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Development of A Website-Based Project Management Information System

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Abstract

This research aims to find out if this project management information system uses the most commonly used waterfall model. Creating web-based application programming using HTML and PHP with MySQL used as the database server. The research method uses a qualitative approach through observation, interviews, and literacy studies. Conclusion In the information system, each work progress is updated every week via a Dashboard page input by the service provider, in an integrated manner and an online project document archiving system that can be accessed at any time by the relevant parties. The history of activities, both problems and solutions during project implementation, is recorded on this Website through the Discussion and Photo sections so that it can be used as a reference for planning and implementing similar projects in the future. Data and information as well as documents stored on the server make storage easier and faster as well as functioning as backup documents for physical/hardcopy documents in digital form. Apart from understanding project implementation, responses and input from potential users are very helpful in developing the Website. It is necessary to improve existing features and add new features according to the needs of the project owner so that this website-based project management information system can function optimally.

Keywords: Website Based, Project Management, Information System

I. Introduction

A Project Management Information System is an information system consisting of tools and techniques used to collect, integrate, and disseminate output from the project management process (Drob and Zichil, 2016). The application of information systems has advantages in the project management process. As in research (Caniels and Bakens, 2012), project management information systems can help project managers make decisions.

Lupasc (2016) explains how the positive influence of web technology on information systems project management can help facilitate communication and expand access between project teams. Project management information systems can be used to monitor cost quality in projects such as research.

According to Ratnasari et al. (2017), discusses and develop a web-based project management information system for software developers. In the case of a construction project, it describes the development of an information system that focuses on the project planning process using the Probability Impact Matrix and Precedence diagramming method.

According to Mardiani (2018). Using the xampp database, however, in its use there are several weaknesses, namely that it is not suitable for handling large amounts of data, both for storing data and for processing data, and has limited performance capabilities on the server when the data stored has exceeded the maximum capacity of the server because does not apply the Technology Cluster concept

When using my SQL database, has several advantages, namely that it can integrate with other programming languages such as R, Python, etc., the RAM required is not that large, it can be used by multiple users, the table structure is more flexible, it is open source (free) and guaranteed security (Girsang, Jafar and Fajar, 2018).

In designing a web-based project management information system for construction projects that can automate the process of ordering construction services, project planning, controlling project costs and activities, and project reporting. This research aims to analyze the current project work control process by observing and collecting the necessary documents, as well as designing an information system to optimize project work control using the prototype method.

2. Research methods

The objectives of this research, namely to provide a project database that can store project data and information, an information system that can be accessed online, and an integrated reporting system with ease of monitoring and evaluation, then to fulfill these objectives a software system design based on web

2.1. Data collection technique

Data collection in research goes through several processes, including the following:

a. Primary data was sourced from interviews and discussions with service users and service providers and accompanied by a presentation on the concept of this website-based project management information system. The results of these interviews and discussions will be used to improve and increase the output produced by the Website-based project management information system.
b. Secondary Data includes data obtained from literature, literature studies, previous research, web applications, along with software used in this research such as PHP, MySQL database, jQuery, and Ajax, as well as several software templates that are widely available on the internet

3. Results and Discussion

3.1. System planning

The method used in system design is a method with a structured approach with information system design tools using Data Flow Diagrams (DFD) and database design tools using Entity Relationship Diagrams (ERD).

3.2. System Requirements Analysis

Input Requirements The inputs required in this project management information system include:

a. Authorization data for Budget Users, Commitment Making Officials, and Technical Team with Name, Username, and Password attributes.
b. Service Provider Data with the attributes Company Name, Company Address, Leader's Name, Leadership Position, Username, and Password.
c. Report data with activity attributes, physical progress, workers, equipment, problems

and solutions, and documentation.

Output Requirements The outputs required in this project management information system include:

a. Executive Summary Report contains a summary of activities and physical progress during the last 1 (one) week.
b. The S-Curve Report contains the physical progress of work depicted in a line graph that compares plans and actual work.
c. The Gantt Chart report contains a comparison of the schedule of work carried out between plans and realization
d. Billing Report contains payment report formats created to simplify and speed up the billing process.

