Web-Based Procurement Information System at CV Radra Sejahtera

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Abstract

From field observations, the process of submitting procurement requests for goods and services at CV Radra Sejahtera is still conducted offline and has not been well-organized. Currently, clients requiring procurement must first send a formal letter to CV Radra Sejahtera, which is then processed by the company. This approach is considered slow due to the absence of an integrated system that allows clients to submit requests directly. This study aims to develop a system that facilitates the connection between CV Radra Sejahtera and its clients or users online. With this system, clients can directly submit their procurement needs without the need for manual letter submissions. The objective of this research is to build an information system that assists in the submission and management of goods and services procurement at CV Radra Sejahtera. The system is designed and developed as a web-based platform using the Extreme Programming (XP) methodology. XP is chosen due to its advantages in shortening development time and simplifying bureaucratic processes, thereby accelerating the procurement request process. Based on the research findings, the developed system improves time efficiency by 50% in the request submission process. Previously, the submission process took an average of two days, but with the system, clients can complete their procurement requests in less than one day. Therefore, this system greatly benefits both the clients and CV Radra Sejahtera.

Keywords*: Information System, Procurement, Goods and Services, Extreme Programming, Website.*

1. Introduction

Information systems consist of several interconnected subsystems that collaborate to form an integrated system. These systems function to process data through specific stages, starting with receiving input in the form of data, then processing it, and finally generating output in the form of information that serves as a basis for decision-making [1]. An information system is a combination of work procedures, data, people, and information technology that is systematically organized to achieve the goals set within a company [2]. It is a collection of interconnected components that work together to achieve the intended objectives [3].

Procurement of goods and services is a series of processes aimed at meeting organizational needs, covering the planning stage to the execution of all necessary steps to acquire the required goods or services [4]. This procurement process is commonly found in business activities, whether in government institutions or private companies [5]. By implementing a procurement application, the entire procurement process can be recorded in a system, ensuring better data storage and archiving [6]. This system enables users and the procurement division to track the progress of the process in real-time, thereby enhancing transparency, efficiency, and accountability in its implementation [7]. Utilizing an information system in the procurement process can also minimize errors in data recording and storage [8].

Field observations indicate that the procurement of goods and services at Radra Sejahtera is still conducted offline and has not been properly structured. Currently, companies or individuals requiring procurement services must first send a formal request letter to CV Radra Sejahtera, which is then processed and responded to by the company. This approach is considered relatively slow due to the absence of an integrated system that can be directly accessed by businesses or individuals in need of procurement services.

In this regard, the researcher believes that the role of an information system can significantly facilitate the process by connecting CV Radra Sejahtera with clients or users online. This allows both companies and individuals to directly submit their procurement needs without the necessity of sending

formal request letters beforehand. As a result, the procurement process for goods and services becomes more efficient and faster. Additionally, the implementation of an information system enhances the ease of information dissemination to clients or users, whether they are individuals or representatives from companies, including CVs and similar business entities.

2. Method

The research is conducted using an appropriate research method approach to enhance effectiveness and success. The chosen research method plays a crucial role in determining the accuracy of the collected data, the quality of the analysis performed, and the validity of the conclusions drawn.

2.1. Data Collection Methods

In this research, the required data is obtained through various data collection techniques tailored to the needs of the study. The collected data may include interview results, field observations, company reports, and references from journals or books relevant to the research.

a) Interviews
Interviews are a data collection method conducted through direct communication between the interviewer and the respondent to obtain the necessary information for the research. In this study [9]. Interviews were conducted with relevant parties at CV. Radra Sejahtera to understand the business processes and challenges faced in the field.

b) Observation
Direct observation was carried out at the CV. Radra Sejahtera location to gain a deeper understanding of the implemented business processes. Additionally, this observation aimed to analyze how workflows are executed and how interactions between staff and users occur in various situations.

c) Literature Study
This method involves gathering scholarly works, including journals, books, and articles, that are relevant to the research topic being studied.

