering Applications

Website: https://ioinformatic.org/

15th June 2025. Vol. 4. No. 3; e-ISSN: 2808-4519

Design of an Administrative Information System at the First GBI Medan Web-Based using the Agile Method

Sep Sefan Alfandry Waruwu*[1], Feriani Astuti Tarigan[2], Hendri[3]

[1,2,3]*Information Systems Study Program, STMIK Time, Medan*
sepsefan21@gmail.com[1*], ferianiastutitime@gmail.com[2], h4andr7@gmail.com[3]

Abstract

The development of information and technology, making information a very important thing to support work in institutions and organizations, many organizations use web-based information systems to improve the efficiency and accuracy of their administrative and management performance, for example administration in church organizations. However, the application of web-based administrative information systems in religious environments, especially churches, is still very limited. Many churches, in reporting every week, use desktop applications in recording the number of offerings and congregations that attend divine services every week. Then for reporting every other activity there is no report at all. One of them is GBI Pertama Medan which in managing its administrative system which still relies on manual methods, namely through word processing applications such as Excel and Word which are still less effective, which results in various problems and obstacles such as recording errors, delays in submitting information, and difficulties in accessing data quickly and accurately. This study aims to and build a web-based administrative information system that will help make it easier for congregations and admins to search and manage administrative data for the First Indonesian Baptist Church Medan. The method used in the development and design of the First GBI Medan administrative information system is the Agile method. Which, this Agile method is widely used in the Software Development Life Cycle (SDLC). Each stage of this method, such as planning, analysis, design, development, testing, and maintenance can help design administrative web systems and various other administrative features at the First Indonesian Baptist Church of Medan, such as managing congregational data, offerings, ministerial schedules, announcements, and FT devotional reading lists. Based on the description above, the authors are interested in conducting research and taking the title of designing an administrative information system at the First GBI Medan web-based using the Agile method.

Keywords: *GBI Pertama Medan, Administration, information, website, Agile SDLC (Software Development Life Cycle)*

1. Introduction

The development of technology in the current era has developed very quickly and has brought many very big changes, because with technology, information can be more easily obtained quickly, accurately and not limited by time and place. With the development of technology and information, information is an important thing in supporting the performance of a particular institution or organization, such as helping to improve the quality of interactive services. An institution, authority or individual always needs fast and accurate information [1]. And in this digital era, many organizations use web-based information systems to improve the efficiency and accuracy of their administrative performance, for example administration in church organizations. The need for precise and accurate data becomes the basis for carrying out various church service tasks and becomes an absolute thing. Without church and congregation data, it will be difficult for service units and church administrators to plan programs in services that will take place at any time [2]. In the process of processing a data can be done by using software that can help smooth in improving the performance of users, especially church members [3].

In this proposal, the case study chosen by the researcher is the administration of the First Indonesian Baptist Church of Medan, which is located on Jl. Pangeran Diponegoro No. 9 in the Central Petisah District of Medan Regency / City. The First Indonesian Baptist Church of Medan is one of the current churches, which in managing its administrative system still relies on manual methods through word processing applications such as Excel and Word which are still less effective, which results in various problems and obstacles such as recording errors, delays in delivering information, and difficulties in accessing data quickly and accurately.

Church congregations, also often information on worship schedules and ministers is not known by the congregation, because the distribution of worship schedules is only informed through WhatsApp groups. Thus, the administration does not disseminate information on worship schedules and ministers to the entire congregation. Then, reports on every other activity apart from public services have not been reported at all. Of course, this is unfavorable to the service at a certain time [4]. So it's web based administrative information system is needed that will help make it easier for congregations and church administrators to search and manage administrative data for GBI Pertama Medan. Software Development Life Cycle (SDLC). The Agile method is one method that is often used in SDLC.

