

Inventory Information System Using LIFO Method (Case Study on Goods Distribution Company Study in Bandung)

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Abstract

At one of the goods distribution organizations in Bandung, manual recording problems such as data mistakes, delayed information, and challenges with inventory analysis must be addressed, and here is where the inventory information system comes in.

An inventory system must be implemented to improve accuracy and efficiency in inventory management. With the correct technology, the business can reduce data errors, speed up information access, do practical inventory analysis, and increase productivity when taking and maintaining inventory. This study develops a web-based inventory information system using the MySQL database from the XAMPP application, the Laravel framework, and the PHP programming language. Representative data modeling and the creation of user-friendly interfaces are critical components of the design focus, which also considers proper technology selection. In order to better understand user needs and provide answers, system design will use the Object-Oriented Software Engineering (OOSE) model.

In order to help with more precise decision-making in inventory management, the Last-In-First-Out (LIFO) method is used in inventory data analysis. Inventory may be easily monitored by using LIFO to offer information on nearly depleted stock and out-of-stock items.

One of the Bandung-based goods delivery companies has seen notable gains due to the adoption of the new inventory system. With this new technology, the business may get past problems with manual recording, like data inaccuracies, delayed information, and challenges with inventory analysis. By streamlining the recording process and facilitating more efficient inventory management, this system facilitates better access to inventory information and increases the efficiency of inventory management.

In summary, using an inventory system is an excellent way to get around problems with manual goods recording. This solution increases inventory management efficiency and speeds up the recording process for one of the Bandung-based commodities delivery enterprises. Its deployment offers significant advantages, improving the company's overall operating performance and facilitating more effective inventory management.

Keywords : Inventory, Inventory Recording, Inventory Management

INTRODUCTION

A practical and precise inventory system is essential to a business's successful operation. (Supriyanti et al., 2019) A corporation that distributes goods must deal with several challenges associated with manual goods recording. This approach is prone to data inaccuracies, information lag, and challenges with inventory analysis. Thus, an inventory information system must be implemented to

improve accuracy and efficiency in inventory management. (S Pasaribu, 2021)

Information System for Inventory

Sobri et al., (2019); Soegoto & Oktady, (2018) assert that a critical factor in helping businesses optimize inventory management is the adoption of information technology (IT)-based inventory systems. The web-based inventory information system that uses the waterfall technique and incorporates Object-Oriented

Programming (OOP) and Unified Modeling Language (UML) diagrams has been shown to improve accuracy and efficiency in tracking the influx and outflow of items. Businesses can increase efficiency, decrease human error, and speed up decision-making and the distribution of inventory information by implementing computerization.

Distributor

A distributor is a firm or business organization that connects producers with retailers or end users by acting as an intermediate in the distribution chain, according to Joshi et al., (2021); ROWLAND et al., (2022). Distributors are in charge of overseeing inventory, planning delivery schedules, and making sure that goods are offered for sale.

OOSE

The three steps of Jacobson's Object-Oriented Software Engineering (OOSE) process include requirements analysis, design, implementation, and testing, according to Brace, (2020). The use case diagram is emphasized in this approach. One benefit of Jacobson's approach is that it is straightforward in its notation but covers every phase of software engineering. (Sugandhi et al., 2017)

LIFO

The products that are sold first are the ones that entered the inventory last, according to the Last-In-First-Out (LIFO) technique. When prices rise, the LIFO approach produces a modest inventory value and a high product cost. (Ching et al., 2019; Prakash et al., 2018)

XAMPP

The purpose of this project is to create a web-based inventory information system for one of Bandung's commodities delivery enterprises to

address these challenges. The MySQL database from the XAMPP application, the Laravel framework, and the PHP programming language will be used to construct this system. The right technology and tools will be used to create a user-friendly, web-based inventory information system with an intuitive interface.

This research will include representative data modeling and creating an easy-to-use user interface throughout the design phase, considering the choice of suitable technology. We will use the Last-In-First-Out (LIFO) approach to analyze inventory data. One of the Bandung-based goods distribution enterprises anticipates seeing significant benefits from adopting the new inventory information system. The organization may need help with manual recording with this new system, such as data inaccuracies, delayed information, and challenges with inventory analysis. Additionally, this method facilitates faster recording, more efficient inventory management, and more straightforward access to inventory data.

