Design of a Website-Based Stock and Drug Sales Information System in a Pharmacy

Hendra, Ruly Dwi Arista, Juliandri

Abstract

The development of information technology has influenced various sectors, including the pharmaceutical sector, which demands fast, accurate, and integrated data management processes. This research aims to design and build a drug stock and sales information system in pharmacies. website -based that is able to increase efficiency operational, minimizing error recording, as well as assisting the data collection process decision. The development method used is the System Development Life Cycle (SDLC) Waterfall model, which includes requirements analysis, design, implementation, testing, and evaluation of the system. The system was developed using PHP, HTML, CSS, JavaScript, and MySQL as the database. The research results show that the system is successful provide feature main such as drug data management, data collection patient, management users, logging stock in and out, transactions sales, as well as presentation report inventory and sales. Black Box testing shows that all over function running according to requirements, while the results of the User Acceptance Test (UAT) prove that that the system is easy to use, efficient, and helps optimize operational processes pharmacies. Thus, this information system is able to provide effective solutions for pharmacies in improving data accuracy, information security, and quality service to customer.

Keywords: Information Systems, Pharmacy, Drug Stock, Drug Sales, Website, SDLC, Waterfall.

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Introduction

Rapid development of information technology in the current digital era has brought significant changes in various fields. sectors of life, including the sector health and pharmacy. Pharmacy as one of the important elements in service Health has a responsibility to provide medicines quickly, precisely and accurately to society. However, in practice, it is still Lots pharmacies that carry out administration and management processes stock of drugs manually. Recording using ledgers or simple worksheets often results in occurrence errors in data collection stock, delay reports, as well as difficulty in monitoring availability of drugs in real time. This condition can result in drug shortage (stock out), excess stock that results in expired drugs, until decline efficiency service to customer.

Management system drug stocks and sales are getting higher along with the increasing needs of society will Fast and accurate service. A website -based information system is available as an effective solution. Because allows centralized data management, easily accessible from various devices, and can displays information in real time. With an integrated information system, pharmacies can minimize error recording, simplifying the reporting process, and improve overall operational performance. In addition, the web-based system also makes it easier to monitor stock by owner pharmacy without having to be present in person at the location.

Various previous studies show that The implementation of web -based information systems in the pharmaceutical sector is able to improve efficiency and accuracy operational. For example, research conducted by Rohili and Eko Setia Budi (2022) entitled " Web-Based Drug Sales Information System in Pharmacies" Khodijah " found that the web -based system is able to overcome problem manual recording which often results in data errors and invalid reports. The system they designed using prototyping methods and the CodeIgniter framework successfully helped pharmacies manage their inventory. transaction as well as monitor better stock management. Similar research was also conducted by P. Amsaras and YN Dewi (2022) in a study entitled "Analysis of the Design of a Drug Sales Information System at Segar Pharmacy," which confirmed that computer- based systems can speed up transaction and reporting processes compared to manual methods. In addition, Rini's research Oktaviani (2022) at Pharmacy Asih Chen also showed that web -based information systems make things easier owner pharmacy in controlling drug supplies, at the same time increase accuracy of stock and sales data.

Although previous studies have made important contributions to the development of pharmacy information systems, most of them are still focus on function basics such as record keeping sales and reports stock. Features continued like notification minimum stock, stock change history audit, integration with suppliers, and automatic reporting system is still rarely implemented. This indicates a research gap that can be used as a basis for developing a more comprehensive information system. comprehensive and adaptive to operational needs modern pharmacy. Based on this background, a design of a website -based drug stock and sales information system that is capable of integrating all operational processes pharmacies effectively and efficiently. This system is expected can overcome problems that often arise in management drug stock, speed up the transaction process sales, as well as provide report sales and inventory in real time. With this information system, it is hoped that pharmacy can increase quality service, efficiency operational, and able to compete in the midst of the increasingly rapid progress of information technology.

Literature Review 2.1 Information System

System information is combination integrated between technology, people, and purposeful procedures collect, process, store, and distribute information For support taking decision in organization. According to Laudon & Laudon (2018), the system information help organization increase efficiency operations, improving business processes, and give information

accurate in a way appropriate time. In context pharmacy, system information very important For ensure availability medicine, accuracy transactions and recording real - time sales.

