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By Muhamad Rizki Rahadian

Design and Development of a Web-Based Medicine Inventory Information System (Case Study on One of The Pharmaceutical Distribution Companies in Bandung)

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Abstract

The establishment of this company took place in 2011, and it currently has a workforce of 63 individuals. The company distributes goods exclusively to authorized agencies or pharmacies rather than the general public. Only entities with a valid business license can purchase drugs from this company.

It should be noted that this company does not produce drugs but rather acquires them from suppliers for resale. There are still challenges in gathering reports on the inflow and outflow of medicine stock data during inventorying. These reports are still reliant on ledger records. Consequently, warehouse staff require considerable time to document reports regarding the arrival and departure of items. This study aims to examine and create a web-based system for managing drug inventory, which is essential for enterprises. Developing this system entails utilizing the Prototyping methodology as a system development approach and the Unified Modeling Language (UML) as a modeling instrument. The activities implemented in this system encompass the management of goods data, incoming goods transactions, outgoing goods transactions, inventory management, goods stock reports, outgoing goods reports, incoming goods reports, and user administration. Based on this study, a web application was developed to address the drug supply system issues at Pharmaceutical Distribution Companies In Bandung.

Keywords : Inventory, Prototyping, System Information, Unified Modelling Language (UML)

INTRODUCTION

The information system in the pharmaceutical distribution industry has emerged as a vital component in service operations. (Montella et al., 2019; Woo et al., 2019) This technology is employed to enhance human performance. Nevertheless, the presence of this information system has diverse ramifications on human living, encompassing both advantageous and detrimental consequences. (Subianto et al., 2023)

The information system within the pharmaceutical distribution industry is an essential asset for organizations and a crucial component of competitive strategies. (Fang et al., 2020; Mehrolia et al., 2021; Nabil et al., 2020) An optimal system design methodology is necessary to ensure the seamless integration of information system requirements may be executed with maximum efficiency). (Mabirizi et al., 2018)

Pharmaceutical distributors have multiple daily data recording procedures that produce a substantial volume of data, which includes manually processed inventory data. The manual method entails documenting inventory reports using ledger entries. (Márquez-Hernández et al., 2019; Suhirman et al., 2021)

The company was founded in 2011 and currently has 63 employees. The corporation disseminates merchandise via suppliers to regular consumers, excluding sales to the broader public. Only entities or pharmacies with valid business licenses can procure medications from this company. The corporation procures drugs from vendors for resale rather than manufacturing them.

While managing drug inventory, there are persistent issues in accurately documenting stock data for both incoming and outgoing drugs, primarily through handwritten ledger entries. As

a result, warehouse staff need a reasonably significant amount of time to document reports on the arrival and departure of items.

In light of these concerns, the researcher proposed developing an information system tailored to the company's pharmaceutical data inventory in alignment with the business requirements. The objective of this system is to streamline the process for warehouse personnel to document and oversee the stock of pharmaceuticals.

a) Definition of Information System:

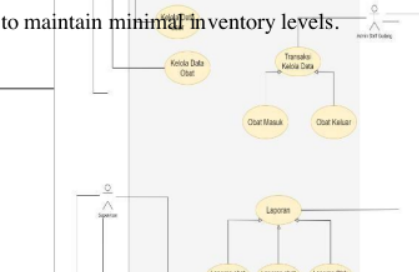
Budiman et al., (2018) defines an information system as a synergistic integration of diverse information technology components that provide information, facilitating communication within an organization or group.

b) Comprehending System Design

Design encompasses a set of methods for translating or elucidating the findings of system analysis into a programming language to specify precisely how the system components can be efficiently implemented. (Bevan Jones et al., 2018) System development refers to creating a new system that will replace an old one, wholly or partially.

c) Inventory is defined as the total amount of goods or materials that a business holds for production, sale, or distribution.

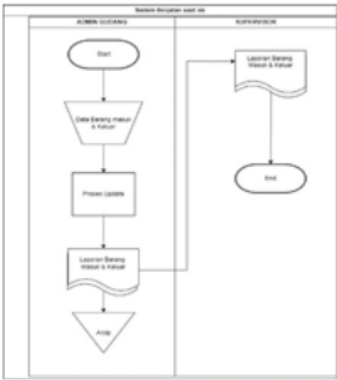
As Afrizal et al., (2019), inventory refers to the assortment of goods and resources that a firm holds to ensure the availability of its stock and meet client demands. Typically, inventory represents the most substantial asset in the financial situation report, which poses challenges in terms of its liquidity and conversion into cash. Consequently, organizations frequently endeavor to maintain minimal inventory levels.