Using this inventory information system at one of the Bandung-based product distribution companies is an excellent way to solve manual item registration problems. This technology helps to improve the company's overall operational performance by streamlining the recording process and increasing inventory management efficiency. As a result, one of the Bandung-based goods distribution enterprises stands to gain a great deal from deploying the designed inventory information system while doing their business.

METHOD

a)Organizational Structure

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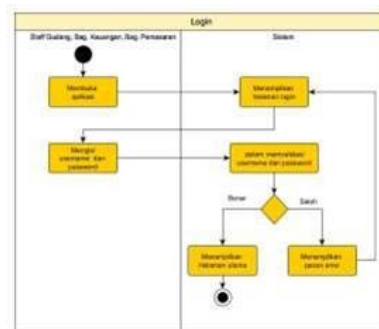
classDiagram
    class Bibliography {
        title
        author
        year
        journal
        +getBibliography()
    }
    class Class {
        title
        author
        year
        journal
        +getClass()
    }
    class Article {
        title
        author
        year
        journal
        +getArticle()
    }
    class Book {
        title
        author
        year
        journal
        +getBook()
    }
    class Journal {
        title
        author
        year
        journal
        +getJournal()
    }
    Bibliography <|-- Class
    Bibliography <|-- Article
    Bibliography <|-- Book
    Bibliography <|-- Journal
  
```



ii. Activity Diagrams

1) Login

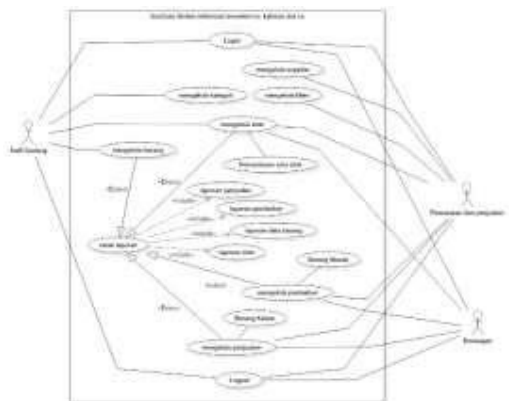
Strenght	Weakness
1. Capable of expediting the recording and management of product data 2. Able to produce hard copy buy and sales transaction reports	1. the server must be turned on before using the application. 2. always need to have an internet connection
Opportunities	Threaths
chances to improve inventory management efficiency	relying on Laravel's dependability and assistance



2) Manage Item Data

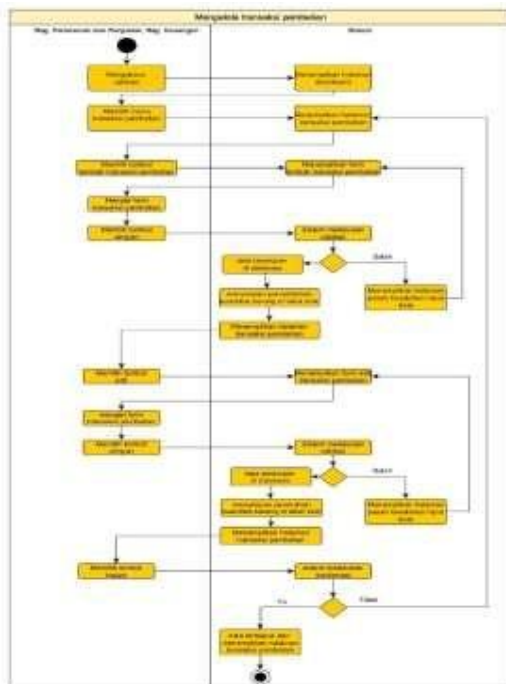
```

