

Design of a Web-Based Book Dropshipping Information System

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The rapid development of information system technology has influenced the business world, including trade, so that the dropshipping system has become popular; however, William Bookstore still conducts direct transactions on site without stock recording, so customers have to come to the store and book availability information is inaccurate. To overcome this problem, this study designed a web-based Book Dropshipping Information System using the Waterfall method, including needs analysis, ERD and UML design, implementation with PHP and MySQL, and testing, so that customers can search and buy books without coming directly, and the store can monitor stock easily. As a result, the system built is able to facilitate purchase transactions, record stock, and purchase history automatically, provide real-time monitoring, increase order transparency, and become an effective solution in supporting shopping convenience and store record management.

Keywords: E-Commerce Information System; Online Bookstore System; Software Development Life Cycle (SDLC); Database-Driven Web Application; Digital Inventory Monitoring.

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1. Introduction

In the current digital era, the development of information technology has brought significant changes to the business world, including the commerce industry. According to Basid et al. (2024), continuously evolving technology has influenced the way businesses operate, communicate, and interact with customers, and has even created new business models. One rapidly growing business model is dropshipping, a sales method in which sellers do not need to store physical inventory but instead forward customer orders directly to suppliers or manufacturers. The growth of the dropshipping business model is closely tied to the increasing public access to, and demand for, information in the digital era.

On the other hand, the reading interest of the Indonesian population remains relatively high. Based on the results of the Indonesia National Assessment Program in 2016 conducted by the Center for Educational Research (Puspendik) of the Ministry of Education and Culture, the data revealed that the national average distribution of literacy in students' reading ability in Indonesia shows that 46.83% fall into the Poor category, only 6.06% fall into the Good category, and 47.11% fall into the Fair category (Tahmidaten & Krismanto, 2020). However, this interest is often hindered by limited access to bookstores and a lack of information regarding book availability in certain regions.

Not all regions have easy access to physical bookstores, especially areas located far from urban centers. This condition makes it difficult for people to obtain the books they want due to long distances and limited information regarding book availability. Such circumstances become an obstacle for individuals who have a desire to read but are not supported by convenient access to books. As a result, many people struggle to obtain reading materials even though their interest in reading continues to grow.

These problems create a significant opportunity for the development of technology-based solutions, particularly through a book dropshipping system. With a dropshipping system supported by a web-based platform, the public can purchase books online easily, quickly, and conveniently without having to look for physical bookstores directly.

In addition, books are information and educational media that have played an important role since long ago. Books function as a means of delivering knowledge and information that can improve the quality of human resources. Therefore, the availability of easily accessible books is crucial in supporting learning activities and fostering a culture of literacy.

Limited access to bookstores, along with data management processes that are still carried out manually, requires considerable time and makes it difficult to monitor book stock and sales. Manual systems also make it challenging for store owners to analyze business development and make strategic decisions.

Based on these problems, a “Design of a Web-Based Book Dropshipping Information System” is needed—one that can integrate book stock management, ordering, and sales and purchase transactions into a single unified system. With the implementation of this system, the book-selling process is expected to become more efficient, public access to books will increase, and business owners will be able to expand their market reach.

2. Method

In this research, several systematically structured stages were carried out to obtain valid data and support the process of designing the web-based book dropshipping information system. The first stage was a literature study, which involved gathering various relevant reference sources such as scientific journals, books, research reports, theses, and other online resources that discuss similar cases or related methods. This stage serves as the foundation for understanding the existing problems as well as determining the appropriate approach for system design.

The next stage was the data collection process, conducted using two main methods: interviews and observations. Interviews were carried out directly with individuals involved in the business processes or workflow to obtain information regarding system requirements, existing problems, and the current manual procedures. Meanwhile, observations were conducted by directly examining operational activities in the field, enabling the researcher to understand the workflow, challenges, and overall process of managing orders, products, and transactions within the dropshipping system.

The third stage is user interaction design, which is conducted using modeling tools such as use case diagrams and activity diagrams in UML. This modeling aims to illustrate user interaction scenarios within the system—whether as buyers, sellers, or administrators—from the processes of ordering, product management, and order creation to report generation. This stage ensures that every function and workflow within the system aligns with user needs and supports an effective dropshipping mechanism.

The final stage is software development using the Waterfall model or the sequential linear System Development Life Cycle (SDLC). This model consists of five stages: (1) Software Requirements Analysis, which involves identifying problems in the manual system and formulating solutions in the form of a digital system; (2) Basic Design, which produces the Entity Relationship Diagram (ERD) and interface design; (3) Coding, which refers to the implementation of the system based on the design; (4) Testing, which includes functional testing, integration testing, performance evaluation, and bug fixing; and (5) Maintenance, which involves improving and enhancing the system after it is deployed.

