E-ISSN: 3025-5481
DINASTI INFORMATION AND TECHNOLOGY
DINASTI RESEARCH
https://dinastirev.org/DIT dinasti.info@gmail.com +62 811 7404 455
DOI: https://doi.org/10.38035/dit.v3i2

Design of a Web-Based Scheduling Information System Using the Codeigniter Framework at the Regional House of Representatives (DPRD) of West Java Provience

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Abstract: Information technology today is highly advanced and has a significant impact on the government sector, particularly in managing time and resources. One application of information technology is the scheduling information system for the members of the West Java Provincial DPRD. However, until now, the scheduling system in the West Java Provincial DPRD still uses a manual method with Microsoft Word. This has resulted in the scheduling process being less efficient and highly prone to errors. The manual method complicates data retrieval, information updates, and structured documentation. To address this issue, a web-based scheduling information system has been designed using the CodeIgniter framework. The development method used is the waterfall method, which starts from the requirements analysis phase to the maintenance phase. System testing is conducted using the black-box method and questionnaires, which indicate that all functions within the system operate well according to user needs. With this information system, the scheduling process in the West Java Provincial DPRD becomes faster, more accurate, and well-documented. This system also assists staff in organizing and monitoring activity schedules, while reducing errors that often occur in the manual system.

Keyword: Information System Scheduling, Web, CodeIgniter, DPRD

INTRODUCTION

Information technology today is highly advanced and has brought significant impact across various aspects of society. One area that has felt this impact substantially is the government sector, particularly in the management of time and resources. The advancement of information technology has driven change and development, enabling organizations and institutions to leverage it to improve performance and efficiency through technological utilization. Scheduling at the Regional House of Representatives (DPRD) of West Java Province is a crucial factor in ensuring the smooth execution of legislative duties and responsiveness to community needs. By effectively managing plenary meeting agendas, work

visits, public socialization (sosper), and other activities, the DPRD can enhance productivity and clarity in the decision-making process.

The DPRD of West Java Province plays a critical role in regulating and overseeing the implementation of regional governance. One of the main supporting factors for the DPRD's performance is effective scheduling management. This includes organizing meetings, policy discussions, and coordination among members. High-quality scheduling is essential to ensure that legislative and supervisory processes run smoothly, without overlaps or delays in the agenda. This study compares a previous system, namely the "Secretariat Information System of DPRD of Kuantan Singingi Regency," with the newly developed system. The former system had several shortcomings, such as limited information dissemination through social media, lack of a centralized system for documentation and scheduling, and the use of simple technology without modern framework support. These led to inefficiencies and limitations in data management. On the other hand, the newly developed system offers a more organized, efficient, and scalable structure. It enables real-time collaboration, accurate scheduling, structured documentation, data export features, and secure user management. Testing of the new system shows a significant improvement in work effectiveness and error reduction. Thus, the new system is proven to be far superior and more reliable than the previous one, as it supports transparency, efficiency, and professionalism in DPRD activity management. (Kabupaten & Singingi, 2020)

Observations indicate that the scheduling process at the DPRD of West Java Province remains suboptimal, leading to unclear information for members managing their various activities. The use of Microsoft Word as a scheduling tool does not fully support efficiency. It presents difficulties in creating complex schedules, has limited real-time collaboration, and lacks well-integrated information. This makes it difficult for DPRD members to access accurate activity schedules. Therefore, a more structured and integrated information system is needed. By utilizing the CodeIgniter framework, this study develops a web-based scheduling information system using CodeIgniter. The use of CodeIgniter is a suitable choice in terms of maintainability and the use of open-source code, with various plugins readily available. With this system, the scheduling process is expected to become more efficient and effective, and managing information related to activities will become easier

Basic Theory

Definition of System

A system is a unity consisting of various components or subsystems that interact, depend on each other, and are inseparable (integral) in order to achieve specific objectives. (Wibowo et al., 2023)

Definition of Information

Information refers to the result of data processing that is presented in a more useful and meaningful form to its recipient, reflecting real-world events that can be used as a basis for decision-making. (Wibowo et al., 2023)

