
DESIGN OF INVENTORY STOCK INFORMATION SYSTEM USING LARAVEL FRAMEWORK WITH FIFO METHOD

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ABSTRACT

Toko Anugerah Rianto is a business engaged in retail, namely cosmetics since 2016, located in Rungkut, Surabaya. Of course, in running his business, the business owner has his own challenges in running it. Based on the results of interviews conducted with business owners, the obstacle in running their business is controlling the availability of stock in the warehouse. This obstacle is caused by the absence of recording incoming and outgoing goods so that stock-outs and inaccurate availability often occur. This problem causes consumers to wait for stock to be available. The purpose of this research is to design an inventory information system that can overcome the problems of the business being run. This design uses the Research and Development (R&D) method which consists of 4D (define, design, develop, disseminate). The stock inventory management method applied in this study is the First In First Out (FIFO) method where the first item in is the first item out to avoid expired goods. The result of this research is a website-based inventory information system that is a solution to the problems of Anugerah Rianto Store to support accurate data collection of incoming and outgoing goods.

Keyword: Toko Anugerah Rianto, R&D, FIFO, Laravel, Website.

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1. INTRODUCTION

In today's digital era, achieving efficiency and accuracy in stock management is one of the main challenges businesses face, particularly in the retail sector. Ineffective stock management can result in mismatched inventory data, stockouts, and losses due to expired goods. According to previous research, companies that do not use digital systems to manage inventory are at high risk for recording errors and information delays, which impact customer service[3]. Toko Anugerah Rianto, a retail business selling cosmetics, baby products, and herbal medicines, still uses a manual system to record incoming and outgoing goods. This approach is time-consuming, labor-intensive, error-prone, and hinders the data-based decision-making process.

Toko Anugerah Rianto's main problem is the absence of a real-time inventory monitoring system, which often results in stock shortages or accumulation of expired goods. Additionally, the recording of incoming and outgoing goods is still done conventionally without a method to ensure goods are distributed according to their entry date. This results in inefficient stock rotation and negatively affects the quality of services provided to consumers. Therefore, a digitized inventory management system that applies structured stock rotation principles is needed.

The First In First Out (FIFO) method, which prioritizes first-in-first-out items, has been proven effective in managing stock rotation in inventory management systems[4]. This method is especially relevant for items with expiration dates, such as cosmetics and health products[1]. Laravel, a PHP-based web development framework, provides an efficient and secure development structure through the Model-View-Controller (MVC) approach, and it is supported by an extensive developer community[2]. Combining the FIFO method with the Laravel framework is seen as the right solution for designing an effective, adaptive, web-based inventory information system.

The goal of this research is to develop a web-based inventory management system that uses the first-in, first-out (FIFO) method and is built with Laravel. The system digitizes the stock data collection process and provides visualizations of incoming and outgoing stock data in the form of graphs and reports. Additionally, the system allows business owners to monitor stock from anywhere because it is a web-based platform accessible via computer and mobile devices. The system is tested using the Blackbox Testing method to ensure that each feature runs according to its intended function[5].

The main innovation of this research lies in integrating the FIFO method into a Laravel-based information system designed specifically for micro and small businesses that have not yet been digitized. Unlike complex stock management systems used by large companies, this system was developed with user-friendliness, a simple data structure, and the basic needs of small-scale retail stores in mind. This research is expected to make a practical contribution to Toko Anugerah Rianto and become a model for developing similar inventory systems for MSMEs in Indonesia facing similar stock management challenges.

2. RESEARCH METHODS

This study uses a research method included in the research and development (R&D) category. R&D aims to produce or improve products. In this case, the goal is to develop a web-based stock inventory information system that uses the first-in, first-out (FIFO) method. The descriptive quantitative research approach involves analyzing user needs and systematically developing systems based on the obtained data. This research follows the R&D model proposed by Borg and Gall (1983), which includes steps such as identifying potential problems, collecting data, designing the product, validating the design, revising the design, conducting trials, revising the product, and creating the final product. The next process is to create a process design. Here are some of the flows that are implemented in the form of usecase diagrams. The usecase diagram describes the relationship between the actor and the system.