The goal is to help the use of the First GBI Medan administration website can be used safely and comfortably, and avoid damage to the website system in the church. Because activities, such as planning, analysis, design, developing, testing, delivering, operating, and maintaining software can be done iteratively and gradually as needed using the Agile Method [5]. Thus, this method can support the design of systems and the development of modern designs and various administrative features at the First Indonesian Baptist Church of Medan. So that the web that is designed, of course, will make it easier for users to search and manage congregational data, offerings, ministerial schedules, announcements, FT devotional reading lists, and of course it will make administrative services faster and more effective to increase efficiency in managing church administrative data [6]. Based on the background above, the authors are interested in conducting research and taking the title " Design of an administrative information system at the first GBI Medan web-based using the agile method ".

2. Research Methods

2.1. Analysis of the current system

The analysis of the current system aims to evaluate the processes implemented by the current organization, especially in the administration at GBI Pertama Medan. In the church administration, there are various types of data that are managed, among others:

1. Congregation data is recorded manually in a book; the following is congregation information available on the system running in fig 1.

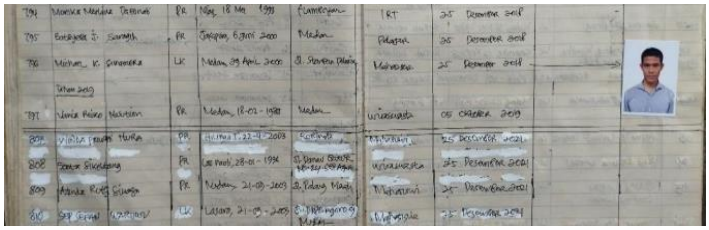

Fig. 1: Congregation data recorded in the book

2. Baptism data is data that contains information on congregations who have performed baptismal immersion, and child dedication, the following data is inputted in Microsoft Word and recorded manually in a book.

Di Baptiskan Pada Tanggal 18 Februari 2023
Dibaptiskan oleh: Pdt.Dr.Irwanto Berutu, M.Th

1	Rita Lusiana Br.Barus	Negeri Dolok, 27 -12-1999	Sipiinggan – STM Huhi	817
2	Junan Ginting	Rumah Deleng, 05-03-1997	Rumah Deleng Bangun Purba	818
3	Elisabeth Lenifati Halawa HP: 0813 7001 7656	Mara , 04 -04 – 1997 NIK: 1214076104970004	Jl.Kapten Maulana Lubis	819
4	Septembersan Laia HP: 0812 6213 1509	Hilotalua, 08 Sept' 1996	Jl.Jamin Ginting, Gg Buluga Kenanga IV No. 70	820
5	Dewi Nurhayati Telaumbanua 085262490773	Hilidarano, 29-12-2001	Sihoroni Gomo	821
6	Nelvin Kriuna Hura 081286391071	Abadanio, 25 Februari 2005	Perumahan Rorinata Tahap X Blok F5 12A	822
7	Martin Luide Jonathan Hutauruk 0882017189117	Medan, 17 -12-2005	Jln. Starban Gang Sahabat Polonia	823

Di Baptiskan Pada Tanggal 15 September 2024
Dibaptiskan oleh: Pdt.Dr.Irwanto Berutu, M.Th
Di Tomok – Samosir

1	YETNY	Medan, 31-08-1980	Jl.Bilal,Kompl.Bilal Blok C-9 Hp. 0819 1888 1628	825
2	FEDERICK JULIANTO	Medan, 05-08-2006	Jl.Bilal, Kompl.Bilal blok C-9 Hp. 0816 301628	826
3	ELVA PARLIN WARUWU	Hilina'a Tafao, 22-04-2000	Tegal Sari Mandala III, Jl.Tuba No.4 Deusi Hp. 0822 7977 4390	827

Fig. 2: Baptism data typed in word

2.2. Problem analysis

After the analysis of the current system is carried out, then based on the collected data, an analysis of the problems faced in the current system used at this time will be carried out, among others:

1. Administrative data at First GBI Medan is still recorded manually, namely through Microsoft Word, Excel, and recorded in a book.
2. The congregation of GBI Pertama Medan often gets information on worship schedules and ministers that are inaccurate and unknown to them, because the distribution of worship schedules, announcements, and other information is disseminated only through WhatsApp, so that the administration does not distribute worship schedule information to several congregations.
3. In terms of funds and finances, GBI Pertama Medan spends a lot of money to print bulletins and program papers for each service.