Definition of Information System

An information system, as defined by Lani Sidharta in Wibowo (2023), is a system designed with a set of computerized components and procedures that are integrated to collect data, process it, and produce useful information for its users. (Wibowo et al., 2023)

Definition of Web

The web is a computer network consisting of a collection of internet sites that provide text, images, sound, and animation resources via the hypertext transfer protocol. Many people know the web as the WWW or World Wide Web. The WWW itself is one of the most widely used internet services today and is known as a series of web pages interconnected via hyperlinks, forming an ocean of information. (Limbong, 2021)

Definition of Framework

A framework is software that provides a working structure that can be utilized by developers to build applications, whether web-based, mobile, or desktop. It contains various commands and basic functions commonly used, thereby facilitating the application development process. By using a framework, the development process is expected to be faster and result in well-organized and neatly structured applications. (Kansha, 2023)

Definition of CodeIgniter

CodeIgniter is a web-based application framework built on the MVC (Model, View, Controller) concept. MVC is a method in application development that separates data (model), the user interface (view), and data processing logic (controller). CodeIgniter includes a comprehensive library to handle various common operations needed in web application development. (Sallaby & Kanedi, 2020)

Definition of Scheduling

Scheduling serves as a guide to manage time and allocate available resources to achieve predetermined targets, enabling tasks to be completed within the planned timeframe. (Destiningrum & Adrian, 2017)

Definition of DPRD (Regional People's Representative Council)

"DPRD is a Regional People's Representative Institution that acts as part of the Regional Government. As the people's representative, DPRD has functions of forming regional regulations, budgeting, and supervision." DPRD has an organizational structure consisting of Council Apparatuses (AKD), which include the DPRD Leadership, Budget Committee, Honorary Board, Deliberative Body, Legislative Formation Body, and Commissions. (DPRD of West Java Province, n.d.)

METHOD

Data Collection Method

The method used in this research is a qualitative approach involving interviews and observation. The interviews were conducted through direct question-and-answer sessions with the Secretariat staff of the Regional People's Representative Council (DPRD) of West Java Province. The questions were related to the existing problems in DPRD West Java, and the observation involved directly monitoring the activity schedules at the DPRD office. After the data collection process, the next step was to analyze the data by reading, studying, and reviewing the current system. This was followed by the design of a system for the application to be developed.

System Development Method

In the process of designing the secretariat information system at DPRD West Java Province, the waterfall method was used. The waterfall method is one of the approaches in the Software Development Life Cycle (SDLC) that is often used in information system development. The term “waterfall” illustrates a sequential process where each phase flows into the next. This method emphasizes a systematic and sequential approach—starting from analysis, design, coding, testing, and maintenance. Each phase is carried out thoroughly before moving on to the next, thereby creating a structured and well-planned workflow in software development. (Pratiwi et al., 2023).

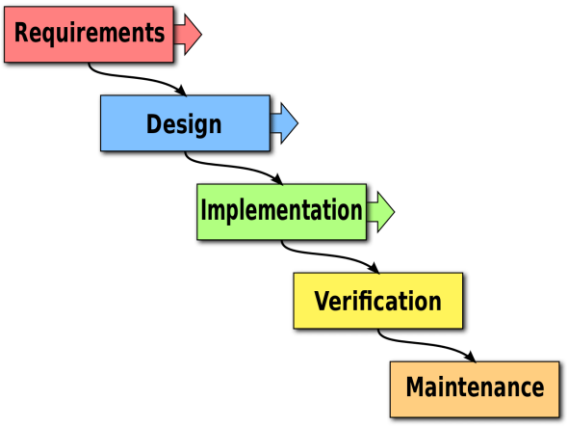

Figure 1. Waterfall Methods

1. Requirement Analysis
   The researcher conducted interviews and direct observations of the complaint management process within the DPRD to gather system requirements.
2. System Design
   The user interface was designed using a flowmap approach to ensure the system would be user-friendly for both the general public and internal administrators.
3. Implementation
   The system was developed as a web-based application using PHP as the programming language and MySQL as the database.
4. Testing
   Black-box testing was performed to verify that all system functions operate as expected.
5. Maintenance
   System evaluation was carried out by collecting feedback from potential users in order to refine the system prior to full deployment.