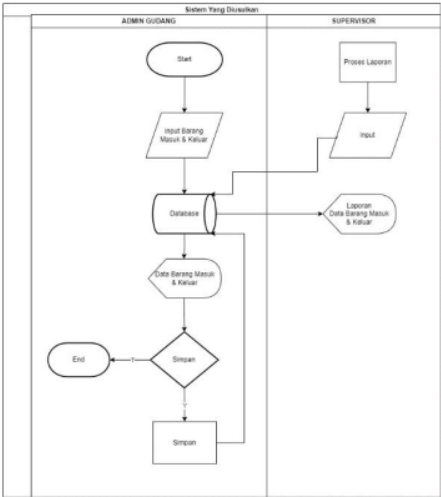
METHOD

a) Current System

Based on the results of observations and observations that have been made, the following is the system running at Pharmaceutical Distribution Companies in Bandung.



b) Proposed System



c) Usecase Diagram Modeling

Usecase diagram for the drug data inventory information system design application at PT. The results of prosperous work are as follows:

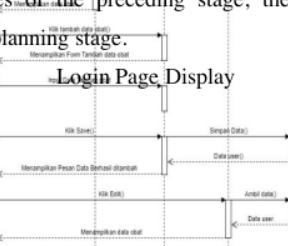
[illegible]

Sequence Diagram Modeling

[illegible]

RESULT AND DISCUSSION

implementation step is the last phase in developing a web-based medication supervision as an application, building upon the outcomes of the preceding stage, the system design planning stage.



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sequenceDiagram
    actor User
    participant Controller as Controller
    participant Model as Model
    participant View as View
    participant DB as Database

    User->>Controller: Klik Tombol Login
    Controller->>Model: Memeriksa User Terdapat atau tidak
    Model->>DB: Data User
    DB-->>Model: Data user
    Model->>View: Simpan Data
    View->>Controller: Klik Save
    Controller->>Model: Memanggilkan Pesan Data Berhasil ditambahkan
    Model->>DB: Klik Edit
    DB-->>Model: Ambil data
    Model->>View: Menampilkan data user
    View->>Controller: Klik name
    Controller->>Model: Memanggilkan pesan data berhasil diedit
    Model->>DB: Klik name
    DB-->>Model: Delete data
    Model->>View: Menampilkan Pesan data berhasil
    View->>Controller:
  
```

The diagram illustrates the process of displaying the login page. It begins with a user clicking the login button, which triggers a series of interactions between the Controller, Model, and View layers, and the Database. The Controller checks if the user exists in the database, and the Model retrieves the user data. The View then displays the user data, and the Controller updates the message to show the login was successful. The process continues with the user clicking 'Save', which triggers the Controller to call the 'Memanggilkan Pesan Data Berhasil ditambahkan' method, and the Model to call 'Klik Edit'. The Database then returns the user data, which is displayed by the View. The process concludes with the user clicking 'name', which triggers the Controller to call 'Memanggilkan pesan data berhasil diedit', the Model to call 'Klik name', the Database to return the deleted data, and the View to display the 'Menampilkan Pesan data berhasil' message.

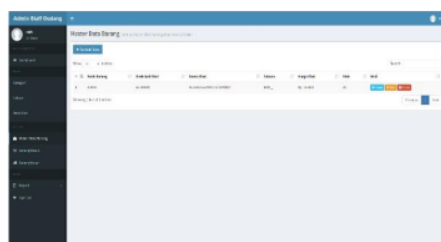
Login Page Display



Dashboard Page View



Drug Data Master Page



The drug inventory system can include the procurement and sales departments.

Incorporating more functionalities to enhance user experience and streamline the utilization of this pharmaceutical inventory management system.

REFERENCES

CONCLUSION

Based on the findings and analysis presented in the preceding chapter, the researcher draws the following conclusions:

The system efficiently provides precise and fast inventory information and reports tailored to the company's requirements. This helps to minimize both surplus and lack of items by utilizing modern data processing technology.

The medication inventory system is constructed on a web-based platform utilizing the PHP programming language, enabling convenient access from different platforms that only necessitate a browser.

Regarding potential recommendations that can be regarded as valuable input and factors to be taken into account by future researchers:

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ORIGINALITY REPORT

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SIMILARITY INDEX

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