Hardware and Software Configuration Hardware Specifications The following is the proposed hardware for a Personal Computer (PC) used as a client from the user side:

a. Processor: 1 GHz or higher
a. Memory: 1 GB DDR3 or higher
b. VGA Card: Onboard or via an expansion slot
c. Optical Drive: Optional or CD/DVD-R/RW
d. Hard disk: 80GB SATA or higher
e. Keyboard: Standard
f. Mouse: Standard
g. Printer: Standard
h. Monitor: 15 inches or higher
i. Internet: ADSL Modem/Cable Modem/Wifi/3G Or you can also use a tablet which is currently widely available on the market to access this information system while mobile/not in front of a notebook or PC. For tablet specifications, the recommended minimum is a 1 GHz processor with WIFI or 3G connection.

Meanwhile, the minimum hardware requirements for the server side are as follows:

a. Processor: Intel Xeon 2 GHz or higher or similar
b. Memory: 4 GB DDR3 or higher
c. VGA Card: Onboard or via expansion slot 46
d. Optical Drive: Optional or CD/DVD-R/RW
e. Hard disk: 500GB with system RAID or higher
f. Keyboard: Standard
g. Mouse: Standard
h. Printer: Standard
i. Monitor: 15 inches or higher
j. Internet: ADSL Modem/Cable Modem/Wifi/3G Specifications

Software The following is the software proposed to be used as a client from the user side:

a. Operating system: Windows/Linux/Mac
b. Browser: Opera/Chrome/Firefox/Safari/IE with the latest version that supports HTML, PHP, CSS3, Javascript, Flash (especially for Gantt Chart)

3.3. Website Users

This website is intended for all parties involved during project implementation, where each party has its level according to the existing organizational structure. The following image

generally explains the position of each party starting from the Budget User Authority (KPA) to the service provider.

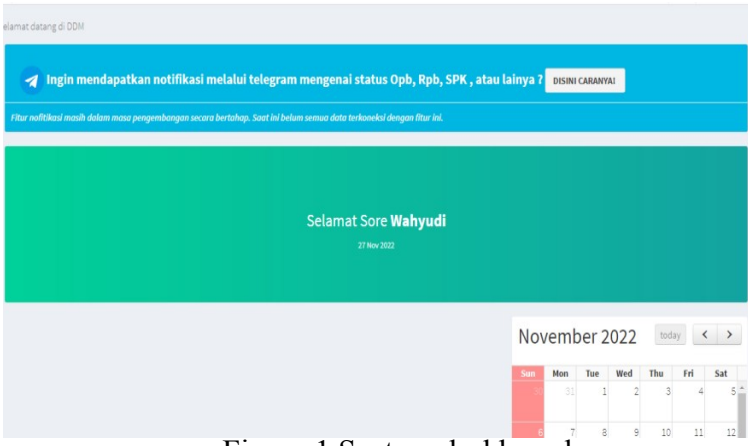

Figure 1 System dashboard

In this system development research, there is a system dashboard that contains the date and year, then there are several icons to go to other menus such as accounting, purchase orders, payments, procurement of goods, engineering, complaints program, and water accounts. Next, go to the accounting menu shown in Figure 2

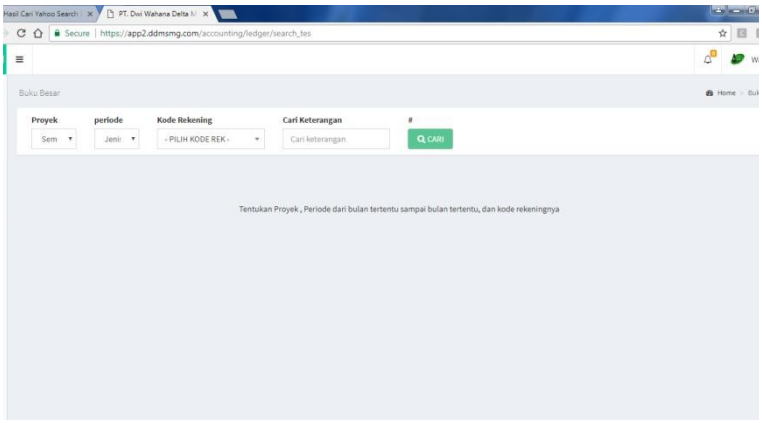

Figure 2. Project Type Accounting

Based on Figure 2 shows the accounting menu containing project type, period, account code, and search information. The accounting menu is a menu used to find out the costs of building a housing project in Bogor. Apart from that, the accounting menu is used to propose a budget plan (RAB) in the process of making a housing project.