RESULT AND DISCUSSION

A. System Analysis

The scheduling system in the West Java Provincial DPRD is currently not fully computerized. The scheduling process for activities is still done manually, utilizing the Microsoft Word application. This condition causes a number of obstacles, such as difficulties in managing and searching for schedules efficiently, difficulties in collaborating in real-time when creating schedules and increasing the risk of scheduling errors due to lack of integration in the system used. The following is an analysis of the system currently running in the West Java Provincial DPRD:

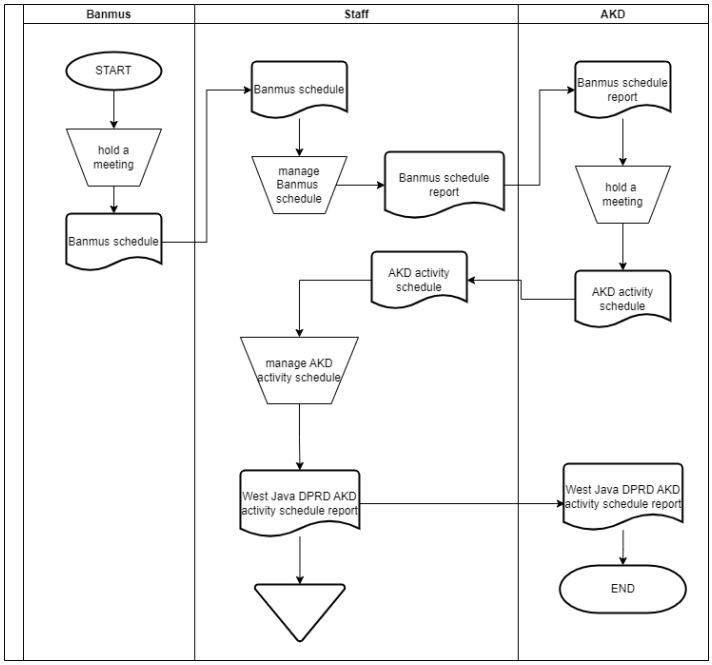

Figure 2. Flowmap in progress

B. System Design

The proposed system flow for designing a scheduling information system in the West Java Provincial DPRD. The following is the flowmap of the proposed scheduling information system:

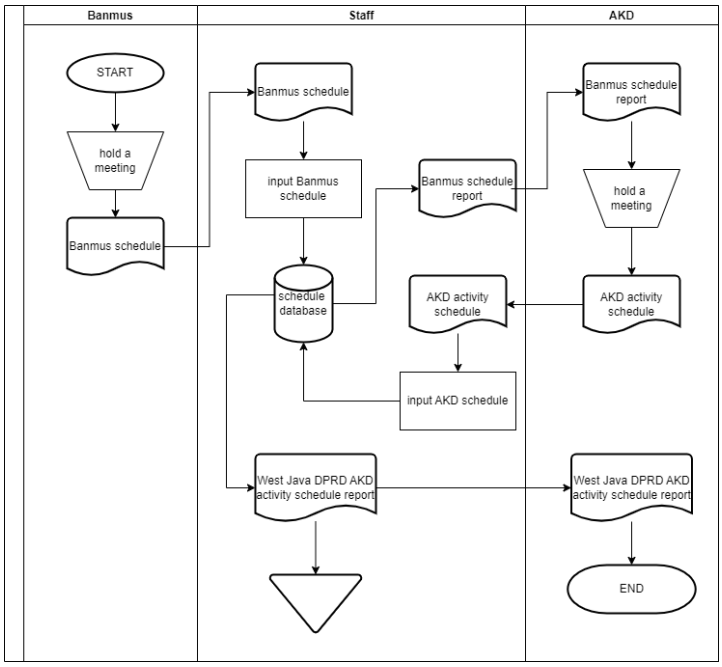

Figure 3. Proposed flowmap

1) Context Diagram

Below is a context diagram of the West Java Provincial DPRD scheduling information system.

Figure 4. Context diagram of IS scheduling

2) Data Flow Diagram (DFD) Level 0

Below is the DFD level 0 of the scheduling information system in the West Java Provincial DPRD.

