

# Web-Based Inventory Management Application Using PHP and MySQL

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**Abstract**— *In this era of computerization, the human need for information drives the rapid development of technology in the fields of information and telecommunication technology. With the current developments in information technology, data processing can be done easily. Manual data entry has several drawbacks, including the potential for errors in writing and reading, and it is also prone to loss or damage. From the aforementioned issues, the author has developed a web-based inventory management information system to facilitate the management of stock data. The purpose of creating this inventory management system application is to help integrate data properly and enable easy and accurate data processing. The development of this system uses the waterfall system design method, which can help in the creation of the system by following a sequential process. This method is carried out starting from the stages of requirement analysis, system and software design, implementation, system testing, and maintenance. The design tool uses UML (Unified Modeling Language) to create use case diagrams, activity diagrams, and class diagrams. The data collection system uses observation, interviews, documentation, and literature study methods, and employs the PHP programming language and MySQL as the database. Based on the testing results, this information system can process incoming and outgoing item data, store data, and generate reports.*

**Keywords** : *Technology, Inventory, Stock Items, Waterfall*

## I. INTRODUCTION

The ever-advancing technology, supported by adequate facilities and infrastructure, proves that information has now become a basic necessity in human life.[1] Information systems and information technology serve as supports for making accurate decisions based on the available information. Inventory recording of goods or products includes recording outflows and inflows. Outflow recording refers to transactions or orders of goods as per the supplier's or customer's request, and is recorded by warehouse personnel. Inflow recording refers to the addition of stock of goods, products, or raw materials, and is also recorded by warehouse personnel.[2]

The implementation of inventory in a company or business is closely related to the activity of collecting data on the inflow and outflow transactions of goods or products from the company or business. Because inventory plays such an important role for companies or businesses, the role of an information technology (IT)-based inventory system is greatly needed to facilitate the recording and management of transactions, compared to manual recording.

Inventory, also known as stock, refers to the stored goods or raw products, materials, or finished goods that are kept for future use or within a certain period. [3] Inventory is considered an asset that includes goods or products owned by the company, intended for sale within a normal business period, or goods or products that are still in the process of production, or raw materials awaiting use in the production process. [4]

Information that is typically obtained through traditional or manual methods can no longer be used effectively to meet the needs of the company, as the company desires accurate and fast information. [5]

Information technology is a crucial and supportive tool for both public and private companies. In the study [6], the implementation of technology has brought many significant benefits to companies. The stock management system enables real-time tracking of inventory, which is a major improvement compared to the previous manual methods. Every business within an organization must be able to process data and information quickly, accurately, and cost-effectively to enhance work productivity. [7]

Data entry conducted manually can lead to errors that should not occur, and to this day, the most common mistake is the creation of duplicate data. Thus, the solution obtained is the development of an information system that provides benefits for the store, such as easier data processing through the inventory management system that is more user-friendly. The purpose of developing this inventory management system application is to help integrate data effectively and allow it to be processed easily and accurately. The use of information technology as a tool to assist in data processing, such as item names, item quantities, item prices, item codes, and item reports.

## II. RESEARCH METHODS

The data collection method is carried out to understand the reasoning behind the issue being studied by gathering data related to the problem.[8]

## 2.1 Data Collection Method

The data collection techniques in this study include : [8]

### a. Literature Review

The data collection method is carried out by studying, researching, and reviewing various literature from libraries, including books, academic journals, websites, and other readings related to the research on the application system to be developed.

### b. Field study is conducted in the following way:

#### 1) Interview Method

The interview method is a step in scientific research that involves the use of verbal communication processes to gather information from a source. Interviews were conducted with employees who will be using the system. In this section, the author interviews them about the current system flow in use.

#### 2) Observation Method

Observation is a data collection method that involves observing the behavior and environment (social/material) of the individual being studied. In this study, the researcher conducts observations by examining the system flow, input, and output processes. Through this observation, the researcher obtains data in the form of inventory records.