Apart from that, in the accounting menu, there are also types of payments, namely debit and credit which are shown in Figure 3

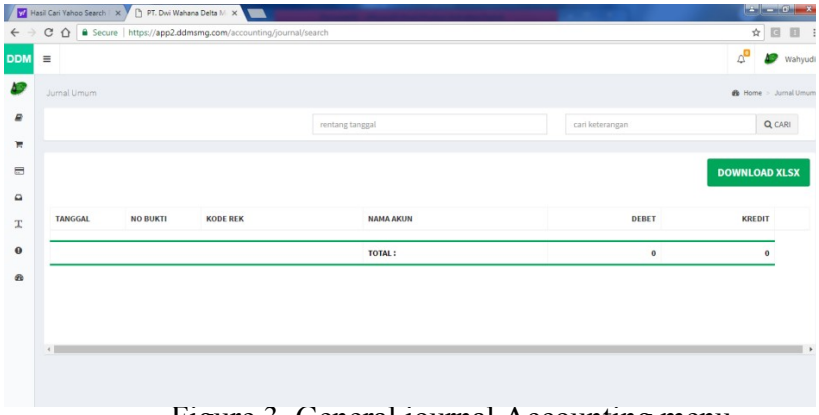

Figure 3. General journal Accounting menu

Next, Figure 3 shows the purchase order menu. In the purchase order menu, it is used to plan the purchase of goods. Apart from that, the purchase order menu is also useful for making the purchase order process more efficient

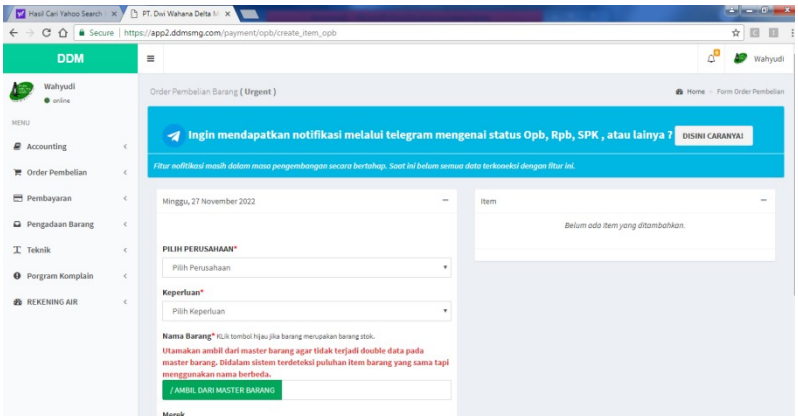

Figure 4. Purchase Order Menu

Companies that require large amounts of inventory must have a purchase order system. The purchase order menu is used when the RAB preparers need goods for the process of building a house in the Puri Delta Asri housing complex. In the purchase order menu in Figure 4, there is a select company content, which is used to fill in the company for the goods you want to buy, and then there is a requirement that functions to fill in the goods needed.

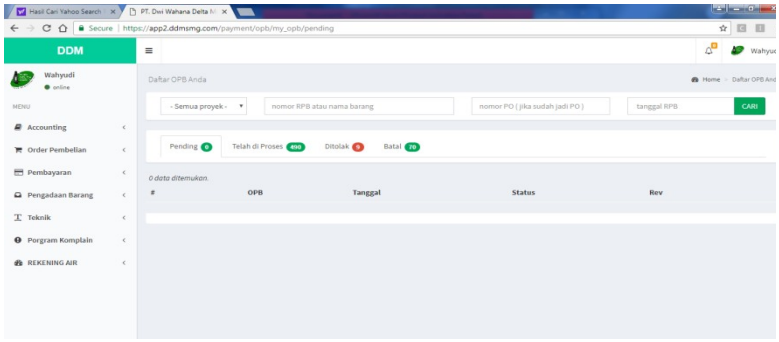

Figure 5 Purchase order progress history menu

After filling in the company and filling in the required items, a display like Figure 5 will appear, which contains pending, processed, rejected, and canceled processes. So you know whether the goods you need will be accepted or not

