Implementasi of The WhatsApp Notification Feature in The Goods Inventory Informastion System for CV. Depo Murah Jaya Sentosa as a Medium for Submitting Requests for Goods Between Branches

Muhammad Rafi Salsabila[1*] , Wiwit Agus Triyanto[2] , Pratomo Setiaji[3]

[1,2,3] Information Systems Study Program, Faculty of Engineering, Universitas Muria Kudus, Kudus 59327, Indonesia

Corresponding Author Email: 201853078@mhs.umk.ac.id

ABSTRACT

CV. Depo Murah Jaya Sentosa is a distribution and sales company for building, sanitary and electronic materials with several branches in Kudus Regency. The information system currently used only records transfers of goods between branches without providing an automatic mechanism for the process of submitting requests for goods, so it still relies on manual approaches such as direct visits or telephone communications. This manual process often results in distribution errors, delays, inappropriate stock allocation, and even cancellation of delivery of goods, which impacts operational efficiency and customer satisfaction levels. This research aims to develop an inventory information system module with integrated WhatsApp-based notification features. This feature is designed to speed up the process of submitting requests for goods between branches through automatic notifications to related parties in real-time, thus supporting faster and more accurate decision making. Using the Waterfall development method, the system is designed to include analysis, design, implementation, testing and maintenance. The final result is a web-based application equipped with the WA notification feature. This system has been proven to be able to increase operational efficiency, reduce the potential for errors in managing stock requests, and provide better transparency in the goods distribution process.

1. INTRODUCTION

In today's digital era, information technology has become a crucial factor in supporting various business activities. The utilization of modern technology, such as internet-based integrated information systems, enables companies to enhance work efficiency, accelerate communication flow, and provide better services to customers. CV. Depo Murah Jaya Sentosa is a company engaged in the distribution and sales of building materials, sanitary products, and electronics, with several branches in Kudus Regency. In carrying out its business operations, particularly in inventory management, CV. Depo Murah Jaya Sentosa has implemented an integrated information system to support stock management at each branch and record item transfers. However, the current system only covers the recording of item transfers in which goods are sent from one branch and received by another, without an automatic mechanism for requesting goods. This request process is still conducted manually, either through direct visits to the relevant branch or via telephone communication.

This manual approach has the potential to cause inaccuracies and errors in the distribution process, which can impact operational efficiency and stock management.

Such inefficiencies may lead to delays in the distribution of goods to branches in need, improper stock allocation, and even the cancellation of deliveries to customers. These issues can disrupt company operations and decrease customer satisfaction. To address these problems, the development of a module within the application is required to facilitate goods request submissions, featuring a WhatsApp-based notification system integrated into the inventory management system. This feature aims to streamline the goods request process between branches by providing automatic notifications to relevant parties directly via WhatsApp, allowing for real-time follow-up. The implementation of this feature is expected to offer an efficient solution for managing inter-branch goods requests, simplifying stock distribution monitoring, and supporting more accurate decision-making. Additionally, this feature is designed to improve the clarity of communication between branches, ensuring that each request is promptly and accurately addressed.

The successful implementation of this feature requires support from all parties, particularly company staff who will be the primary users of the system. Training and guidance will be provided to ensure the system is optimally implemented and delivers maximum benefits. This initiative serves as a strategic

step toward sustaining operational efficiency, ensuring that the system's implementation is not merely a formality but a genuine solution to existing challenges.

2. RESEARCH METHODOLOGY

In this study, the method used is the Waterfall method. Waterfall, also known as the classical model in software engineering, is one of the oldest and most well-known models in software development. Waterfall describes a sequential design process, often used in software development, where progress flows smoothly downward (like a waterfall) through various phases (Saravanos & Curinga, 2003). The phases of the Waterfall model are illustrated in Figure 1 below:
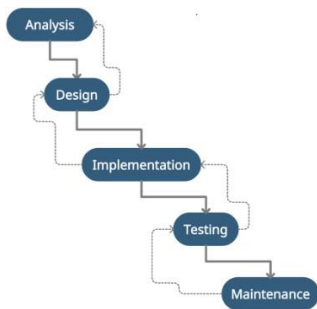
Figure 1. Stages of the Waterfall Method (Saravanos & Curinga, 2003)

Figure 1 illustrates the stages of the Waterfall method, which are as follows:

A. Analysis
Services, constraints, and system objectives are defined through consultation with system users. These requirements are then documented in detail and serve as the system specification.