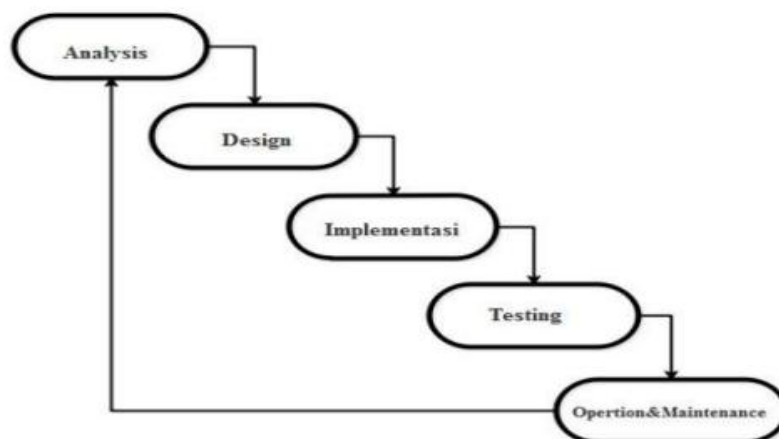


Fig. 1. Method Waterfall Model

3. Model dan Development

In the process of analyzing and designing system requirements to ensure that the system operates according to the planned design, there are two main types of requirements that must be considered: functional and non-functional requirements. Functional requirements refer to the identification of the services or functionalities that the system must provide in order to operate properly and achieve its objectives. Meanwhile, non-functional requirements focus on supporting specifications related to system quality, including the software and hardware requirements that must be met to ensure the system can function optimally.

3.1 Functional Requirements

Functional requirements are needs that relate directly to the processes that will be performed by a system. The system requirements analysis includes:

1. Admin Management
 - a. Account Login
The system must provide a dedicated login feature for accessing and managing the system.
 - b. User Data Management
The admin can view the number of registered customers and stores, display customer and store details, and delete specific accounts if necessary.
 - c. Book Data Management
The admin can view the list of book products, display book details, and delete specific books if needed.
 - d. View Total Stock and Total Book Sold
The admin can view the total stock of products sold and available across all stores.
2. Seller Management
 - a. Account Registration and Login
The system must provide a registration feature for store (seller) accounts as well as a login function for managing their store independently.
 - b. View Book Catalog
Sellers can view the list of available books or books associated with their store.
 - c. Book Search
Sellers can search for books based on category, title, or author for sales purposes.
 - d. Add and Manage Products

- Sellers can add new books to the catalog, update product information, and manage stock.
 - e. View Transaction History
The system must provide access to transaction records involving the store's products.
 - f. Manage Storage Profile
Sellers can update store information, change passwords, and manage other account-related data.
3. Buyer Management
- a. Account Registration and Login
The system must provide customer account registration and a login page to access book purchasing services.
 - b. View Book Catalog
The system must display the list of available books, including product details such as title, author, price, and stock.
 - c. Book Search
Customers must be able to search for books based on category, title, or author through the search feature.
 - d. Add Book To Cart
The system provides a function for adding products to the shopping cart before proceeding to the ordering process.
 - e. Orders and Payments
Customers can proceed to checkout, select a payment method, and fill in transaction details according to the purchase flow.
 - f. View Transaction History
Customers can access the order history page to check purchase status, order details, and payment receipts.

The following is the Use Case Diagram for the Admin, Seller, and Buyer displayed in Figure 2, related to the system's Use Cases below:

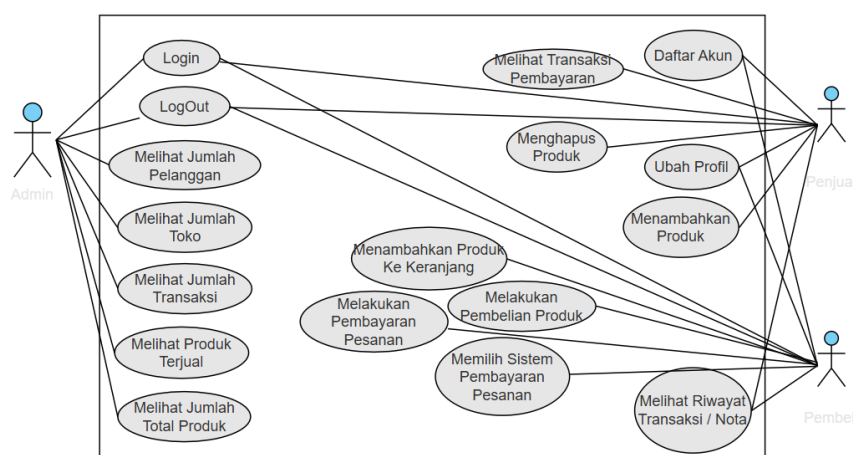


Fig 2. Use Case Diagram

3.2 Interface System

The following is the Use Case Diagram for the Admin, Seller, and BuyeThe interface of this system is designed with a focus on ease of use, a well-structured layout, and efficiency in supporting user activities. The interface design is also tailored to the needs of each role within the system, particularly the Admin as