## 2.2 System Development Method

Each paradigm consists of activities formed by methods, procedures, and tools to achieve the goal. In the development of this inventory management application, the waterfall method is used.[9] The initial stage involves analyzing the storage system and data processing reports of goods in a related organization to understand how the old system will be developed. Then, the system design is carried out using use cases, interactions between tables, and the design of the user interface. Then, coding is carried out using the PHP programming language with a MySQL database. From the program, testing is conducted to identify any mistakes or errors in the application program. The final stage is the implementation of the inventory management application for the organization. In the waterfall method, the system is developed sequentially or linearly. If the first step has not been completed, the second, third, and subsequent steps cannot be performed. [10] The application testing method uses Blackbox Testing.[11] The waterfall method to be used in the application development is shown in the diagram below.

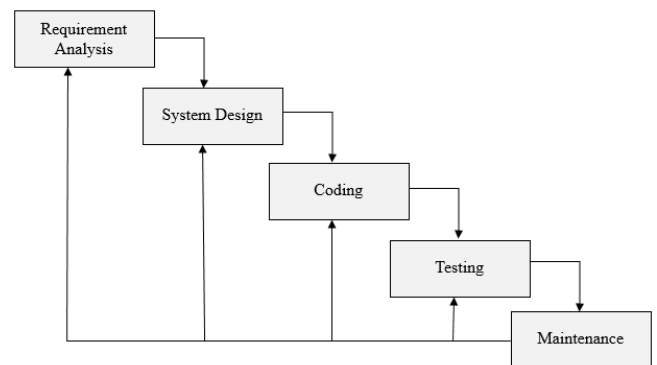


Figure 1. Waterfall Model  
 (Pressman, 2010:39 in Herlina, 2023:53)

## III. RESULT AND ANALYSIS

### 3.1 System Requirements Analysis

System analysis aims to understand the system, identify its shortcomings, and determine the system's requirements. Data flow analysis aims to understand the flow of information processes.[12] The Object-Oriented Development used includes: Use Case Diagram.

Table 3.1 Functional Requirements of Admin

Actor : Admin		
Actor	Use Case Name	Description
Admin	Login	The admin can manage the entire system, including distributor data, incoming goods data, outgoing goods data, printing incoming goods reports, and printing outgoing goods reports.
Manager	Change Password	The manager can manage admin data, print product reports, print incoming goods reports, print outgoing goods reports, and print revenue reports.

### 3.2 System Design Use Case Diagram

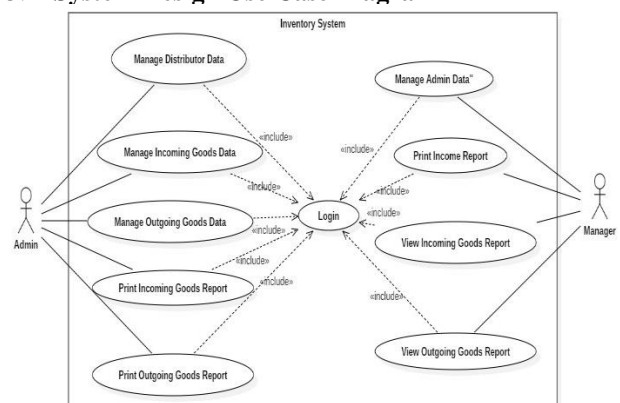


Figure 2. Use Case Inventory of Goods

### 3.3. Implementation

#### 1. Page Display Login

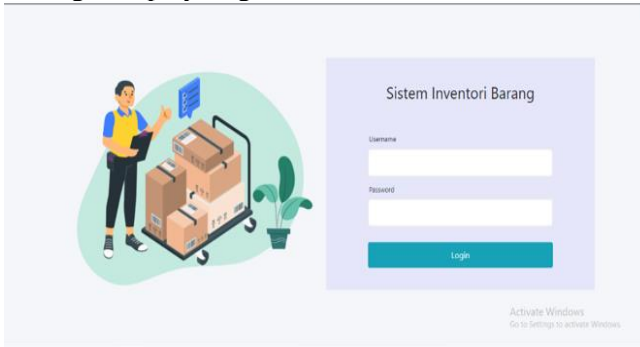


Figure 3. Login Page

On the login page, the user enters their username and password. If successful, they will be directed to the homepage, and if unsuccessful, an error message will be displayed.

