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Bible Study Scheduling Information System Using Rapid Application Development Method in GKS Jemaat Padadita Barat

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Abstract

Along with technological developments in the field of information systems, great opportunities arise to improve the efficiency and performance of various institutions, including churches. The church as an institution that has an important responsibility in serving the congregation, requires an effective information system to support various service activities. One example is GKS Jemaat Padadita Barat, which currently manages the Bible Study (PA) schedule using traditional methods. The PA schedule management is done by an officer, namely the secretary, by typing the schedule using Microsoft Word and printing it manually. This method is not only time-consuming but also inefficient and prone to errors.To answer these challenges, a website-based information system is needed that can help manage PA schedules more efficiently and integrated. This research aims to design and build a website-based PA scheduling information system specifically designed to assist congregational assemblies in managing congregational data and preparing PA schedules. This system is expected to facilitate access, speed up data management, and allow real-time schedule updates.This research uses the Rapid Application Development (RAD) method, which is well-known for its ability to produce systems quickly, structurally, and efficiently. The implementation of this system is expected to optimize the management of PA schedules at GKS Jemaat Padadita Barat, support church services, and increase congregational satisfaction in participating in PA activities.

Keywords: *Church, PA scheduling, Website, Rapid Application Development*

1. Introduction

PA (Bible Study) is a spirit of living according to God's word by exploring, deepening, and living it in daily life for Christians, in order to live towards maturity in Christ. PA is usually conducted during domestic worship, led by pastors, vicars, and counselors.
GKS Jemaat Padadita Barat is a branch of GKS Jemaat Waingapu which has been established from 1964 until now and finally, on June 12, 2019. GKS Jemaat Waingapu Padadita Branch officially blossomed into an independent congregation with the name GKS Jemaat Padadita Barat with 2 ordained pastors namely Rev. Martina Navsari Marumata, M. Si and Rev. Jefry Adi Papa Lede Malo, M. Th who was sent to be a lecturer at STT Johanes Calvin. GKS Jemaat Padadita Barat is located in Prailiu Village, Kambera District, East Sumba Regency. GKS Jemaat Padadita Barat is one of the GKS service areas located in the Waingapu Klasis. Currently, GKS Jemaat Padadita Barat is led by Rev. Martina Navsari Marumata, M.Si, with a total of 21 assemblies, 207 households, totaling 823 people consisting of 429 men and 394 women who are divided into 3 service areas namely Neighborhood A, Neighborhood B, and Neighborhood C. Each neighborhood has 7 assemblies, and each neighborhood has 7 assemblies. In each neighborhood there are 7 councilors, 69 heads of families in each neighborhood and in neighborhood A : 275 congregations, neighborhood B : 274 congregations and neighborhood C: 274 congregations. The variables needed when creating a PA schedule are: Neighborhood, day/date, congregation name, PA leader and companion. Every household already has an android phone [1], [2].

GKS Jemaat Padadita Barat has quite a lot of data such as congregation and ministry data. GKS Jemaat Padadita Barat currently does not have a good information system so that it often has difficulty in managing PA schedule information because it is still written in a book and read out every Sunday worship service. In terms of schedule distribution, the congregation assembly delivers the worship schedule at each congregation's house that gets the Bible Study (PA) worship schedule. In GKS Jemaat Padadita Barat, the Bible Study (PA) service is held in every neighborhood. In one day, there can be Bible study services in several neighborhoods at once [3], [4]. This causes the writing process to consume a lot of paper because it still uses the manual method by handwriting. In addition, there is also paper that is photocopied and the congregation delivers it to each congregation's house that gets a worship schedule. The process resulted in expenses for buying paper and costs for photocopying worship schedules. From the explanation above, there are several problems that can be concluded to occur due to the traditional scheduling process carried out [5], [6].

The first problem was related to the cost of purchasing books and paper. The second problem is related to the schedule of Bible Study (PA) services written and read out so that there are some congregants who do not hear the announcement for various reasons so that they do not know that their names are actually mentioned in the schedule [7], [8]. The third problem was that the congregation had to handwrite so many names. The last problem is the cost incurred for photocopying the worship schedule to be distributed to the congregation during Sunday worship. With this web-based Bible Study (PA) worship scheduling information system, it can help churches solve the above problems such as facilitating the preparation of schedules, saving preparation costs, and facilitating schedule distribution [9], [10].