the primary manager responsible for handling data and user administration. The system interface is developed to be responsive and interactive by utilizing web technologies such as HTML, CSS, and JavaScript, allowing for a more dynamic, adaptive, and user-friendly display.

This web-based book dropshipping information system provides three main interface types used by three categories of users: Admin, Seller, and Buyer. The following describes several core pages available within the system: displayed in Figure 2, related to the system's Use Cases below:

a. Dashboard Page

The dashboard page displays several features, including Cart, Purchase History, Checkout, Register, and Login. This can be seen in Figure 3

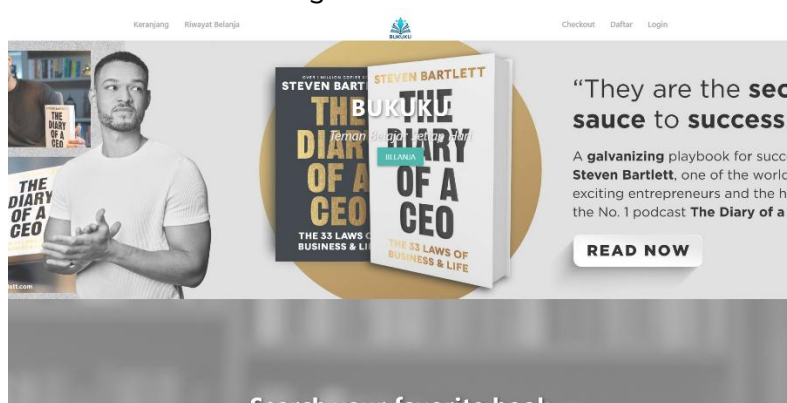


Fig 3. Dashboard Page

b. Login Page

On this login page, users are required to enter the email and password they registered with on the account registration page. This can be seen in Figure 4.

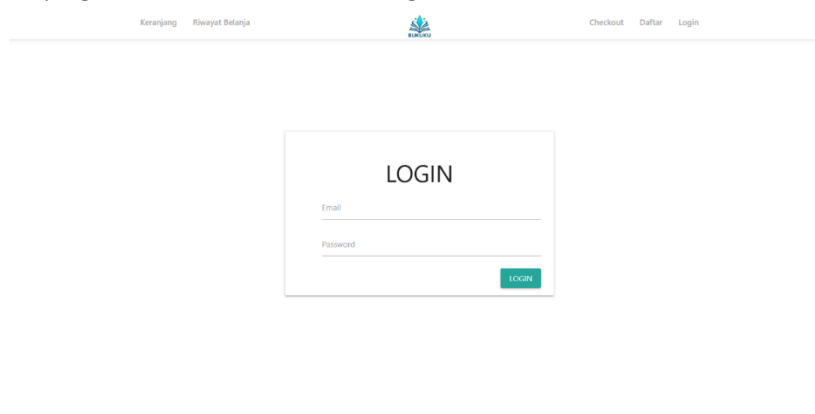


Fig 4. Login Page

c. Account Registration Page

On the account registration page, customers are required to fill out a form containing their personal information. After completing the registration, customers will receive an email message to activate their registered account. The activation email is typically received within 5–10 minutes after the customer clicks the register button. This can be seen in Figure 5.

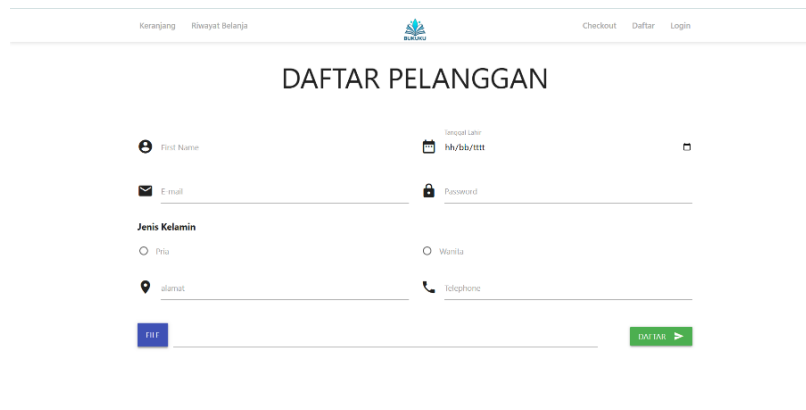


Fig 5. Account Registration Page

d. Cart Page

The cart page stores the books that the user intends to purchase. This page cannot be accessed if there are no products inside the cart. This can be seen in Figure 6.