2.2. System Development Method

The software development method used in this research is the Extreme Programming (XP) method. This method is an object-oriented software development approach aimed at improving software quality through an interactive, iterative, and incremental process. One of the key advantages of Extreme Programming is its ability to accelerate development time by reducing bureaucratic processes, which in turn helps lower the overall cost of software development [10].

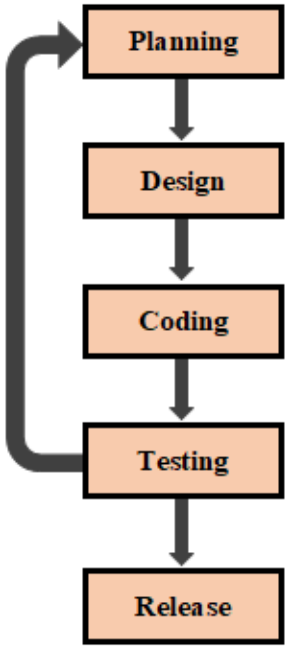

Fig. 1 Extreme Programming Stages

Figure 1 illustrates several stages involved in software development using the Extreme Programming (XP) method. These stages include:

1. Planning
   In this phase, information is gathered through observation and interviews with relevant stakeholders to gain a clear understanding of the current system workflow. The collected data serves as a foundation for defining project requirements and objectives.
2. Design
   This stage involves the use of use case diagrams to analyze the system and model interactions between users and the system. Additionally, system design and user interface layout planning are carried out to create a structured development blueprint.
3. Coding
   Based on the previously created system design, this phase focuses on converting the design into a functional software application using the PHP programming language. The process includes implementing system logic, writing code, and integrating various components to ensure that the system operates as intended.
4. Testing
   Once the system has been developed, a series of tests are conducted to evaluate its performance and verify that all features function correctly according to predefined specifications. This phase ensures that potential errors or inconsistencies are identified and resolved before deployment.
5. Release
   In this final phase, the fully developed system is deployed to a server, making it accessible to users. Additionally, continuous monitoring is performed to identify potential improvements or further development needs based on user feedback and system performance.

2.3. Current System Analysis

The procurement process for goods and services at CV. Radra Sejahtera begins with the admin recording a catalog of available goods and services, which serves as the primary reference for transactions. When a client requires specific goods or services, they submit a written proposal, which is then received and documented by the admin to ensure that all requests are properly recorded. Following this, the admin sends an official letter and message containing the details of the request to the client as a confirmation of the submitted proposal. Once the proposal is approved, the requested goods and services are prepared and delivered to the client according to the agreed terms.