2. Research Methodology

In conducting this research, there are several stages that will be carried out by researchers in building and designing PA scheduling information systems. The following is an outline of the stages carried out by researchers, namely [11], [12]:

Figure1: Research Flow

1. Analyze the needs first by collecting data in a way:
- Observing, collecting, recording and studying directly about the process of making PA scheduling at BPMJ GKS Jemaat Padadita Barat which is carried out by the BPMJ secretary, and how the congregation gets information about the PA schedule appropriately.
- Conducting interviews directly with BPMJ GKS Jemaat Padadita Barat to obtain data in this case the chairman of BPMJ GKS Jemaat Padadita Barat and information related to the system that has been used with the aim of knowing the problems that occur.
2. Design or design the system flow so that researchers can design a well-structured system using Use Case Diagrams, Activity Diagrams, Class Diagrams and Sequence Diagrams. Design process (Design Workshop):
- Involving users in building the system, where at this stage the researcher will carry out the design process and make improvements if there is a mismatch between the design made and what is needed by the user. At this stage, users are needed in making this application, because it will greatly help researchers to build the information system desired by all parties, both from officers as operators and users.
- Building the system. In building the system, researchers use XAMPP, HTML, PHP, My Sql and Javascript applications in building the system.
3. Testing will use the black box testing method to check whether there is a collision of hours or people leading PA worship at one time on the PA scheduling system so that it can run according to the wishes of the researcher and the system can be run according to user needs.
4. At the Implementation stage, all designs that have been made will be implemented into an information system that will be used to facilitate users in conducting or accessing PA schedule information at the West Padadita Congregation GKS.

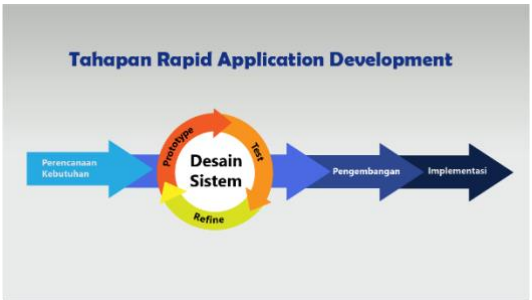

Figure 2: Rapid Application Development Method

There are 4 stages in Rapid Application Development:

1. Needs Analysis
   This stage aims to identify the needs, limits and objectivity of the system that will be developed by collecting data from stakeholders. This stage was carried out by interviewing the person in charge of the West Padadita Congregation of Sumba Christian Church, Pastor Martina Navsari Marumata, M. Si (Theol) regarding the system requirements needed. After conducting the interview, a solution was obtained regarding the specifications of the web service application for congregational data information systems and PA scheduling.
2. Design Workshop (Modeling)
   This stage aims to design all activities in the overall system architecture by involving the identification and description of fundamental software system abstractions and their relationships in order to design all activities in the overall system architecture. This stage also aims to improve understanding of the problem based on the analysis carried out.
3. Development Process and Feedback Collection
   At this stage, the design that has been created and agreed upon is converted into a beta version of the website until the final version. At this stage, programmers must also continuously carry out development and integration activities with other parts by

considering feedback from users. If the process goes well, it can continue to the next stage, while if the website developed has not answered the needs, the programmer will return to the system design stage.

4. Implementation (Construction)
   The purpose of this stage is to construct the system and the application of methods adapted to the selection process in programming to the results of analyzing system requirements and will be explained in the database implementation stage and website system development. At this stage the programmer determines the software implementation environment through database design using the XAMPP application, HTML, PHP, Mysql and website development using Javascript.

3. Testing and Analysis

The following process is carried out in the form of input and output results from the information system of the West Padadita Congregation of Sumba Christian Church.

3.1. Login Page Admin

Figure 3: Login Page Admin

On the admin login page there is a login form that must be filled in first, namely the username and password specifically for the admin. Then the system will check the username and password that has been filled in, if it is correct it will enter the dashboard page for the admin, if it is wrong it will return to the login page.

3.2. Main Menu Page (Dashboard)

Figure 4: Main Menu Page (Dashboard)

On the main page there are several features, namely church profile, congregation data, PA schedule and logout.

3.3. Church Profile Page

Figure 5: Church Profile Page

On the church profile page there is information about the brief history of the establishment of the West Padadita Jemaat Sumba Christian Church.