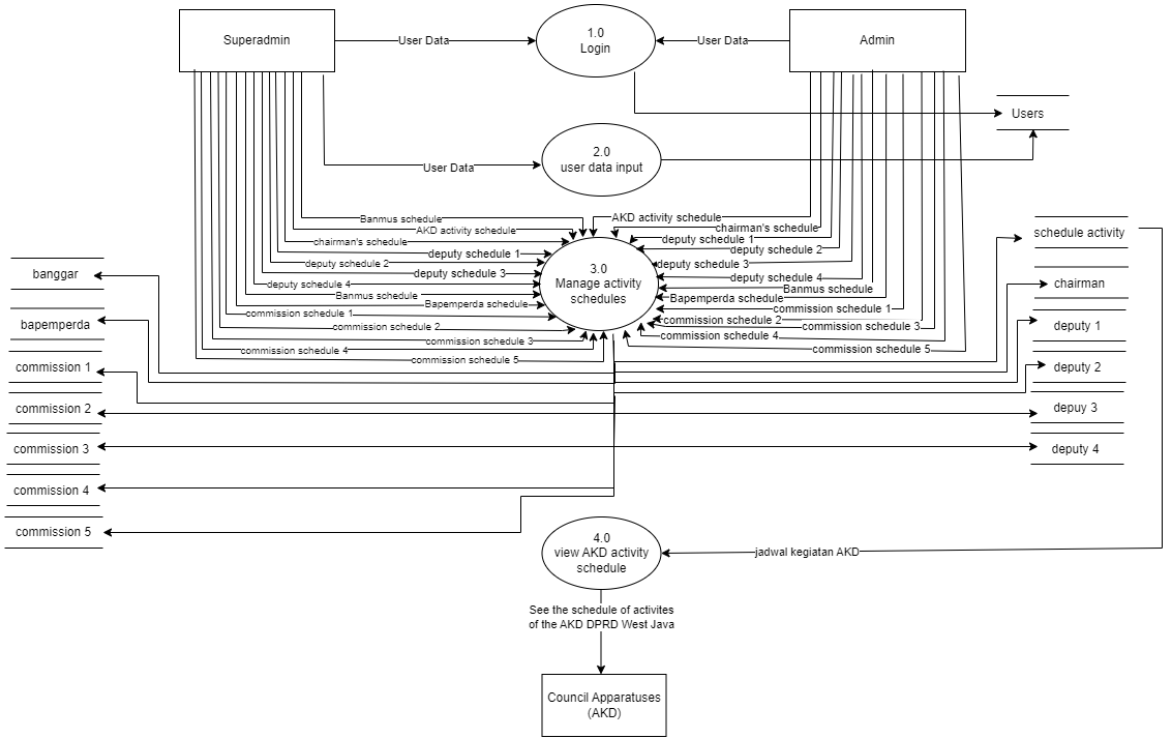

Figure 5. DFD Level 0 IS Scheduling

C. Implementation

1) Login Page

The image below is the login display for the Scheduling Information System.

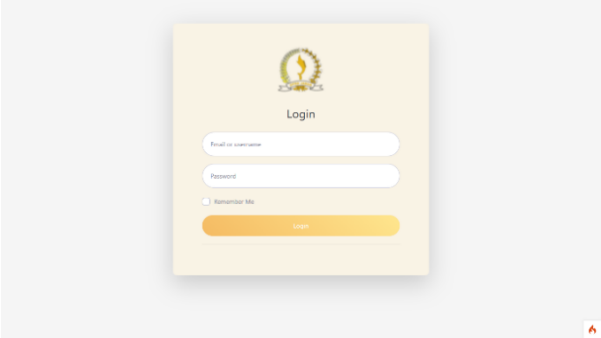

Figure 6. Login Page View

2) Dashboard Page

The image below is a display of the dashboard that will appear after logging in.

Figure 7. Dashboard page view

3) User Data Page

The image below is a display of user data that can only be accessed by the superadmin.