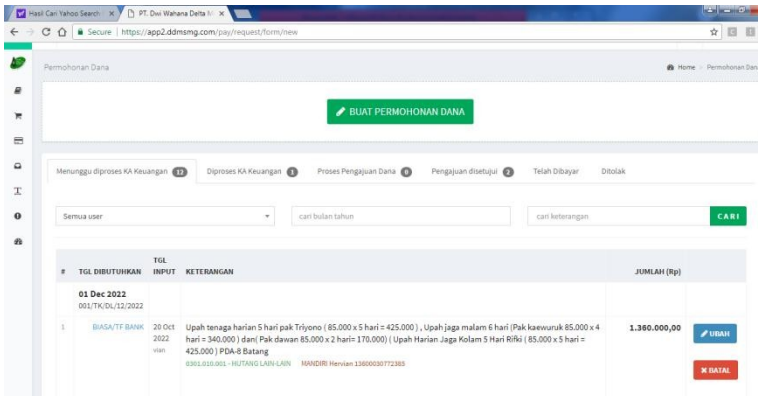

Figure 6. Payment Menu

Based on Figure 6, there is a payment menu that contains the request for funds, and the contents of the request for funds, namely the input date, description of funds, and items needed. Then, to find out if the funds have been processed, there is a menu, namely waiting to be

processed by the financial department, processed by the financial department, processing the fund's application, the application has been approved and has been paid.

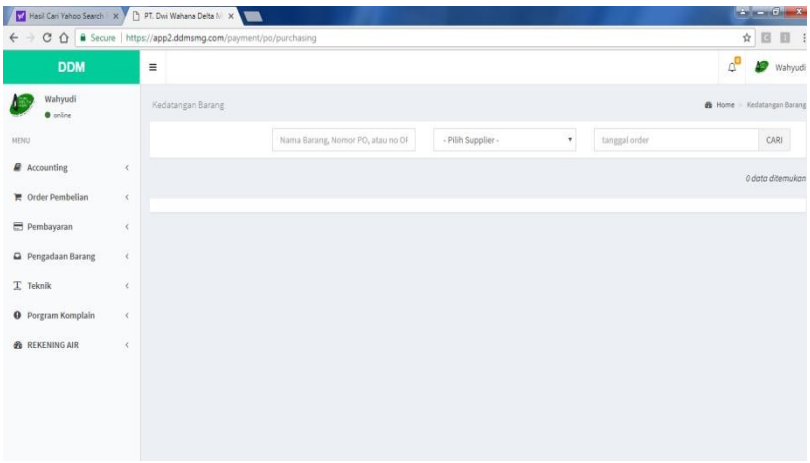

Figure 7 Goods Procurement Menu

Next is the goods procurement menu which can be seen in Figure 7. The goods procurement menu has several other menus, namely goods procurement which contains the arrival of goods, goods handover menu which contains information awaiting confirmation and has been confirmed, goods history which contains goods, month of arrival, and specifications of goods that have arrived in previous months, and there are frame stock menu which contains the number of frames available, frames in the warehouse, goods to be moved, item inventory and history.

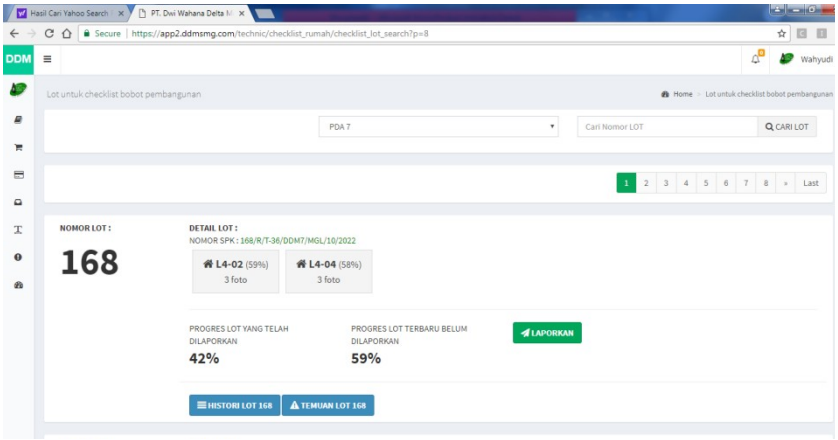

Figure 8 Engineering menu

Figure 8 shows the engineering menu, the engineering menu has 2 options, namely house progress input and SPK infra list. The first page of the technical menu contains the lot number, and lot details showing which block it is in, then there is a lot of progress that has been reported and the latest progress that has not been reported. Apart from that, there is also a menu to move between PDA 1-9 for data input.