3.4. Cogregation Data Input Page

Figure 6: Congregation Data Input Page

On the congregation data input page, which consists of congregation id, congregation name, occupation, household name, address, neighborhood, and cellphone number. If the admin finishes inputting the congregation data, it will be saved by clicking save, then the data is displayed.

3.5. Cogregation Data Display Page

Figure 7: Congregation Data Display Page

On the congregation data display page there is congregation data consisting of congregation id, congregation name, occupation, household name, address, neighborhood and mobile number. However, these data can be updated by the admin such as add, edit, and delete congregation data.

3.6. Cogregation Data Edit Page

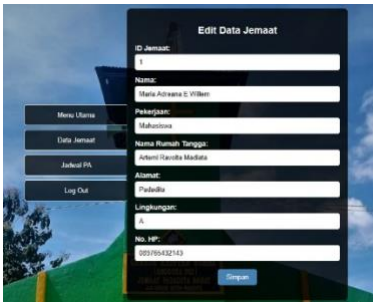

Figure 8: Congregation Data Edit Page

On the church data edit page there is church data consisting of church id, church name, occupation, household name, address, neighborhood, and cellphone number. If the admin finishes editing the congregation data, then the data has been updated.

3.7. Page Delete Cogregation Data

Figure 9: Page Delete Congregation Data

On the delete congregation data page there is a notification to confirm to delete the selected congregation data.

3.8. PA Schedule Input Page

Figure 10: PA Schedule Input Page

On the PA schedule input page, which consists of schedule id, user id, congregation id, household name, address, neighborhood, PA leader name, day/street and worship time. If the admin finishes inputting the PA schedule, it will be saved by clicking save, then the data is displayed.

3.9. PA Schedule Display Page

Figure 11: PA Schedule Display Page

On the PA schedule display page there is congregational data consisting of schedule id, user id, congregation id, household name, address, neighborhood, PA leader name, day/street and worship time. If the admin finishes inputting the PA schedule. However, the data can be updated by the admin such as add, edit, and delete the PA schedule.

3.10. PA Schedule Edit Page

Figure 12: PA Schedule Edit Page

Pada halaman edit jadwal PA terdapat jadwal PA yang terdiri dari dari id jadwal, id user, id jemaat, nama rumah tangga, alamat, lingkungan, nama pemimpin PA, hari/tangga dan jam ibadah. Jika admin selesai mengedit jadwal PA, maka jadwal PA tersebut sudah diperbarui.

3.11. PA Schedule Delete Page

Figure 13: PA Schedule Delete Page

On the PA schedule delete page there is a notification to confirm to delete the selected PA schedule.

3.12. Schedule Clash Check Page

Figure 14: Schedule Clash Check Page 1

In the image above, it shows the clash of PA Leaders who were already on the schedule, but were rescheduled on the same day.

Figure 15: Schedule Clash Check Page 2

In the image above, the schedule clash occurs because the PA leader's name is pending and the PA leader already has a schedule on the same day in a different household.

Figure 16: Schedule Clash Check Page 3

In the figure, there is a schedule clash in the household, PA leader, and PA schedule on the same day.

3.13. Congregation and PA Leader Login Page

Figure 17: Congregation and PA Leader Login Page

On the login page there is a login form that must be filled in first, namely username and password. Then the system will check the username and password that has been filled in, if it is correct it will enter the dashboard page, if it is wrong it will return to the login page.

3.14. Congregation and PA Leader Dashboard Page

Figure 18: Congregation and PA Leader Dashboard Page

On the main page there is a background of the West Sumba Christian Church Padadita congregation and two features, namely view the PA schedule and logout

3.15. View PA Schedule Page (Congregation and PA Leader)

Figure 19: View PA Schedule Page (Congregation and PA Leader)

On this page, there is a PA schedule that has been inputted by the admin and congregation and the PA leader can only view the schedule.

3.16. Blackbox Testing

This system test phase uses a blackbox which is useful for designing PA scheduling information systems at the West Padadita Jemaat Sumba Christian Church so that they are suitable for use. The results of this test are the results of the testing phase. after testing the PA scheduling design system at the West Padadita Jemaat Sumba Christian Church has been completed with the expected results. The test method is carried out on software. The test method applied is blackbox testing by testing the usability of the website and can be applied at all levels of software testing both unit, integration, system, functional, and acceptance levels.