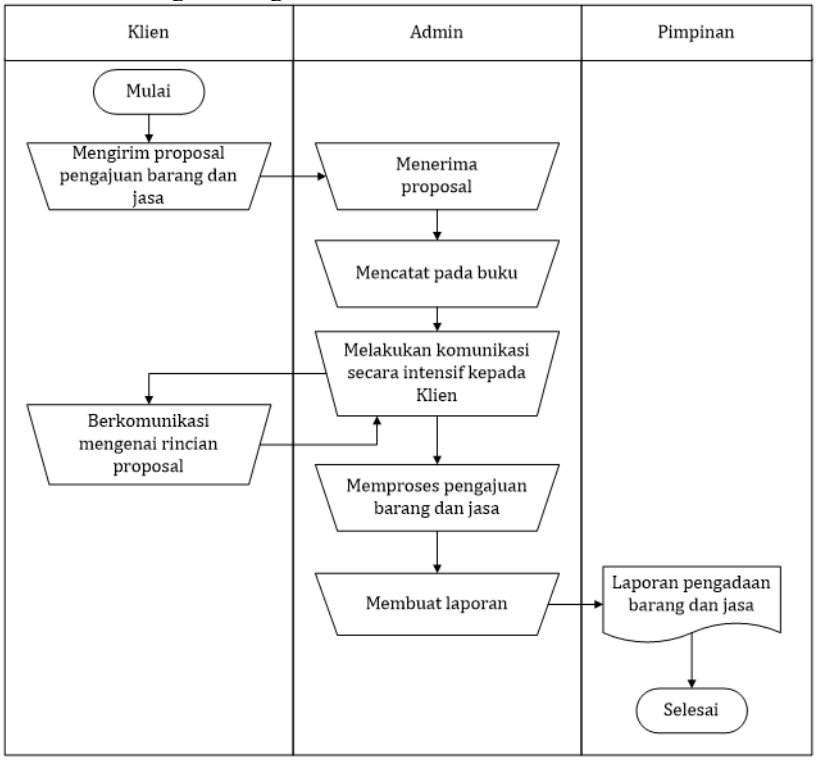

Fig. 2 Flowchart of the Current System

From the current system, it can be observed that all processes are still carried out manually, leading to a high potential for errors in recording, processing, and data management. Reliance on manual recording can also slow down workflow, increase the risk of data loss, and hinder overall operational efficiency.

2.4. Business Process

A business process is a set of interrelated activities carried out within an organization to achieve specific business objectives by delivering products or services to customers [11].

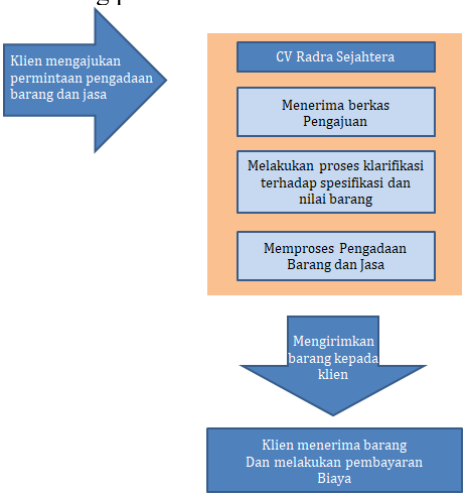

Fig. 3 Business Process Flow

CV Radra Sejahtera's business process ensures optimal service in procuring goods and services. Clients submit a procurement proposal, which the company verifies for specifications and contract value. Once ready, the goods are delivered as requested, and the client completes the payment.

2.5. System Design

This research uses the Unified Modeling Language (UML) method to represent the system during the system development process. By utilizing UML, developers can create diagrams that visualize system components, interactions between elements, and the workflow within the software [12].

2.6. Usecase Diagram

A Use Case Diagram is one of the components in UML used to illustrate the relationships and interactions between different actors within the system. This diagram helps describe how users interact with the application, including their roles and the actions they can perform within the system being developed [13].

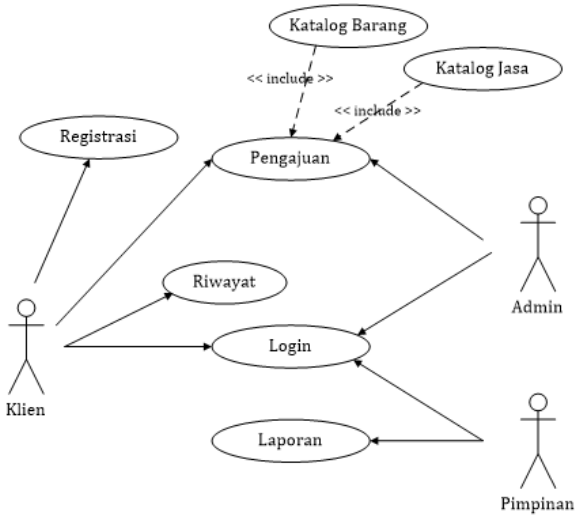

Fig. 4 Use Case Diagram

Figure 4 illustrates the use case diagram with three actors: Client, Admin, and Manager. The Client can register, submit procurement requests for goods and services, and view their submission history. The Admin manages the goods and services catalog and verifies client submissions. The Manager can view and print monthly procurement request reports.