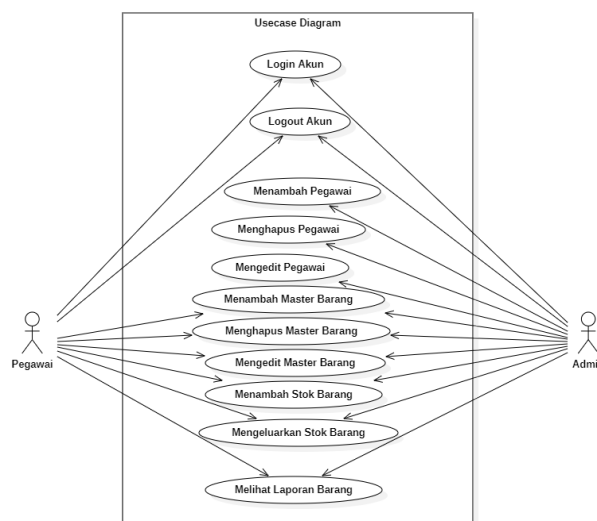


Figure 1. Usecase Diagram

Data collection techniques were employed through direct interviews with the owner of the Anugerah Rianto Store in order to identify workflows and existing stock management issues. Additionally, a literature study was conducted to support system design, particularly regarding the implementation of the FIFO method and the use of the Laravel framework in web development (Alpina & Witriyono, 2022; Maulana & Nirmala, 2023). The obtained data was analyzed descriptively and comparably by comparing the store's initial conditions before and after implementing the system to evaluate its effectiveness. The resulting system was tested using black box testing, a method that focuses on the system's functionality without examining the internal code structure (Pressman, 2010). Using this method, the research team expects to produce an effective, automated, real-time stock management system that can significantly improve store operational efficiency.

3. RESULTS AND DISCUSSION

This research produces a stock inventory website for Anugerah Rianto Store. With this website, it will help the process of controlling the stock of incoming and outgoing goods in the store warehouse. Prior to the development of the inventory information system, an analysis of the stock management process that has been running at Toko Anugerah Rianto was carried out. In the results of interviews and observations with the owner of Toko Anugerah Rianto, several problems were found. The following is a problem identification table:

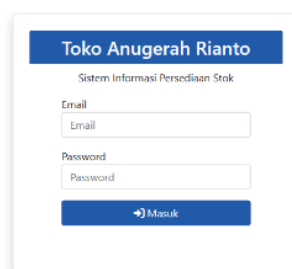
Table 1. Problem Identification

No.	Problem	Risk
1.	Manual recording of stock items	Data is easily lost and inaccurate
2.	There is no rotation system for goods based on entry time	Stock items expire or are not controlled
3.	Data is only available on one device	Data is lost if the device is damaged
4.	Validation is not yet automatic when inputting goods	Incorrect or double input occurs

Therefore, the goal of this research is to develop a stock inventory website. This system includes several main features: user login, item data management, incoming and outgoing stock transactions, application of the first-in, first-out (FIFO) method, and graphical report presentation. The system was developed using the Laravel framework and the Model-View-Controller (MVC) architecture to ensure neat, manageable code. The interface is designed to be simple and responsive to facilitate use by admins and store employees alike.

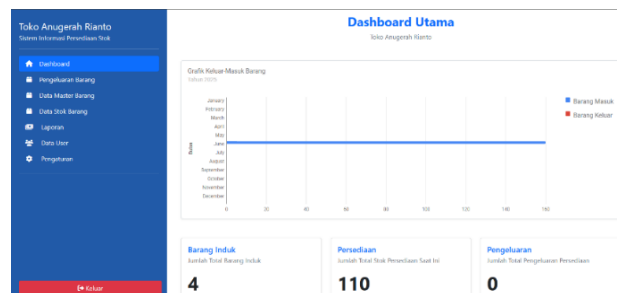
3.1 Implementation

After conducting the system analysis and design stage, the results of the information system design will be implemented in the form of a website.