#### 2. Admin Dashboard Page Display

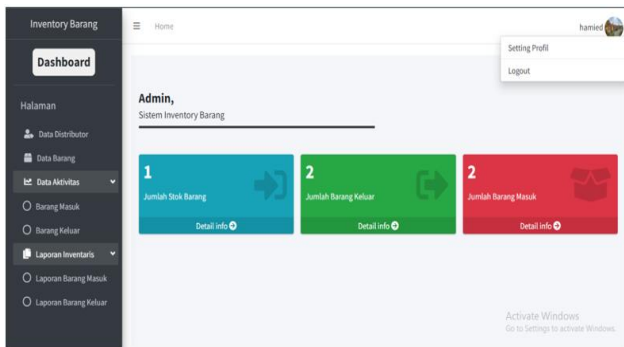


Figure 4. Admin Dashboard Page

This is the Admin Dashboard display. On this page, there are features that can be accessed by the store admin.

#### 3. Distributor Data Page Display

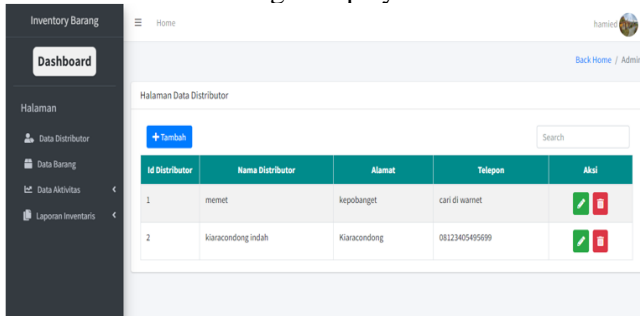


Figure 5. Distributor Data Page

This page displays the data of the distributors that have been entered. If the user wants to delete or modify the data, they can click the green icon to modify and the red icon to delete.

#### 4. Add Distributor Data Page Display

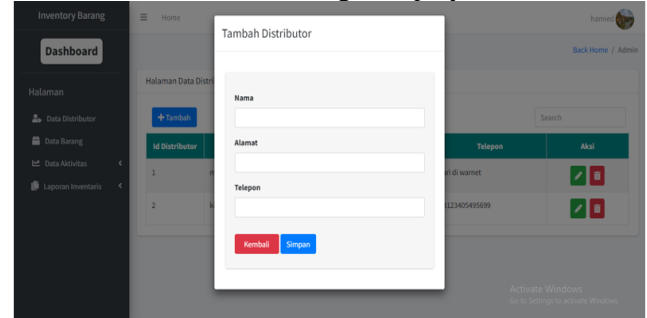


Figure 5. Add Distributor Data Page

This page is used to add distributor data

#### 5. Edit Distributor Data Page Display

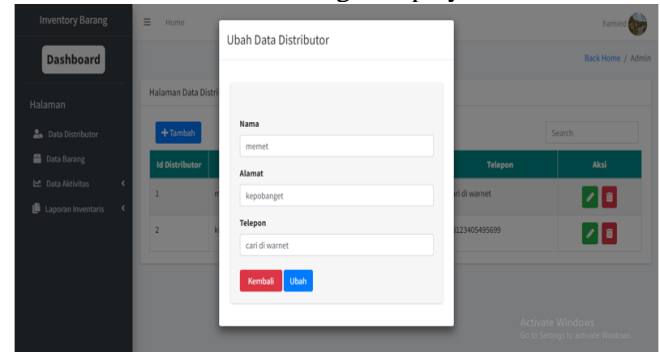


Figure 6. Edit Distributor Data Page

This page is used to edit the desired distributor data.

#### 6. Product Data Page Display

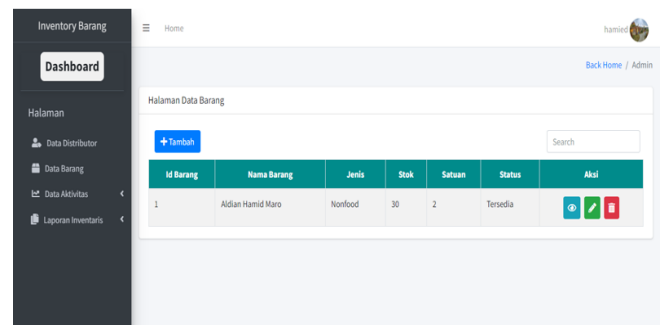


Figure 7. Product Data Page

This page displays the data of each product that has been entered. To add product data, click the blue add button, the green icon to edit, and the red icon to delete.