2.7. Activity Diagram

An Activity Diagram is used to represent the dynamic aspects of a system. It visually depicts the workflow process and transitions between activities in a clear and structured model [14].

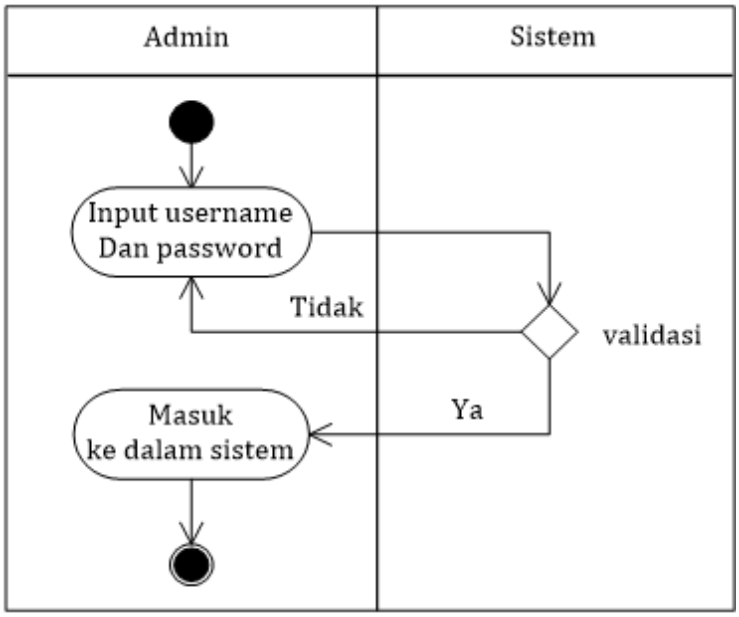

Fig. 5 Login Activity Diagram

Figure 5 illustrates the steps required for admin or users to log in and access the system. In this process, users must enter their username and password on the designated login page. Once submitted, the system validates the credentials to ensure they match the registered data in the database.

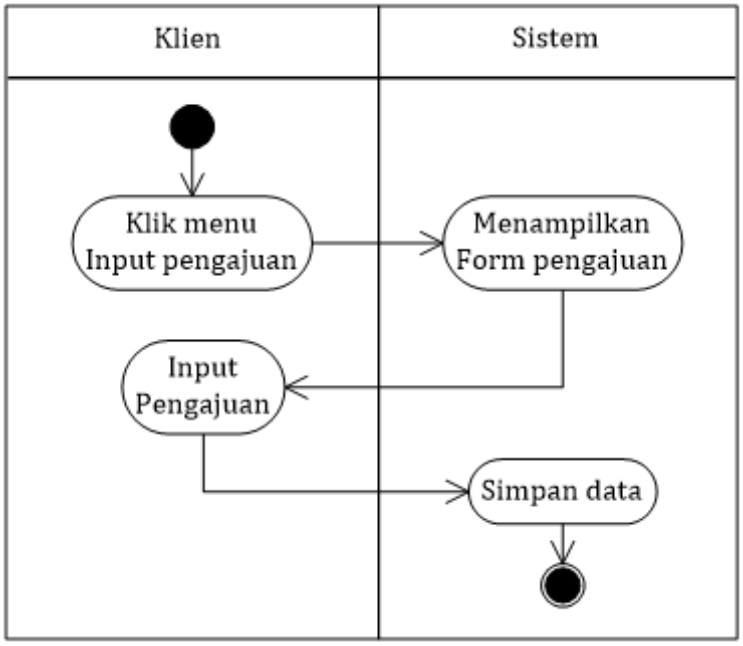

Fig. 6 Activity Diagram for Procurement Request

Figure 6 provides a detailed workflow of the system when a client submits a procurement request for goods and services. The client first fills out a submission form, specifying the required items or services.