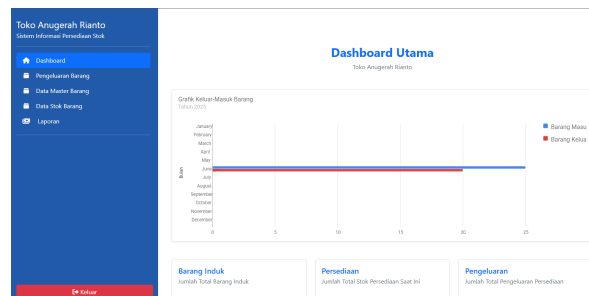
Picture 1. Log in Admin and Employee

In Picture 1. shows the appearance of the log in page for admins and employees before entering the stock inventory system. Admins and employees can fill in the email and password that has been created. Then then directed to the dashboard page.



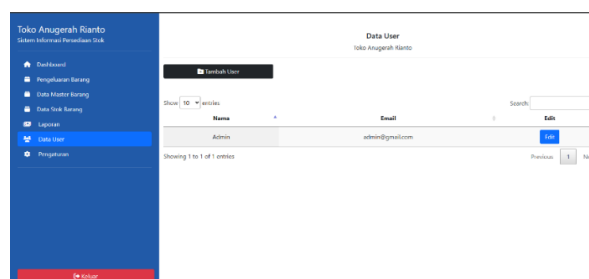
Picture 2. User Interface

Next is Picture 2, which shows the admin dashboard page displaying a summary of items, stock, and recent transactions.



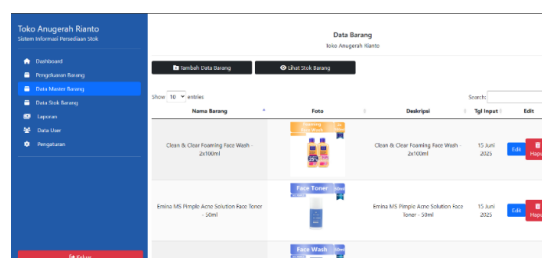
Picture 3. Employee Dashboard

This Picture 3. shows a page where employees can see the main dashboard which contains a graph of goods in and out as well as a sales graph. On this page, there is no settings menu and user data.



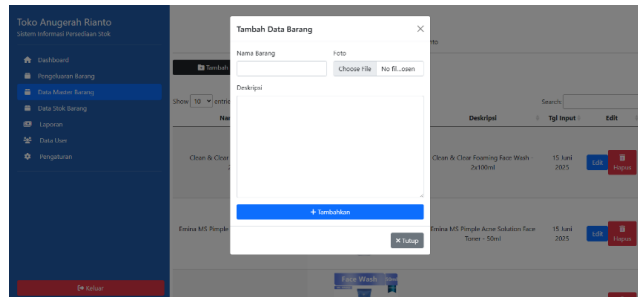
Picture 4. Employee Data

Furthermore, Picture 4. displays the employee data page, the admin can manage employee data by selecting the add user menu or by editing existing employee data.



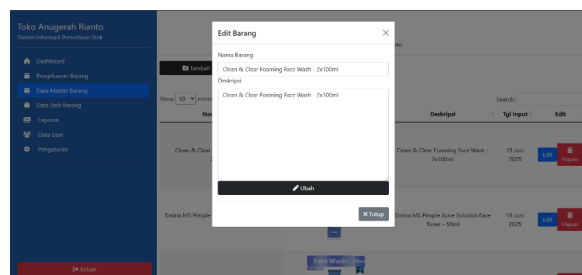
Picture 5. Item Master

Picture 5. shows the admin page, where employees can manage item master data. Admins and employees can add, edit, and delete item masters.