### 7. Add Product Data Page

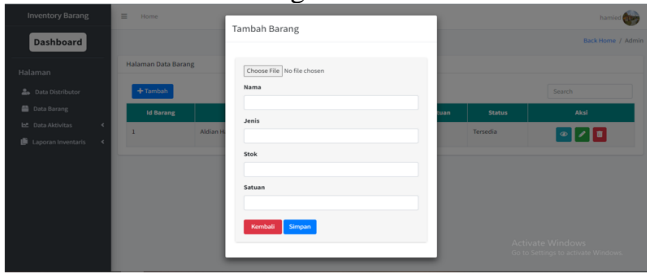


Figure 8. Add Product Data Page

This page is used to add incoming product data..

### 8. Edit Product Data Page

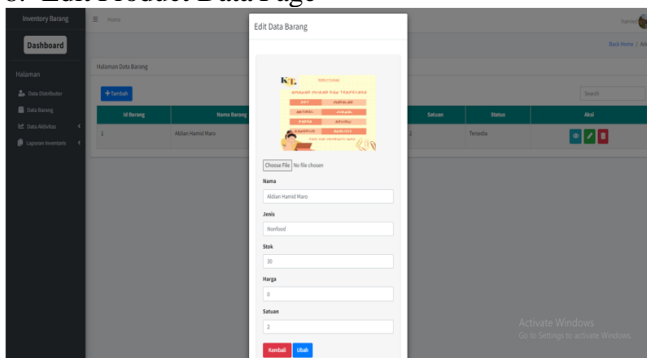


Figure 9. Edit Product Data Page

This page is used to edit product data if there are any changes to the product information.

### 9. Product Detail Page

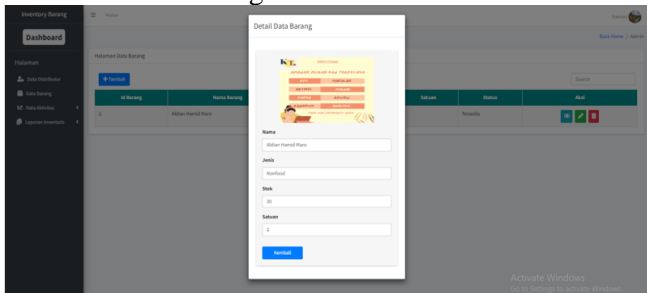


Figure 10. Product Detail Page

This page is used by the admin to view the details of a product.

### 10. Incoming Product Data Page

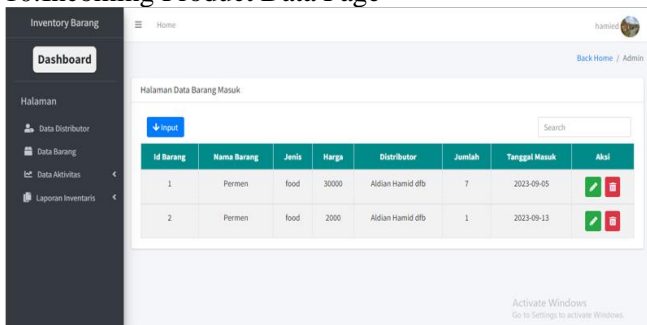


Figure 11. Incoming Product Data Page

This page displays incoming product data. To add product data, click the blue input icon, and to edit, click the green icon, or the red icon to delete the product data.

### 11. Add Incoming Product Data Page

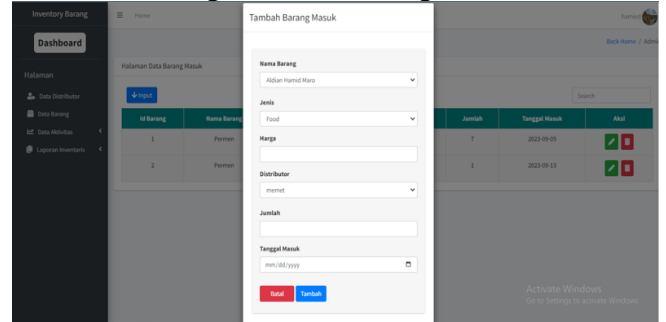


Figure 12. Add Incoming Product Data Page

On this page, the admin can add incoming product data.