Once completed, the data is automatically stored in the database to ensure proper documentation. The admin then accesses and processes the request, verifies the information, and takes the necessary steps to proceed with the procurement process.

2.8. Class Diagram

The following is the Class Diagram built within the system.

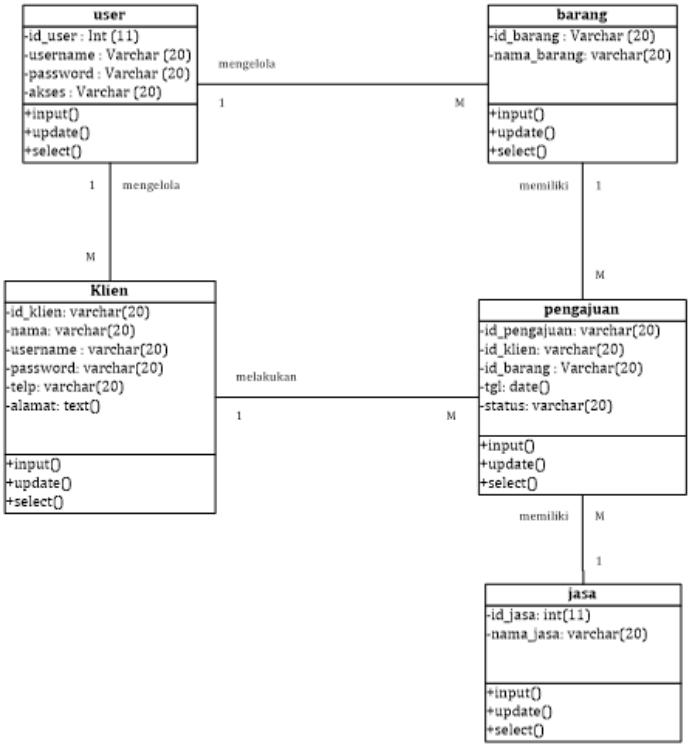

Fig. 7 Class Diagram

Figure 7 displays the class diagram, which illustrates the system's structure by representing classes, attributes, methods (functions), and relationships between classes in the developed system.

3. Results and Discussion

This section outlines the research findings, presenting the developed system through screenshots of system interfaces from various menu pages.

3.1. Home Menu

The Home Menu serves as the main interface of the system or application, functioning as the central navigation hub for users. Below is the display of the home menu page.

Fig. 8 Home Page Display

Figure 8 shows the initial screen when the application is launched. The system displays a front-view image of the Radra Sejahtera office, along with menu buttons that users can access according to their respective functions.

3.2. Login Menu

The Login Menu Page serves as the main access point for users to enter the system. Below is the display of the login menu page.

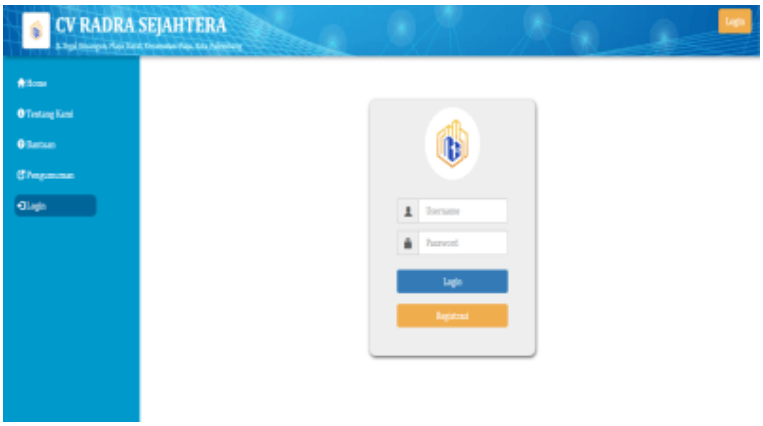

Fig. 9 Login Page Display

Figure 9 illustrates the Login Page, which acts as the primary gateway for users to access the system. On this page, users are required to enter their registered username and password. Once the credentials are input, the system performs a validation process to verify that the entered data matches the stored information in the database. If the validation is successful, users will gain access to the main menu according to their roles. Conversely, if the information provided is invalid, the system will display an error message indicating incorrect username or password and allow the user to retry the login process. This login page ensures secure access control, restricting users based on their assigned permissions.