2.2 Management Inventory Management

Management supply is the process of regulating, controlling, and monitor stock goods For ensure sufficient availability without cause excess stock. According to Heizer & Render (2017), inventory control supply required For minimize cost storage, avoid lack stock -out, and prevent expired.

In pharmacies, management stock become more complex Because drug own date expiration date, batch number, and category drug certain so that need system accurate record keeping.

2.3 Sales Information System

System information sale is the system used For take notes transaction sale in a way automatic and integrated. O'Brien & Marakas (2014) explain that system sale based technology capable reduce error manual recording, improving speed transactions, and present report finance in a way directly. At the pharmacy, the system This display transaction details drug like Name medicine, price, quantity, prescription doctor (if required), as well as the total payment.

2.4 Website as an Information System Platform

Website is a platform that can accessible through internet network and designed For facilitate data processing and transactions online. According to Pressman (2019), the system web -based has excess like accessibility height, convenience maintenance, multi-user, and flexibility in database integration system information pharmacy web -based allows owners and employees access stock and sales data When only and from device whatever.

2.5 Database

Database is organized data set in a way systematic and can accessible as well as managed use system database management system (DBMS). According to Connolly & Begg (2020), DBMS enables data storage structured, consistent, and support CRUD (Create, Read, Update, Delete) operations. Database on the system pharmacy used For store drug data, supplier data, stock, transactions sales, and reports.

2.6 Web-Based System Development Technology

A number of common technology used in design system information web- based includes :

- HTML, CSS, JavaScript → for appearance interface user (front-end).
- PHP / Python / Node.js → as server-side programming.
- MySQL / PostgreSQL → as database.
- Framework (Laravel, CodeIgniter, Django) → speeds up the development process and improves security system.

Research Methodology 3.1 Types and Approaches of Research

Study This use approach engineering device software engineering research with type study Research and Development (R&D) Approach This aim produce A product in the form of system information stock and sales drug website based that can solve problem operational at the pharmacy.

Study nature applicable, focused on development system in accordance need users, testing, and evaluation results.

3.2 Location and Time of Research

- Location study : Pharmacy (customized) with object study).
- Research time : (Add month and year in accordance need).

3.3 Data Collection Sources and Techniques

Data collection was carried out through various technique following :

a. 3.3.1 Observation

Researchers do observation direct to operational processes pharmacies, including :

- Recording process stock drug
- Transaction sale
- Reception drug from supplier
- Management drug expired

Observation results used For understand channel Work real as base design system. b. Interview

Interview done with owner pharmacy or officer pharmacy For get information about :

- Need system
- Constraint in manual recording
- Expected features

c. Documentation Study

Documents collected includes :

- Book stock drug
- Sales note
- Price list drug
- Report supply monthly

Results

Research results obtained through the process of needs analysis, design, implementation and testing of the drug stock and sales information system that was built website based. All stages development carried out based on the methodology explained in the previous chapter, so that the results presented in this chapter are representation from the success of the system design process in answering problems found in pharmacies.

The research results include description general system that has been developed, fulfillment of functional and non- functional requirements, design results data structures and interfaces, as well as implementation feature main ones that include drug management, management stock, recording transaction sales, up to presentation report. In addition, this chapter also presents the results of the evaluation through system testing, both functionally using Black Box Testing and through assessment. User Acceptance Test, to ensure that the system functions properly and meets operational needs pharmacy.

By presenting these results, it is hoped that reader can understand thoroughly how the system developed is able to provide solutions to manual recording constraints, improve data accuracy, speed up the transaction process, and support the data retrieval process decisions through more reports informative and structured. This chapter is concrete evidence success implementation of information technology in improving efficiency and effectiveness of operational activities pharmacy.

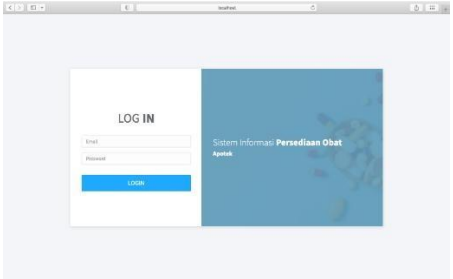


Figure 1. The Login Menu

The login menu is used for users or admins to enter the system, there is an email and password menu that can be used used to log in.