graph TD
    Start([Mulai]) --> InputData[Input Data]
    InputData --> EnterTitle[Memasukkan judul]
    EnterTitle --> EnterYear[Memasukkan tahun terbit]
    EnterYear --> EnterBooks[Memasukkan jumlah buku]
    EnterBooks --> EnterPrice[Memasukkan harga]
    EnterPrice --> EnterQuantity[Memasukkan jumlah]
    EnterQuantity --> Limit{Batas}
    Limit -- Ya --> SaveDB[Simpan data ke database]
    Limit -- Tidak --> ReEnter[Memasukkan kembali]
    ReEnter --> EnterTitle
    SaveDB --> End([Selesai])
  
```

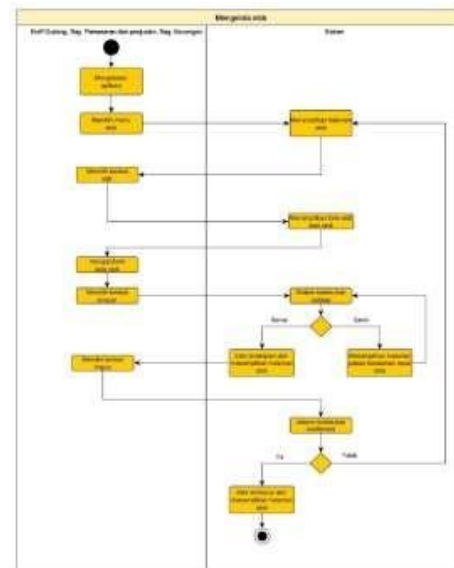


i. Database Design

3) Manage Transactions Purchase

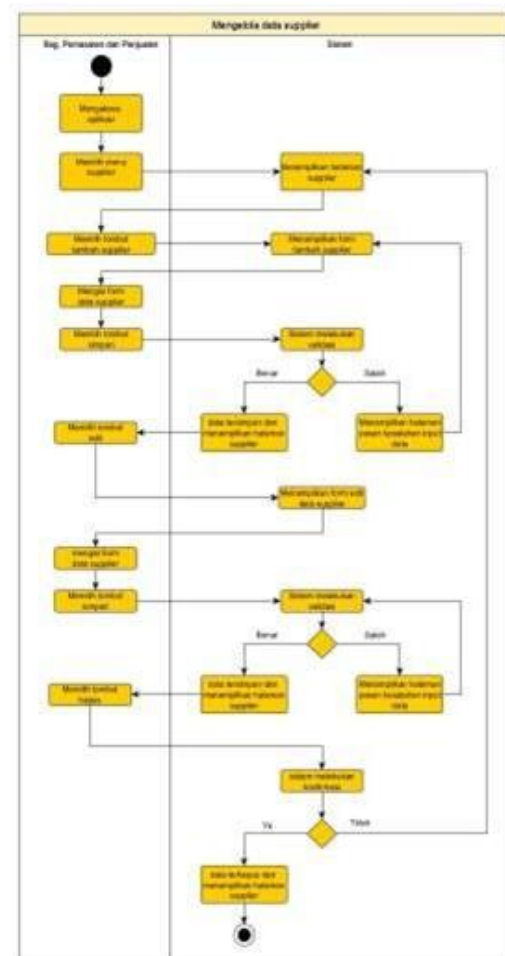
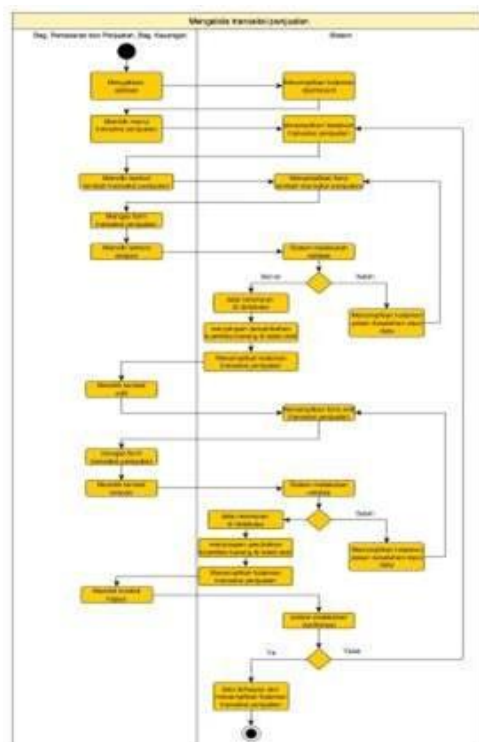


5) Manage Stock

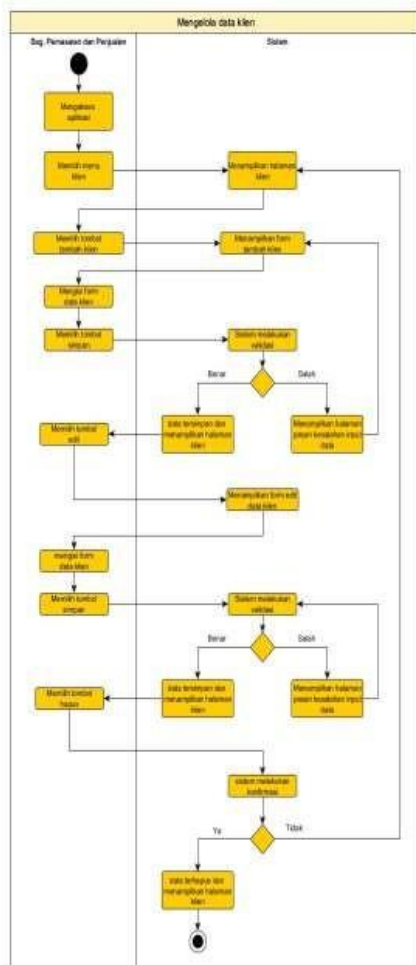


6) Managing Suppliers

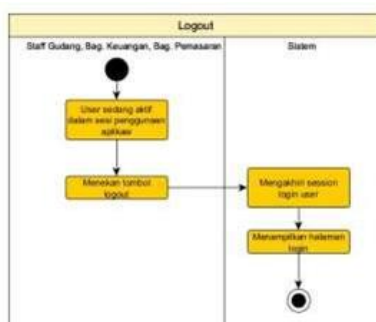
4) Manage Transactions Sale



7) Managing Clients



8) Log out



iii. Interface design

1) Login Page

Username
Password
☐ Remember me

2) Dashboard Page

Dashboard

Client 5 Categories 5 Barang 5

Supplier 5 Pembelian 5 penjualan 5

Stok 5

Barang yang akan datang
+ barang 1 kg
+ barang 2 kg

3) Category Pages

No	Nama	Kategori	Harga	Status	Aksi
1	Barang	Kategori	1000	aktif	
2	Barang	Kategori	2000	aktif	

4) Item Page

No	Nama	Kategori	Harga	Status	Aksi
1	Barang	Kategori	1000	aktif	
2	Barang	Kategori	2000	aktif	

5) Supplier Page

No	Nama	Vendor	Telepon	Email	Alamat	Created	Updated	Aksi
1	Barang	PT. Ada	0812345678	ada@ada.com	J. Jkt	10/10/20	10/10/20	

6) Client Page



7) Halaman Pembelian



8) Sales Page



9) Stock Page



RESULT AND DISCUSSION

a) System implementation is an application system's stage-by-stage description that gets it ready for use.

1) Login Page



2) Dashboard Page



3) Category Pages



4) Halaman Barang



5) Supplier Page



6) Client Page



7) Purchase Page



8) Sales Page



9) Stock Page



10) Export results to Excel format



11) Export results to PDF format



CONCLUSION

This study aims to solve problems with manual inventory recording, including data inaccuracies,

information lags, and challenges with inventory analysis. Some inferences that can be made from this research are as follows:

One of the distribution companies in Bandung can eliminate several issues relating to data errors, information delays, and challenges in inventory analysis that previously occurred due to manual recording of incoming and outgoing goods by implementing this inventory information system.

One of the distribution organizations in Bandung has seen a substantial improvement in inventory management efficiency thanks to the MySQL database included in this new system. Quickly accessible data can be stored in a stable, well-organized database.

This inventory information system offers features that facilitate the simplicity of report preparation.

The formulation of these issues leads to the conclusion that one of the distribution companies in Bandung can address issues like data errors, information delays, challenges with inventory analysis, and barriers with inventory monitoring by implementing a new inventory information system.

There are various recommendations to take into account for more development:

Development of Additional Features: Determine and create new features, like demand forecasting or inventory risk management, that can help the business improve its inventory management.

User Interface Usability: Make sure the user interface of the online application is simple to use and intuitive.

Customization: Take into account offering choices while exporting data.

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