2.3. Analysis of the proposed method

This sub chapter describes the analysis of the methods used in this research. The method proposed and used in the development of the First GBI Medan information system is the Agile SDLC (*Software Development Life Cycle*) method. With the following stages:

1. Planning: This stage plans the development of a web-based administration system for GBI Pertama Medan so that services and information delivery become more effective, including 7 main variables such as congregational data, fellowship, worship, offerings, devotions, and news.

2. Analysis: Problems were found such as manual recording, uneven information, and high printing costs. A web system was designed to overcome these problems based on interviews and observations.
3. Design: Design is done through Use Case Diagram, ERD, and interface design (UI) using Figma so that the system is easy to use and in accordance with user needs.
4. Implementation: The system was developed using MySQL and PhpMyAdmin (backend), as well as HTML and CSS (frontend), covering all administrative features based on seven planned variables.
5. Testing: Testing was conducted to ensure all features such as login, data input, and integration between modules were running well and error-free.
6. Maintenance: After the system is released, maintenance such as bug fixes, performance improvements, and adjustments based on user feedback are performed to keep the system stable and optimized.

2.4. Analysis of the proposed system

Next, the author analyzes the proposed system, usually referred to as functional requirements analysis and will be described using a *Use Case Diagram*.

1. Use Case Diagram

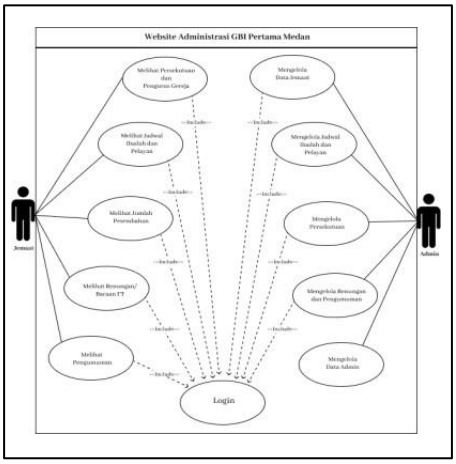

Fig. 3: Use case of church administration website

2. Database design

The following is the database design of the First GBI Medan administration website along with its table structure using the Entity Relationship Diagram (ERD).

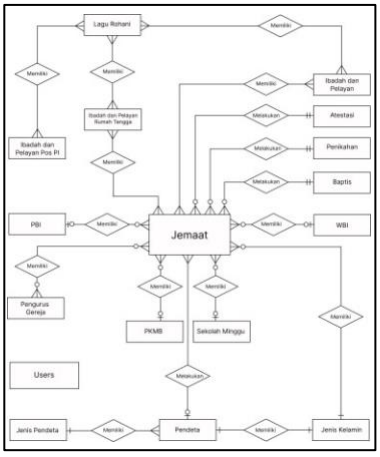

Fig. 4: Entity relationship diagram of the first gbi administration system medan

3. Results and Discussion

3.1. Website display results

The result of this research is the website of the administrative information system of the First Baptist Church of Medan which is useful for congregations and church administrators to view and manage congregational data and other church administrative data.