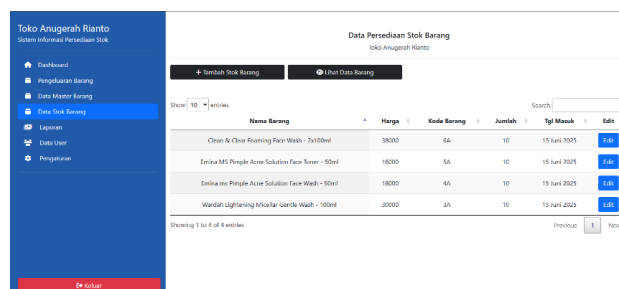
Picture 6. Add Item Master

At Picture 6. shows the admin page display. Employees can add master items by filling out the existing fields for the item's name, image, and description. Then, they click "Add."



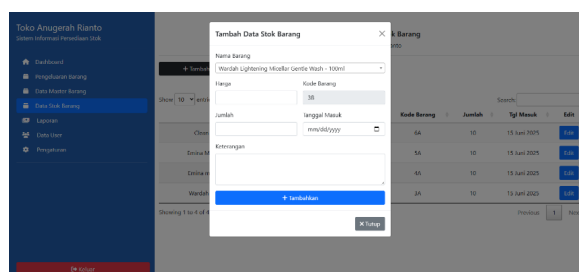
Picture 7. Edit Item Master

This Picture 7. shows this page. admins and employees can edit the item master by changing the existing columns (namely, the item name, item image, and item description), and then clicking "Change."



Picture 8. Stock Item

Picture 8. shows the admin and employee pages where they can manage stock items. Admins and employees can add and edit stock items.



Picture 9. Add Stock Item

On Picture 9. shows a page where admins and employees can add stock items by filling in the existing columns: name, price, quantity, and description. Then, click Add.

Toko Anugerah Rianto
Sistem Informasi Peredaran Stok

Dashboard
Pengeluaran Barang
Data Master Barang
Data Stok Barang
Laporan
Data User
Pengaturan

Data Pengeluaran Stok Barang
Toko Anugerah Rianto

+ Tambah Pengeluaran Barang

Show 10 entries

Nama Barang	Harga	Kode Barang	Keterangan	Jumlah	Tgl Keluar	
Wardah Lightening Micellar Gentle Wash - 100ml	50000	3A	terjual	5	15 Juni 2025	Edit
Wardah Lightening Micellar Gentle Wash - 100ml	50000	3A	terjual	5	15 Juni 2025	Edit

Showing 1 to 2 of 2 entries

Previous Next

Picture 10. Dispensing Of Item

Then Picture 10. shows a page where admins and employees can manage the issuance of goods. Admins and employees can issue stock items and edit item expenditures.

Toko Anugerah Rianto
Sistem Informasi Peredaran Stok

Dashboard
Pengeluaran Barang
Data Master Barang
Data Stok Barang
Laporan
Data User
Pengaturan

Tambah Data Pengeluaran Barang

Nama Barang
Wardah Lightening Micellar Gentle Wash - 100ml

Harga Jual
Harga Beli
Kode Barang

Stok
Jumlah
Tanggal Keluar
mm/dd/yyyy

Keterangan

+ Tambahkan

Tutup

Picture 11. Add Item Expenditures

In Picture 11. is a page view for admins and employees can add item expenses by filling in the existing columns, namely the name of the item, the selling price of the item, the amount, the date and the description then click add.

Toko Anugerah Rianto
Sistem Informasi Peredaran Stok

Dashboard
Pengeluaran Barang
Data Master Barang
Data Stok Barang
Laporan
Data User
Pengaturan

Laporan Transaksi
Toko Anugerah Rianto

Export PDF
Export Excel

Show 10 entries

Tanggal	Jenis	Nama Barang	Kode Barang	Harga	Jumlah
15 Juni 2025	Pembelian	Wardah Lightening Micellar Gentle Wash - 100ml	3A	50000	10
15 Juni 2025	Pembelian	Emina ms Pimple Acne Solution Face Wash - 50ml	4A	10000	10
15 Juni 2025	Pembelian	Drinix MS Pimple Acne Solution Face Toner - 50ml	5A	10000	10
15 Juni 2025	Pembelian	Clean & Clear Foaming Face Wash - 2x100ml	6A	30000	10

Showing 1 to 4 of 4 entries

Previous Next

Picture 12. Item Report

In this page as shown in Picture 12. admins and employees can view reports on goods in the system. Admins and employees can view reports on a monthly basis by clicking the filter in the top menu. Admins and employees can also export reports that have been selected.