B. Design
The system design process allocates requirements to hardware or software systems by establishing the overall system architecture. Software design involves identifying and describing fundamental software system abstractions and their relationships.

In this process, the author uses the Unified Modeling Language (UML) model. According to Rose & McGibbon (2020), UML is a tool used to design and describe software structures through various types of diagrams, such as use case, activity, sequence, and class diagrams. UML allows software developers to visually communicate software designs and ensure alignment between the design and the functional and non-functional requirements of the software.

As a supporting tool for system design, the author utilizes the Entity-Relationship Diagram (ERD). According to Astutik & Rosid (2020), an ERD is a model based on the perception of data in the real world, consisting of a collection of objects called entities and relationships between those objects, known as relationships.

C. Implementation
At this stage, the software design is realized as a series of programs or program units. Unit testing is conducted to verify that each unit meets its specifications.

D. Testing
Individual program units or components are integrated and tested as a complete system to ensure that software requirements are met. Once testing is completed, the software system is delivered to the customer.

E. Maintenance
Typically (though not always), this is the longest phase of the lifecycle. The system is installed and used in practice. Maintenance involves fixing errors not detected in previous stages, improving system implementation, and enhancing system services when new requirements emerge.

3. RESULTS AND DISCUSSION

A. Analysis
This research aims to develop an information system capable of accommodating the needs for inventory management, stock, and mutation tracking with WhatsApp-based notifications. To build this system, the following data and information are required as in table 1:

**Table 1. Data and Information Requirements Table**

No.	Kebutuhan Data	Kebutuhan Informasi
1.	Data Supplier	Informasi Stok
2.	Data Kategori	Informasi Pengadaan / Barang Masuk
3.	Data Sub Kategori	Informasi Permintaan Mutasi
4.	Data Barang	Informasi Mutasi
5.	Data Cabang	Informasi Penjualan
6.	Data User / Karyawan	
7.	Data Member	

B. Design
The design phase is carried out using the UML system design method to illustrate the system flow and rules into the following diagrams:

a. Use Case Diagram
The Use Case Diagram visualizes, defines, and documents the behavioral requirements of a system. The use case diagram developed in this research is as follows can see in figure 2:
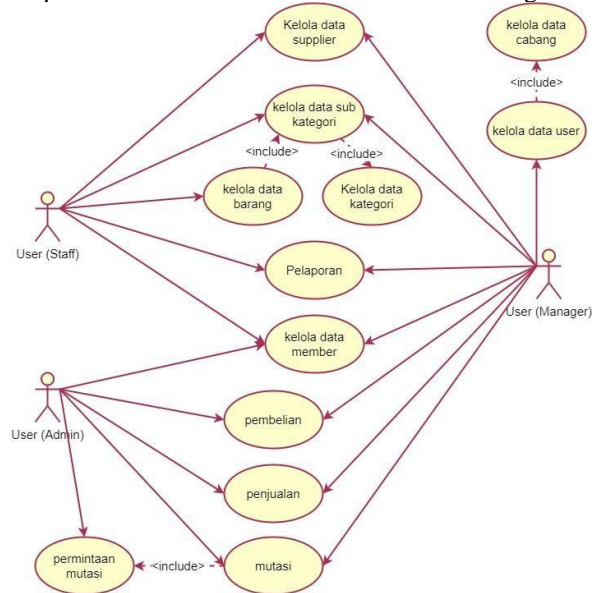
Figure 2. System Use Case Diagram

b. Class Diagram
A Class Diagram illustrates the structure of a system by defining the classes that compose the system. It is a diagram that shows the relationships between classes, including the properties and functionalities of objects. The class diagram developed in this research is shown in Figure 3 below:
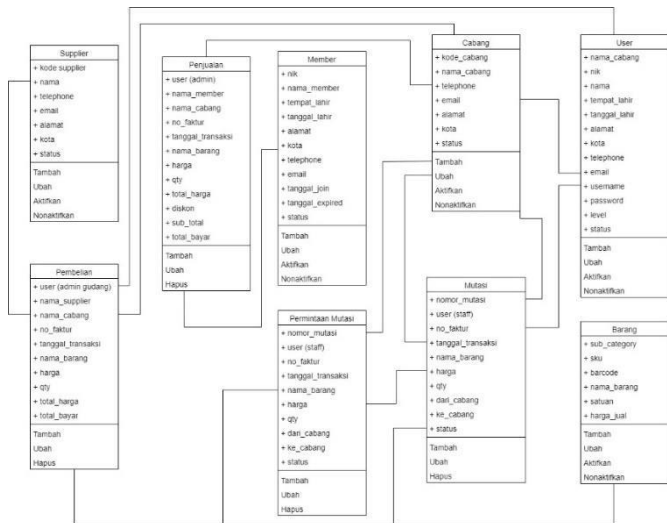
Figure 3. Class Diagram