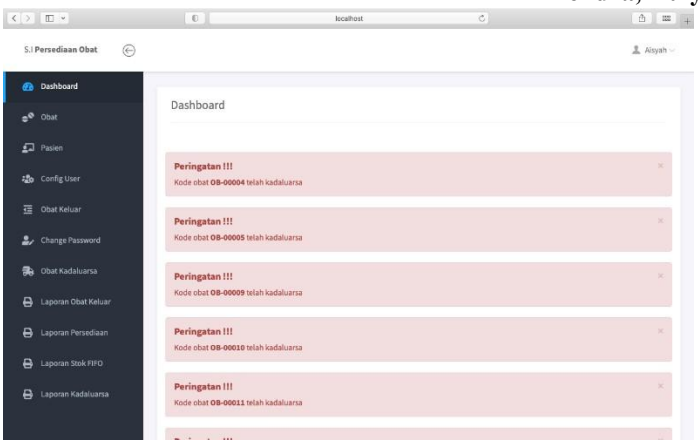


Figure 2. Dashboard Menu

After the admin enters the system, a dashboard menu will appear which will displays expired drug warning data.

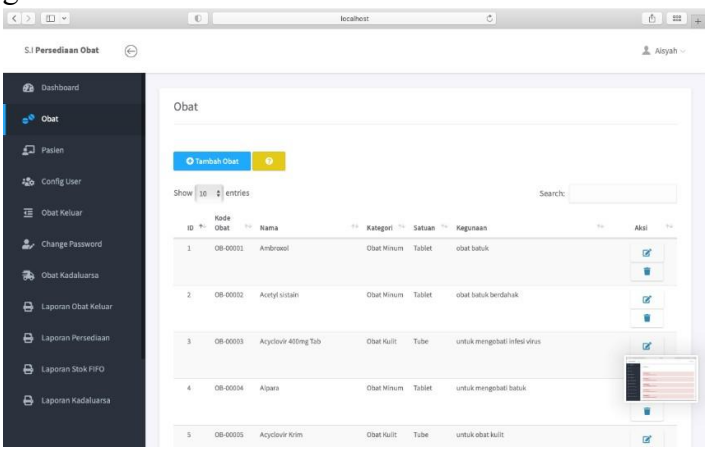


Figure 3. The drug menu

The drug menu contains drug data that has been entered, there is also a menu for adding drugs, editing and deleting.

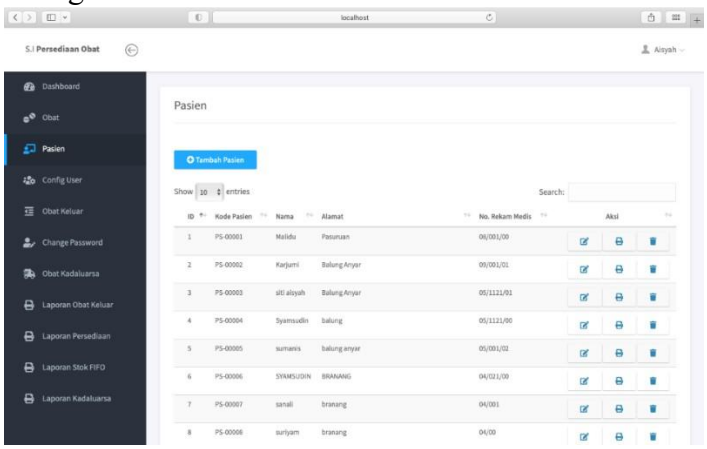


Figure 4. Patient Menu

Patient menu there is data on patients who purchased drugs from doctor or hospital according to prescription from Doctor. There is also a menu for adding patients, editing, and deleting.