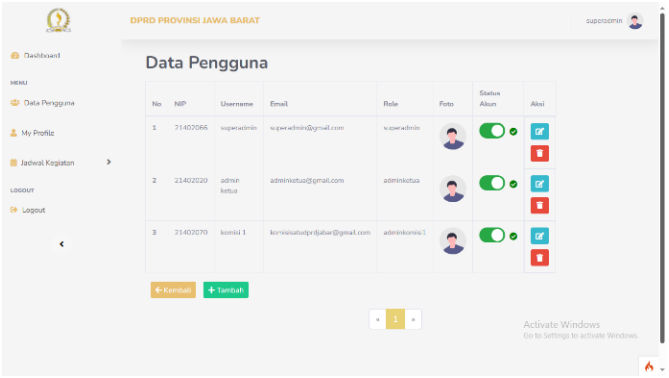

Figure 8. User data page view

4) Profile Page

The image below is a display of the profile page which will display profile information from users who log in.

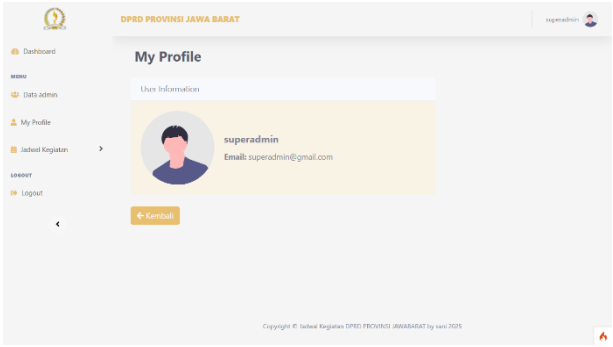

Figure 9. Profile page display

5) Activity Schedule Page

The image below is a display of the main activity schedule of the members of the West Java Provincial DPRD.

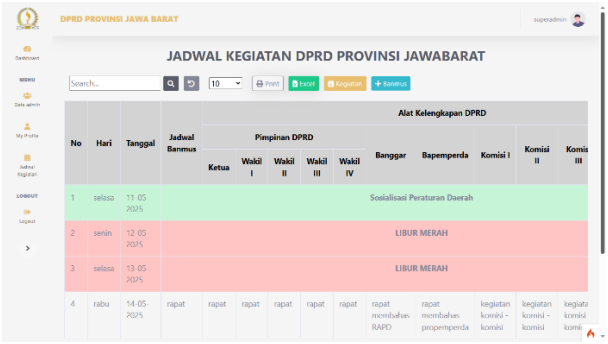

Figure 10. Activity schedule page display

6) Commission I Schedule Page

The image below is a display of the commission I schedule, which can be added to the commission I schedule by the superadmin and commission I admin.

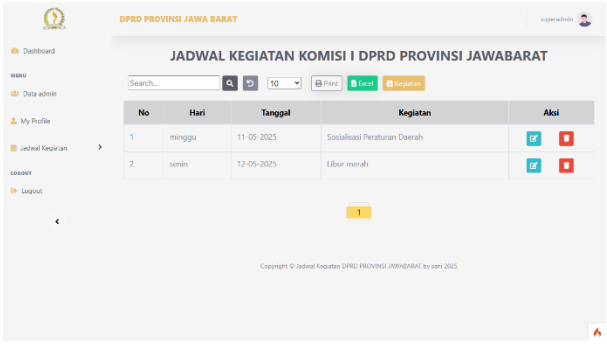

Figure 11. Commission schedule page view I

D. Testing

At this stage, all systems and components that have been developed will be tested to ensure that the system is free from deficiencies. At this stage, testing is carried out using 2 methods, namely:

1) Black Box Testing Method

This method is used to test the function of the features on the West Java Provincial DPRD scheduling application website. The test results can be described as in the following table:

Table 1. Black-box testing results

No	Testing	Expected results	Test results
1	Login form	Displays the system dashboard page	The system successfully displays the dashboard form
2	Input user data	Save input data results	The system successfully saved the input results.
3	Displaying profile form	Can display profile form	the system displays the user profile
4	Input activity schedule	Save activity schedule data from input results	The system successfully saved the input results.
5	Displaying the activity schedule form	Can display activity schedule form	the system displays the activity schedule
6	Commission schedule input I	Save the commission schedule data I input results	The system successfully saved the input results.
7	Exporting activity schedule	Export activity schedule into excel format	The system successfully converted the file into excel.