Fig. 5: Landing page

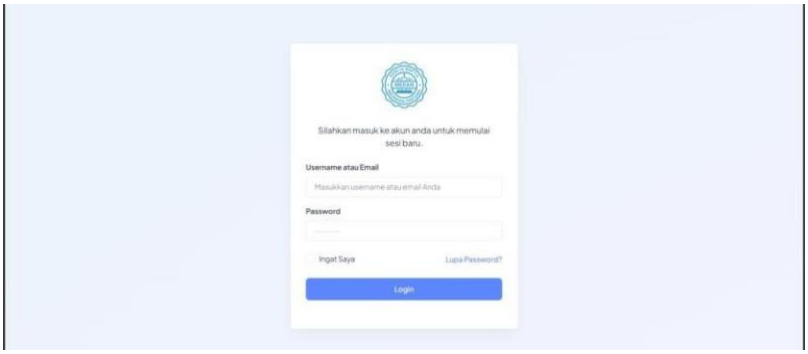

Fig. 6: Admin and congregation login page

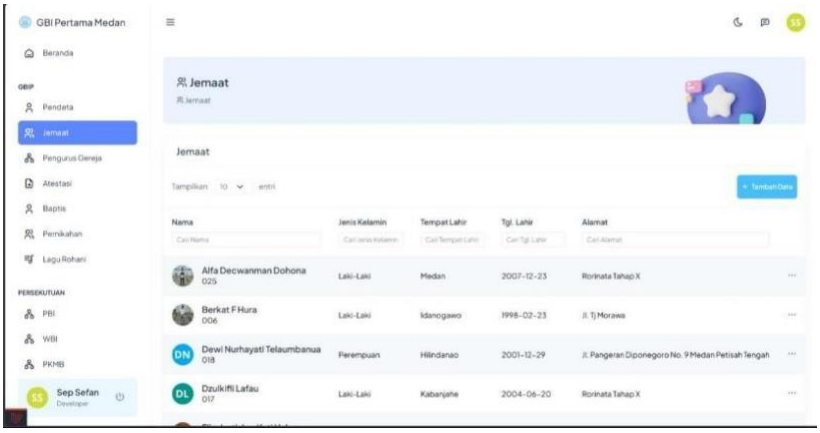

Fig. 7: Admin page manages the administrative data of first gbi medan

Fig. 8: First GBI contact menu page

4. Conclusion

After evaluating the results of the research that has been done, it's time to formulate conclusions that can be drawn. This conclusion concludes the research process while providing an overview of the achievements that have been obtained, including:

1. The First GBI Medan administration website that was built can automatically synchronize all administrative data, making it easier for admins to view information on GBIP Medan administrative data.
2. The use of the Agile SDLC method in the development of the First GBI Medan administration website can produce a system that is more effective, secure, and structured as a whole.
3. Overall, the website built successfully fulfills the basic needs in managing the administration of GBIP Medan through development using a programming language that can be accessed online on various devices.

5. Suggestions

To improve the quality of the website, the author recommends further development of the church administration system to be able to handle payment data as a whole, such as cash data, inventory costs, and other types of financial administration. In the next stage, further research is recommended to clarify additional needs, especially related to the selection of administrative data and customization of features in accordance with user needs. In addition, the improvement of the real-time monitoring system and the provision of user feedback features are important to facilitate the identification of features that need to be improved, so as to improve overall user experience and satisfaction.

References

[1] M. D. Y. Ludji, A. C. Talakua, and D. A. Sitaniapessy, "Design of Worship Service Information System in Sumba Christian Church Patawang Congregation Using Object Oriented Analysis and Design," *MALCOM: Indonesian Journal of Machine Learning and Computer Science*, vol. 4, no. 1, pp. 240-246, Jan. 2024, doi: 10.57152/malcomv4i1.1052.

[2] Y. Christofer, L. Abineno, D. Cahya, and P. Buani, "Designing a Web-Based Congregation Information System at GKI Pulomas," 2022. [Online]. Available: http://jurnal.bsi.ac.id/index.php/imtechno

[3] T. V Tamuntuan, C. E. Mongi, and D. Hatidja, "National Seminar of Faculty of Engineering, Malikussaleh University, 2022."

[4] Y. E. Santoso, S. Pamela Adithama, and S. Suryanti, "Web-based Indonesian Christian Church Information System with Laravel Framework," *Proletarian: Community Service Development Journal*, vol. 1, no. 2, pp. 59-65, Dec. 2023, doi: 10.61098/proletariancomdevv1i2.81.

[5] S. Hidayah Nova, A. Puji Widodo, B. Warsito, and S. Pasca Sarjana, "Analysis of Agile Methods in Website-Based Information System Development: Systematic Literature Review Analysis of Agile Method on Website-Based Information System Development: Systematic Literature Review." [Online]. Available: https://scholar.google.com

[6] J.T. Practica *etal.* "Micah Agus Widiyanto" [Online]Available: http://jurnalstttenggarong.ac.id/index.php/JTP