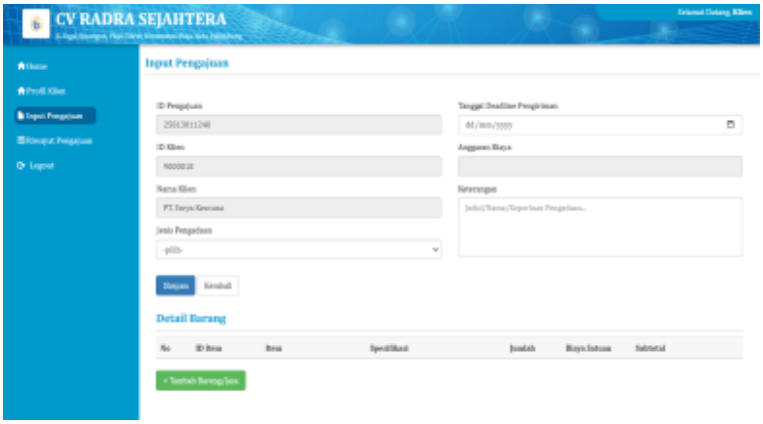

Fig. 10 Submission Page Display

Figure 10 presents the Goods and Services Request Submission Menu, which allows clients to submit procurement requests according to their needs. On this page, clients are required to fill out a submission form that includes essential information such as: Submission ID, Client ID, Client Name, Submission Date, Details of requested goods and services. Each field in this form plays a crucial role in ensuring that the submission process is structured and well-documented.

3.3. System Testing

After the application development process is completed, the next step is the evaluation or testing phase to ensure that the system functions as expected. In this phase, the black-box testing method is applied, focusing on functionality testing without examining the source code. This testing aims to evaluate several key aspects, including: User Interface Display, Menu Features, Main Functions of the Application. Using this method, testers can assess whether the application performs correctly based on the given inputs and expected outputs, ensuring that every feature operates according to user requirements [15].

Table 1 Testing Results

Actor	Menu Page	Testing	Expected Outcome	Result
Client, Admin, Leader	Home	Does it display company information	Displays company information	Success
Client, Admin, Leader	Login	Input correct username and password	Redirects to the user menu page	Success
		Incorrect username or password	Displays login failure notification	Success
Client	Request Submission	Submit a procurement request	Saves request data	Success
Client	Request History	Display request history data	Shows date and request details	Success
Admin	Goods Catalog	Display the list of goods	Displays available goods	Success
Admin	Service Catalog	Display the list of services	Displays available services	Success
Admin	Request List	Display all client requests	Shows request details	Success
Leader	Report	View reports	Displays procurement reports	Success
		Print reports	Generates a report printout	Success
Client, Admin, Leader	Logout	Logout from the System	Exits the system	Success

From the results of testing using the black-box method on each user, it was found that the developed system is functioning properly and can be used by users in the submission and management process of goods and services procurement.

4. Conclusion

This system facilitates access to information in the procurement process of goods and services at CV Radra Sejahtera. Based on the research findings, the author concludes that the developed system improves time efficiency by 50% in the submission process. Previously, the submission process took an average of two days, but with the system, clients can complete their procurement requests in less than one day. Therefore, this system significantly benefits both clients and CV Radra Sejahtera.

For future development, the application can be expanded to the Android platform, allowing access via mobile devices. Additionally, the system can be further integrated and enhanced by adding new features.

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