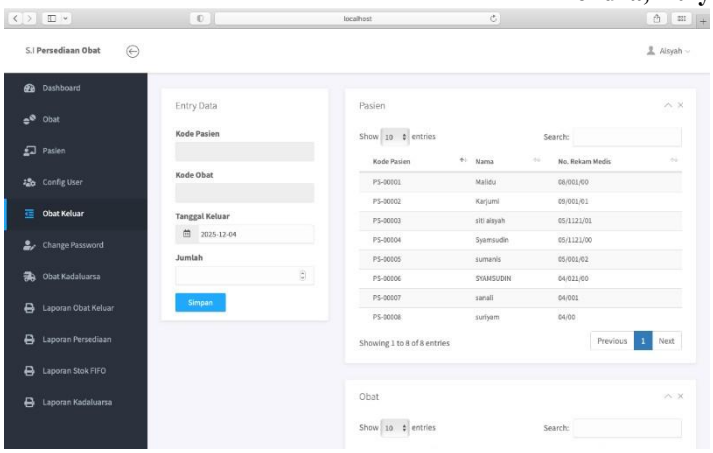


Figure 5. Medication Menu

The out-of-pocket medication menu provides information on what medication data has been dispensed. supply.

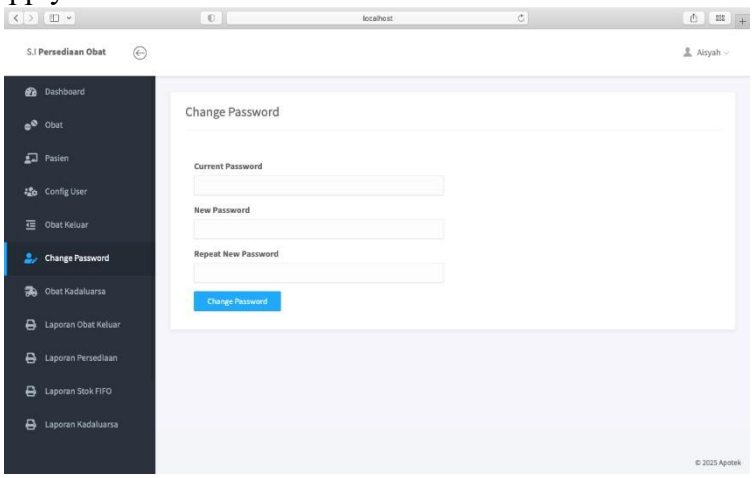


Figure 6. Password Menu

The change password menu is used to change the existing admin password.

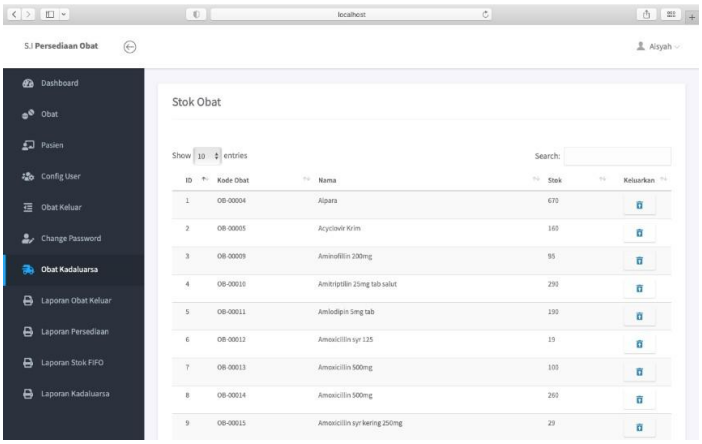


Figure 7. Expired Medicine Menu

Expired medicine menu functions to record expired drugs and can updated.

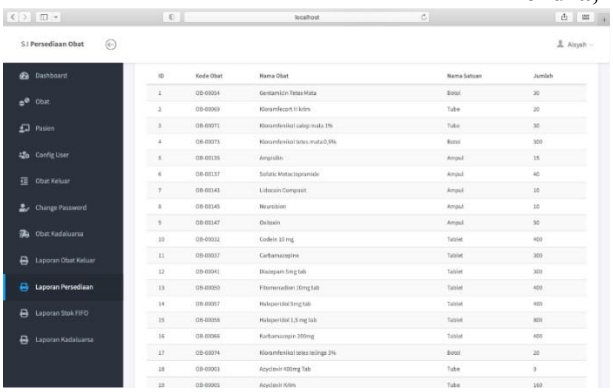


Figure 8. Report Menu

Report menu supply functions to view a list of all drug inventory data in stock.