2) Questionnaire

This questionnaire is designed as a questionnaire containing a number of questions and distributed directly to relevant respondents. Data from the questionnaire is processed and converted into a chart. This method is carried out to collect data, which aims to support research findings. Below are the variables tested related to the results of the website design. Can the West Java Provincial DPRD scheduling application website increase effectiveness in managing the schedule of activities of West Java Provincial DPRD members?

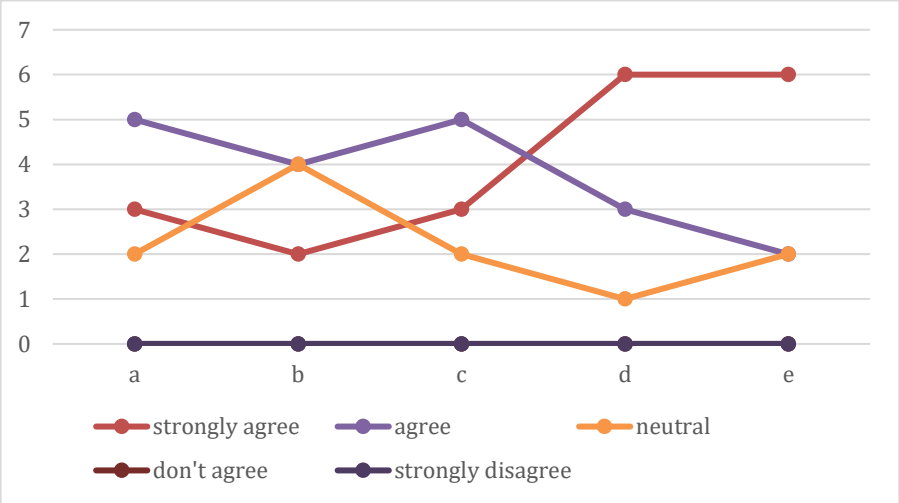

Figure 12. Questionnaire results

Statement:

a. The scheduling application website that was created makes it easier for staff to organize the schedule of activities of the West Java Provincial DPRD
b. The scheduling application website that was created helps reduce errors in scheduling the activities of members of the West Java Provincial DPRD
c. The time needed to organize the schedule is faster by using the scheduling application website that was created
d. The scheduling application website that was created can optimize coordination between members of the West Java Provincial DPRD
e. The use of the application website that was created increases the effectiveness of work in managing the schedule of the West Java Provincial DPRD

From Figure 12 above, as many as 10 respondents gave responses regarding the scheduling application website that had been created. If calculated on average, it can be assessed that 40% of respondents (10 people) "strongly agree" with the statement that has been submitted. And 38% of respondents (10 people) "agree" with the statement that has been submitted, the remaining 22% responded neutrally. So it can be concluded that the West Java Provincial DPRD scheduling application website can increase the effectiveness in organizing the schedule of activities of members of the West Java Provincial DPRD.

3) Maintenance

The web-based scheduling system used in the West Java Provincial DPRD requires regular maintenance to ensure that it continues to function properly. If there is no adequate maintenance, this system may face various obstacles in the future, which can have a negative impact on the operational activities of the institution. Therefore, it is very important to carry out corrective maintenance to address the extent to which problems arise when the system is used. This maintenance will play a role in handling issues and risks that may arise, so it is very important for the smooth running of the system. The ability to quickly detect and resolve problems is one of the most crucial aspects in maintaining the operational stability of the system in this government agency.

CONCLUSION

Based on the findings of the research titled "Designing a Web-Based Scheduling Information System Using the CodeIgniter Framework in the West Java Provincial DPRD", it can be concluded that the current scheduling process, which relies on manual creation using Microsoft Word, is prone to errors in recording and planning, potentially leading to misinformation and coordination issues between departments. The newly designed web-based scheduling information system aims to address these challenges by offering a more structured, accurate, and efficient approach to managing activity schedules, thereby reducing the risk of errors. Developed using the CodeIgniter framework, the system supports organized and easily maintainable web-based functionality, enabling administrative staff to efficiently organize data, regularly update schedules, and improve overall work transparency. System testing confirmed that the application performs effectively and can replace the previous manual process, contributing significantly to the improvement of administrative and scheduling operations within the West Java Provincial DPRD.

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