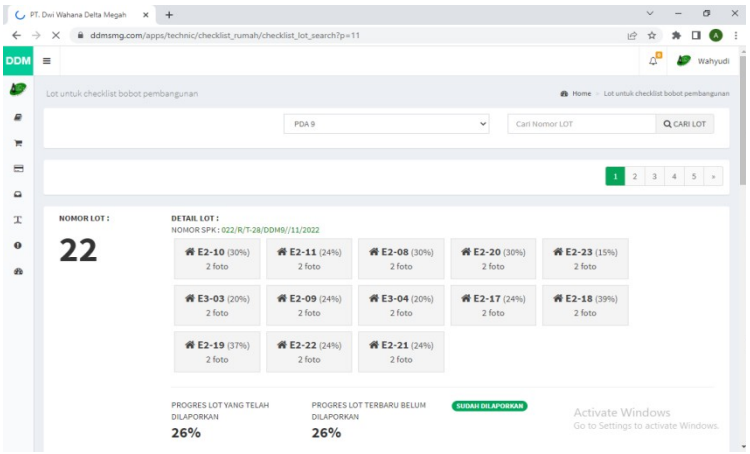

Figure 9 Housing Progress Input Menu

Next is the housing progress input process which can be seen in Figure 9, this image contains the lot number, lot details, lot progress that has been reported, and the latest lot progress that has not been reported. For housing input, choose one of the lot details, namely E2-10. Then the page in Figure 10 will appear

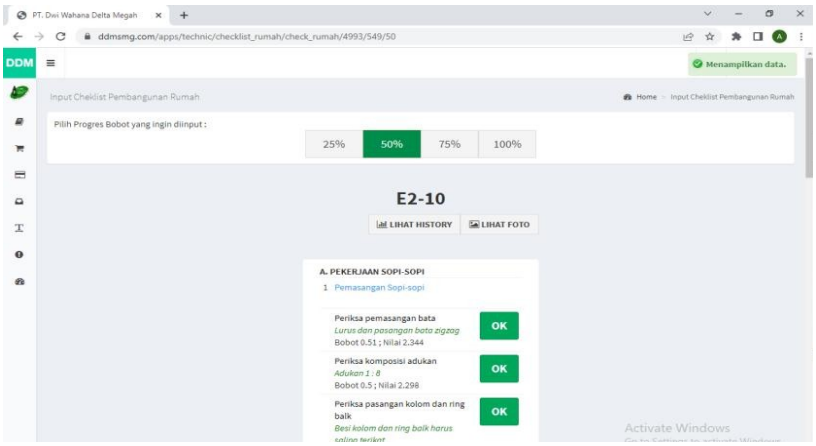

Figure 10 Housing Progress Input Menu

In Figure 10, namely the progress in block E2-10, there is progress with a percentage of 25%, 50%, 75% and 100%. Each percentage has its indicator. In Figure 4.10, the progress percentage is 75%, which is about brick installation, and mortar composition. column and ring pairs. If each indicator has been implemented then click OK. After pressing OK, the next step is the photo upload process, which is shown in Figure 11