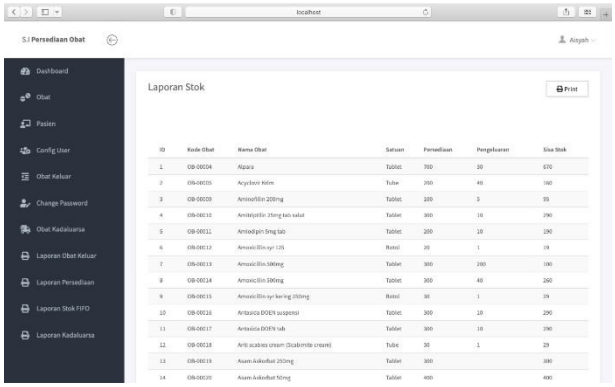


Figure 9. The Drug Stock Report Menu

The drug stock report menu is working check all drug stock data that is still available available, how much is out, and also remaining stock.

Black Box Testing done For ensure that every functions in the system information pharmacy Work in accordance with need without see structure program code. Testing focuses on the suitability of output to a particular input as well as ensure that every module walk with Correct.

1. Login Module Testing

Table 1. Login Module Testing

No	Scenario Testing	Input	Expected Output	Results
1	Login with correct email & password	Valid email, correct password	The system displays the admin dashboard	Succeed
2	Login with wrong password	Valid email, wrong password	The message "wrong password" appears	Succeed
3	Login with empty data	Did not fill in email/password	A validation message appears	Succeed

2. Admin Dashboard Testing

Table 2. Admin Dashboard Testing

No	Scenario	Input	Expected Output	Results
1	Displays expired drug information	Access dashboard	The system displays expired drug warning	Succeed

3. Drug Data Module Testing

Table 3. Drug Data Module Testing

No	Scenario	Input	Expected Output	Results
1	Add medicine	Complete drug data	Data is saved & displayed in the drug table	Succeed
2	Edit medication	Changes in drug data	Updated data	Succeed
3	Remove medication	Click the button wipe	Drug data deleted	Succeed

4. Patient Module Testing

Table 4. Patient Module Testing

No	Scenario	Input	Expected Output	Results
1	Add patient	Complete patient data	Data saved	Succeed
2	Edit patient	patient data	Updated data	Succeed
3	Wipe patient	Click delete	Patient data deleted	Succeed

5. User Module Testing (Administrator)

Table 5. User Module Testing (Administrator)

No	Scenario	Expected Output	Results
1	Add new user	New user is saved and can login	Succeed
2	Edit user	User data changes according to input	Succeed
3	Delete user	User deleted	Succeed

6. Testing of the Outgoing Drug Module

Table 6. Testing of the Outgoing Drug Module

No	Scenario	Input	Output	Results
1	View the list of dispensed medications	Access menu	medication dispensing table is displayed.	Succeed
2	Adding outgoing drug Automatic stock reduce	Drug data & number Succeed data	of dispensed	

7. Testing the Change Password Module

Table 7. Testing the Change Password Module

No	Scenario	Input	Expected Output	Results
1	Change the password correctly	Old password & new password	Password successful updated	Succeed
2	Old password is incorrect	Old password input is incorrect	An error message appears	Succeed

8. Expired Drug Module Testing

Table 8. Expired Drug Module Testing

No	Scenario	Input	Output	Status
1	Displays a list of expired drugs	Access menu	List of expired drugs is displayed	Succeed
2	expired drug data	Change of status	Status updated	Succeed

Conclusion

System developed information succeed fulfil need operational pharmacies, in particular in the process of managing drug data, recording stock, transactions sales, data collection patients, user management, and presentation report. All feature This has implemented in accordance results analysis needs and walking with good at the stage testing. Process

management drug become more structured and efficient, because system provide function add, edit, delete, and monitor stock in a way automatic. Information expired drugs as well as dwindling stocks can also displayed via the dashboard, so that help admin in taking more decisions fast and precise. Module transactions and drugs go out walk with accurate, where every transaction sale in a way automatic influence amount stock. This is remove risk error manual recording, improving accuracy data collection, and speed up the service process to patient. System provide complete and easy reports accessible, namely report drug out, report inventory and reports stock medicine. Report This help admin monitor condition supplies and do evaluation periodically to use Medicines at the pharmacy. Results Black Box testing shows that all over function system walk in accordance hope, without critical error found. With Thus, the system has worthy used as operational aids daily at the pharmacy.

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