c. Entity Relationalship Diagram

To accommodate data storage needs, a database must be created. The database design is based on the design carried out using an Entity-Relationship Diagram (ERD), which is shown in Figure 4 below:
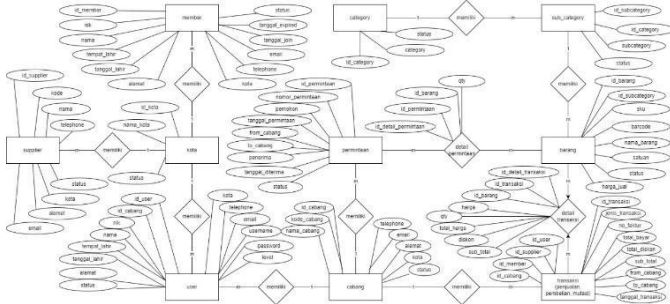

Figure 4. Entity Relationalship Diagram (ERD)

C. Implementation

At this stage, the application design developed with UML is translated into the user interface (UI) of the system, while the table design is implemented into a physical database that will be accessed by the system.

a. Database

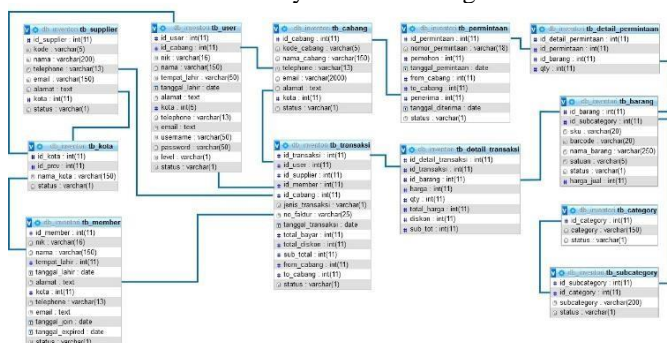The database used in this research is MySQL. The structure of the database in this study is shown in Figure 5 below:

Figure 5. System Database

b. UI Design of the Login Page

The login page is the page accessed when first opening the website. This page serves as the gateway to enter the application by identifying the username and password, allowing for the verification of access levels. The UI design of the login page is shown in Figure 6 below:
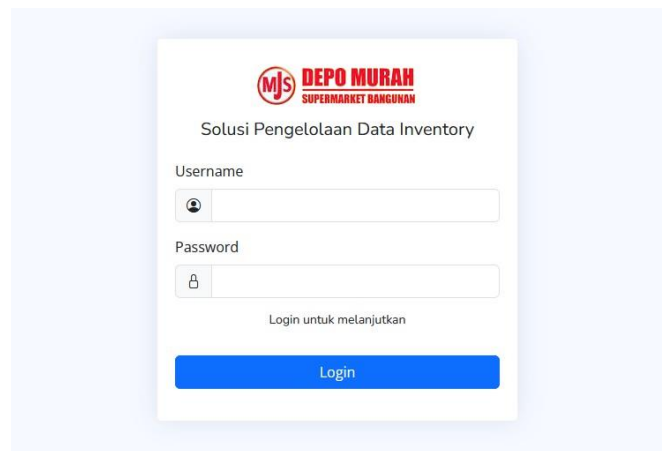

Figure 6. Login Page UI

c. UI Design of the Request Page

The request page is used to submit requests for goods to other branches. If this request is approved, a transfer of goods will be made from one branch to another. The UI design of the request page is shown in Figure 7 below:
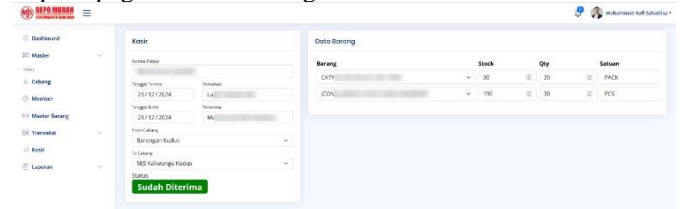