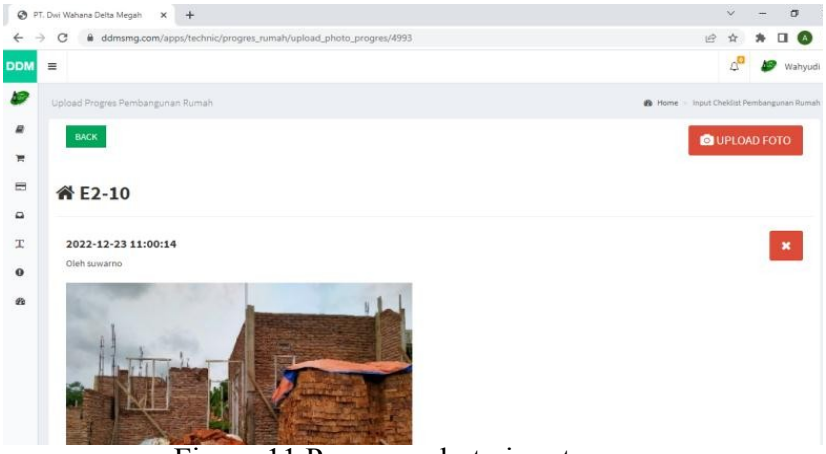

Figure 11 Progress photo input menu

Next, go to the SPK infra list that is available on the Engineering menu. Then Figure 12 will appear

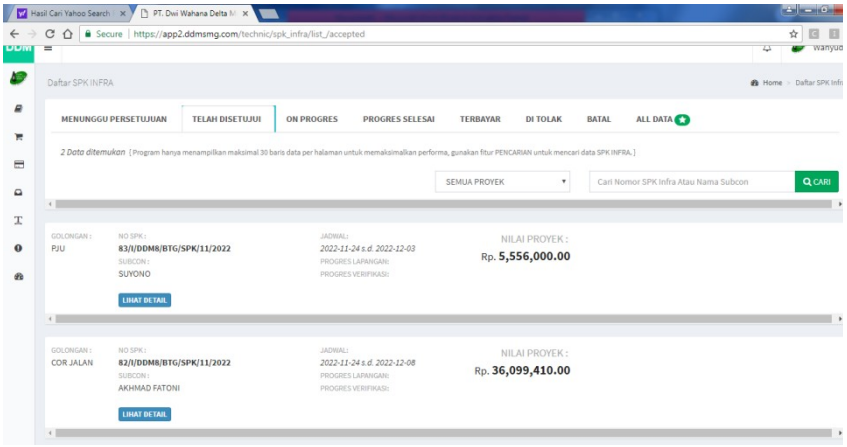

Figure 12 Process after Data Input

Figure 12 shows the data process after input, namely the menu "awaiting approval", and "has been approved" which shows that the progress of the project has been approved by Quality Control. Then there is "in progress", which means the project is in the development process. Next, there is "progress complete" meaning the process of building the house has been completed. There is "paid" which shows that the house has been paid for by the buyer. Then there is the "Reject" and "Cancel" menu, which are used to reject progress that does not match reality and to cancel progress that has already been input but has been rejected by Quality Control. Next is a comparison of the existing system with the system developed in this thesis.

4. Conclusion

Based on the discussion above, several conclusions can be drawn, including the following:

a. In this information system, a project database server has been built using MySQL which supports RDBMS, where all data processed into project reports comes from 1 (one) source and is stored on the server, making it easier to store search data and use it as a backup. from hardcopy documents. This website-based information system can be accessed online via the internet so that information provided between parties involved in the project can be conveyed quickly.
b. The web-based reporting and billing system included in the information-based system makes it quick and easy for suppliers to provide integrated work progress reporting and billing to project owners.
c. During the process of developing this information system, responses and contributions from potential users are very useful in providing information, presenting information, and using the information system so that it runs according to their needs and desires. potential users.
d. This website development is quite effective because the project owner can know and anticipate the advantages and disadvantages of service providers who have collaborated on a project at the Company if they are re-selected in the final auction process. Responses and input from several technical teams highlighted the issue of clarity in more detailed physical progress reports, such as daily, weekly, and others. This is to facilitate the evaluation process by the technical team.

5. Suggestion

Based on the discussion and conclusions in this development research, several suggestions can be given, namely as follows:

a. For users, so that the system can run optimally, users must perform regular backups to avoid unwanted events.
b. For developers the system currently being built is website-based. It would be a good idea to carry out mobile-based development.
c. Sharing tutorials in providing online and offline training on how to use this site is very important for project owners and service providers for the smooth running of construction projects during the implementation period
d. For companies, the security elements that already exist in this information system in the form of logins need to be added to other security systems that are not yet used, considering that the documents contained in them are quite important project documents.

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