Table 1: Login test table

NO	Test Scenario	Test case	Expected results	Testing Results	
				Successful	Failed
1	Click the login button without filling in any data	User Name: (empty) Password: (empty)	The system rejects and revalidates	✓	
2	Fill in the username without filling in the password	User Name: Admin Password: (empty)	The system rejects and revalidates the password	✓	
3	Fill in the password without filling in the username	User Name: (empty) Password: (secret)	The system rejects and revalidates the username	✓	
4	Fill in the correct username but the wrong password	User Name: Admin Password: password	System rejects and refills password	✓	
5	Fill in the correct username and correct password	User Name: admin_user Password: admin123	The system accepts and the dashboard page for admin is displayed.	✓	
6	Fill in the correct username and correct password	User Name: regular_user Password: user123	The system accepts and the dashboard page for congregations and PA leaders is displayed.	✓	

Table 2: Congregation data testing table

No.	Test scenario	Test Case	Expected results	Testing Results	
				Successful	Failed
1	Select the congregation data menu	Select the congregation data menu	A list of congregation data appears	✓	

2	Select add data	Fill in the empty jemat data add form	The system will give a warning on forms that are left blank or that have not been filled in.	✓	
3	Select the Action button add data	Fill in all forms to add congregation data	Data will be saved and displayed	✓	
4	Select the edit data button	Edit congregation data without selecting the data to be edited	System revalidation on congregation data	✓	
5	Select the data you want to edit	Change data and fill in all congregation data forms	The system saves the data and displays the changes to the congregation data.	✓	
6	Select the delete button	Delete data without selecting the data to be deleted	The system displays the revalidation symbol on the congregation data	✓	
7	Click the delete button on the data to be deleted	Delete Data	The system will display data changes on the congregation data page	✓	

Table 3: PA Schedule Testing Table

No.	**Test scenario**	**Test Case**	**Expected results**	**Testing Results**	
				Successful	Failed
1	Select the PA schedule menu	Select the PA schedule menu	A list of PA schedules appears	✓	
2	Select add PA schedule	Fill in the blank PA schedule add form	The system will give a warning on forms that are left blank or unfilled.	✓	
3	Select the Action button add PA schedule	Fill in all forms to add PA schedule	Data will be saved and displayed	✓	
4	Select the edit PA schedule button	Edit congregation data without selecting the PA schedule to edit	Revalidation system on PA schedule	✓	
5	Select the data you want to edit	Change data and fill in all PA schedule forms	The system saves the data and displays the changes to the PA schedule.	✓	
6	Select the delete button	Delete data without selecting the PA schedule to be deleted	The system displays the revalidation symbol on the PA schedule	✓	
7	Click the delete button on the PA schedule to be deleted	Delete PA schedule	The system will display data changes on the PA schedule page	✓	
8	Select the Action button add PA schedule	Fill in all forms to add PA schedule (If there are multiple household names).	The system will display a warning and the schedule will not be added, but the system will redirect to the PA schedule add form page.	✓	
9	Select the Action button add PA schedule	Fill in all forms to add PA schedule (If there are multiple names of PA leaders in different households on the same day).	The system will display a warning and the schedule will not be added, but the system will redirect to the PA schedule add form page.	✓	
10	Select the Action button add PA schedule	Fill in all forms to add PA schedule (In case of duplication of household names, name of PA leader and day/date of PA).	The system will display a warning and the schedule will not be added, but the system will redirect to the PA schedule add form page.	✓	

Table 4: Page Testing Table for Congregations and PA Leaders

No.	**Test scenario**	**Test Case**	**Expected results**	**Testing Results**	
				Successful	Failed
1	Select the view PA schedule menu	Select the view PA schedule menu	A list of PA schedules appears	✓	

4. Conclusion

Testing using black box shows that the PA Scheduling Information System can perform its function and be used as it should without any obstacles or errors to improve the service of household PA worship to the congregation, every week Sumba Christian Church West Padadita

congregation which can be used as a source of information on household PA worship schedules without presenting information in the form of congregational newsletters announced directly or in paper form is less effective. Because there are often sudden changes in information, spending a lot of budget in buying books and paper, consuming a lot of time in making schedules, and most congregations have gone home or forgotten the PA household worship schedule that was delivered during the congregational message.

From this, an alternative solution is needed to overcome it in the form of a Website-based PA Scheduling Information System at the West Padadita Jemaat Sumba Christian Church that can help manage congregational data and PA household schedules. The system built is able to produce information on congregational data and household PA schedules.

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