Figure 7. Request for Goods Page

In the request submission process, when the request is saved, the website will send a WhatsApp message to the branch's number for verification of the request. The screenshot of the WhatsApp message sent is shown in Figure 8 below:

Figure 8. WA Message Screenshoot

d. Mutation Page UI Design

The mutation page is a page used to manage mutation data. The mutation UI is shown in Figure 9 below:
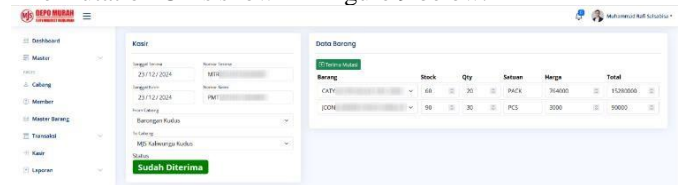

Figure 9. Mutation Page UI

D. Testing

At this stage the application is implemented for users with assistance to ensure the system runs as it should. The system implementation documentation can be seen in Figure 10 below:

Figure 10. System Implementation Documentation

E. Maintenance

This stage is carried out if during implementation a functional failure occurs, the system does not work as it should or conditions are discovered that have not been included in the system as a form of development. In this research, the system created was in accordance with needs and was able to accommodate the obstacles that occurred, including as a medium for submitting mutation requests to branches, WA notifications and managing mutation data.

4. CONCLUSION

Based on the results of research conducted by the author on CV. Mura Jaya Sentosa Depot, it can be concluded that:

A. This research succeeded in designing and implementing a web-based inventory information system equipped with an automatic notification feature using WhatsApp. This system was designed using the Waterfall development method, through the stages of Analysis, Design, Implementation, Testing & Maintenance. The system developed is able to overcome manual problems in managing requests for goods between branches, which were previously prone to errors and delays.

B. With the WhatsApp-based notification feature, the process of submitting requests for goods becomes more efficient, transparent and real-time. This system also makes it easier to monitor stock distribution between branches, so that it can support more accurate and timely decision making. A UML-based approach to system design, including use case diagrams, class diagrams, and Entity Relationship Diagrams (ERD), ensures that the system meets expected functional and non-functional requirements.

C. The research results show that this system is able to increase operational efficiency, reduce the potential for errors in the distribution of goods, and support the sustainability of inventory management in the company. With optimal implementation and support from system users, this inventory information system can be a strategic solution to support sustainable company performance.

BIBLIOGRAPHY

[1] Aji, S., & Pratmanto, D. (2021). "Sistem Informasi Inventory Barang Menggunakan Metode Waterfall." Indonesian Journal on Software Engineering (IJSE), Vol. 7, No. 1, Juni 2021, hlm. 93-99. http://ejournal.bsi.ac.id/ejurnal/index.php/ijse

[2] Astutik, I. R. I., & Rosid, M. A. (2020). Buku ajar: Basis data untuk informatika. UMSIDA Press.

[3] Rahman, M.A., & Mujiastuti, R. (2022). "Sistem Informasi E-Disposisi dengan Notifikasi Email dan Whatsapp pada Unit Pengelola Terminal Angkutan Jalan." Seminar Nasional Sains dan Teknologi 2022, Fakultas Teknik Universitas Muhammadiyah Jakarta, 2 November 2022, hlm. 1-12. http://jurnal.umj.ac.id/index.php/semnastek

[4] Rose, A., & McGibbon, P. (2020). Applying UML and Patterns: An Introduction to Object-Oriented Analysis and Design and Iterative Development. Addison-Wesley Professional.

[5] Saravanos, A., & Curinga, M.X. (2023). Simulating the Software Development Lifecycle: The Waterfall Model. Applied Systems Innovation, 6(1), 108. https://doi.org/10.3390/asi6060108.

[6] Sovi. (2020). Rancang Bangun Sistem Informasi Inventory Barang Berbasis Web Menggunakan Metode Scrum pada UD. Asia Abadi Cemerlang. Skripsi yang disusun di Jurusan Sistem Informasi, Fakultas Ilmu Komputer, Institut Informatika dan Bisnis Darmajaya, Bandar Lampung.