### 12. Edit Incoming Product Data Page

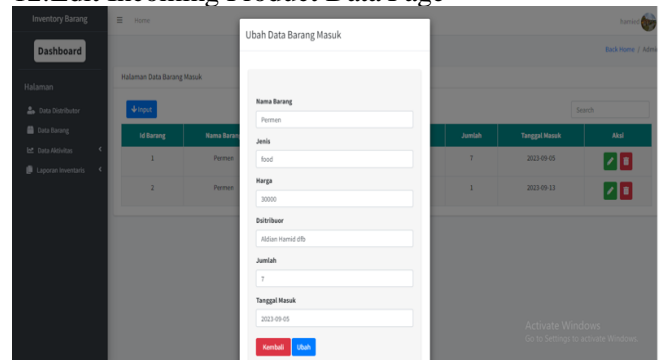


Figure 13. Edit Incoming Product Data Page

On this page, the admin can edit incoming product data if there is an error in the entered product information.

### 13. Outgoing Product Data Page

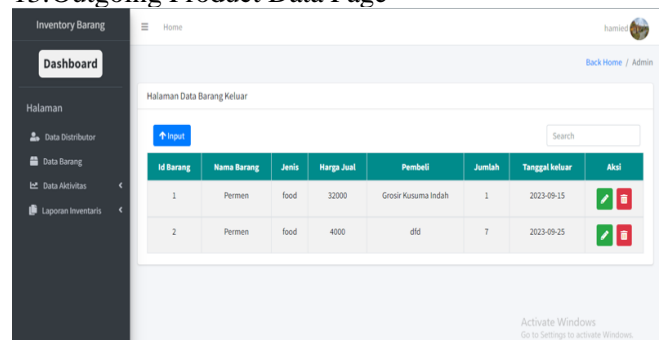


Figure 14. Outgoing Product Data

On the “Outgoing Product Data” page, it displays the data of each product that has been sold. There are options to add, edit, and delete. If the user wants to

add an outgoing product, click the blue add button. To edit the outgoing product, click the green edit icon in the action column, and to delete the outgoing product, click the red delete button in the action column.

14. Manager Dashboard Page

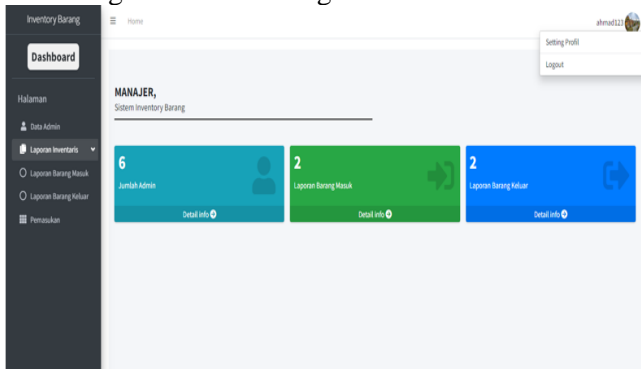


Figure 15. Manager Dashboard Page

On the “Manager Dashboard” page, it displays a dedicated page for the store manager with features that can be accessed by the manager. On this page, the manager can view incoming and outgoing product reports, manage admin data (add, edit, and delete admin), as well as view sales financial reports and print reports.

3.4 Pengujian Sistem

Table 3.2 Blackbox Testing for Admin and Manager

No	Testing	Expected Result	Test Result
1	Login	Successfully logged in with a registered account	Valid
2	Add Product Data	The system successfully added the product data	Valid
3	Edit Product Data	The system successfully edited the product data	Valid
4	Delete Product Data	The system successfully deleted the product data	Valid
5	Add Incoming Product Data	The system successfully added the incoming product data	Valid
6	Add Outgoing Product Data	The system successfully added the outgoing product data	Valid
7	Print Product Data	The system successfully printed the product data	Valid
8	Incoming Product Data Print	The system successfully printed the incoming product data.	Valid
9	Outgoing Product Data Print	The system successfully printed the outgoing product data.	Valid
10	Add Admin	The system successfully	Valid

No	Testing	Expected Result	Test Result
11	Data	added admin data.	Valid
	Edit Admin	The system successfully	
	Data	edited the data.	

VI. CONCLUSION

Inventory Stock Management Information System using PHP and MySQL can simplify the processing of product data in the related store. This application can manage incoming and outgoing stock, generate product data reports, and has access rights, ensuring a good level of security.

THANK-YOU NOTE

Thank you to the IJCIS Team for taking the time to review the journal we submitted.

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