Toko Anugerah Rianto
Sistem Informasi Peredaran Stok

Dashboard
Pengeluaran Barang
Data Master Barang
Data Stok Barang
Laporan
Data User
Pengaturan

Pengaturan

Deskripsi
Tentukan deskripsi toko di halaman utama
Toko Anugerah Rianto
Simpan

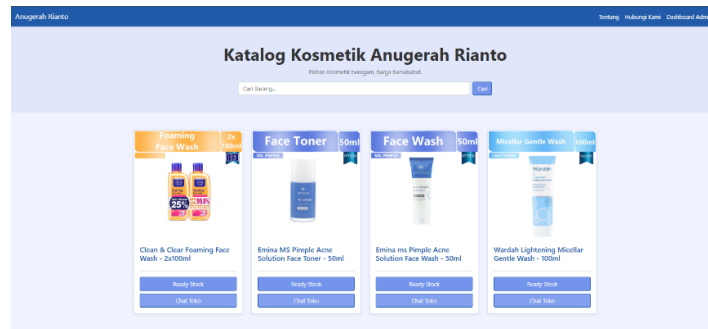
Alamat
Tentukan alamat toko di halaman utama
Jl. Green Lake No.7 B1, Wonorejo, Kec. Rungkut, Surabaya, Jawa Timur 60296
Simpan

Kontak
Tentukan no. telp toko di halaman utama
+6281238965454
Simpan

Maps
Tentukan Maps Toko di halaman utama
https://www.google.com/maps/embed?pb=!1m18!1m12!1m3!1d3957.4
Simpan

Picture 13. Setting

Picture 13. is a page view for admins to make settings for the home page. There are columns that can be filled in, namely description, address, contact, and maps.



Picture 14. Home

And Picture 14. shows a page intended for consumer access, where consumers can see the items in stock and ask the store owner about them. In this case, it will be a WhatsApp message to the shop owner.

3.2 Blackbox Testing

According to Beizer (1995), black box testing is a method that focuses on analyzing the specifications of an application, system, or website by comparing the actual input and output with the expected input or output. In black box testing, there are two types of users:

Table 2. Login Testing

No	Test Procedure	Output
1.	Fill in the username and password form	as per
2.	Enter the dashboard page	as per

Table 3. Testing Item Data

No	Test Procedure	Output
1.	Add item master data. Fill in the existing form with the name and image.	as per
2.	Add stock data. Fill in the existing form with the name, amount of stock, and description.	as per
3	Reducing stock data. Fill out the existing forms with the name, number of expenses, and description.	as per

Table 4. Employee Data Testing

No	Test Procedure	Output
1.	Add an employee. Fill out the existing form with the username and password.	as per
2.	Edit employees. Fill in the existing form with the username and password.	as per

Based on the results of the system's implementation and testing, it can be concluded that the inventory system at Anugerah Rianto Store runs according to user needs. Using the FIFO method has proven successful in efficiently managing stock rotation. Graphical reports make it easier for shop owners to monitor stock and make business decisions. Additionally, the web-based system provides high flexibility, allowing the owner to access information at any time from any device.

CONCLUSION

The results showed that a web-based stock inventory information system was successfully developed using the Laravel framework and the first-in, first-out (FIFO) approach. The system is designed to replace Toko Anugerah Riantos error-prone and inefficient manual recording process. The FIFO method is applied automatically to the system by arranging the order of goods release based on the date of entry. This minimizes the accumulation of old goods and the risk of expiration, especially for cosmetic products and herbal medicines.

The system can also record incoming and outgoing goods transactions in real time, store activity history, and generate stock reports in the form of easily understandable graphs. Blackbox Testing confirmed that all main features, from login to reporting, function according to specifications. Overall, this system provides a practical stock management solution and improves operational efficiency and data accuracy. It has great potential for implementation in small-scale retail businesses that need a simple yet effective inventory management system.

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