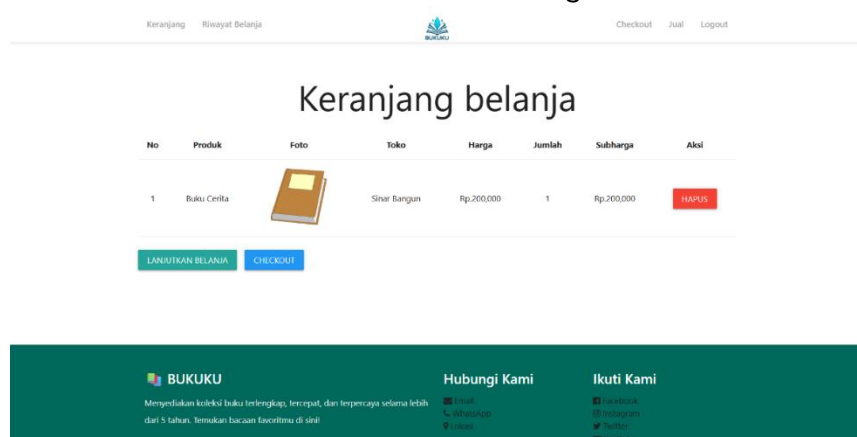


Fig 6. Cart Page

e. Checkout Page

On the checkout page, which is the next step after proceeding to purchase the products or books in the cart, the system will display a form for entering order information. This can be seen in Figure 7.

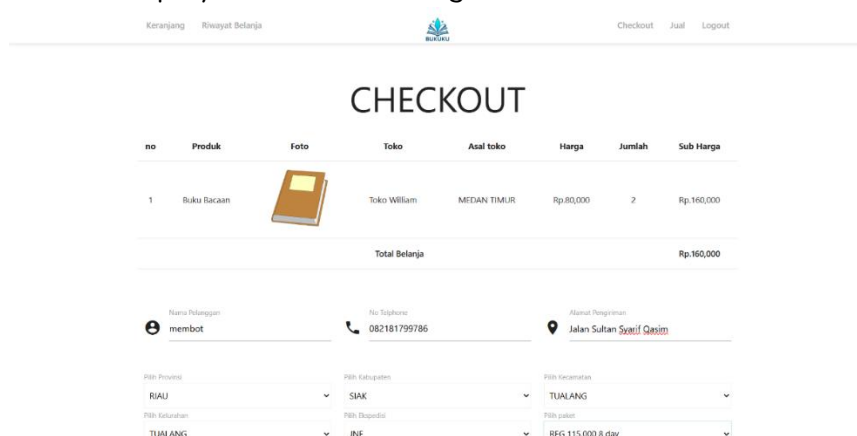


Fig 7. Checkout Page

f. Receipt Page

The receipt page serves to store information about the order that has been placed. The Purchase Receipt page will appear after an order is completed. This can be seen in Figure 8.



Fig 8. Receipt Page

g. Seller Account Registration Page

On the seller account registration page, users are required to fill out a form containing the store information that will be created. This can be seen in Figure 9.

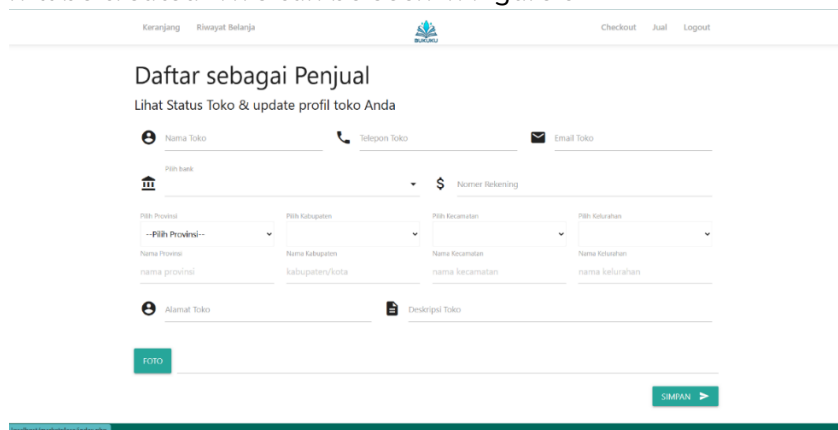


Fig 9. Seller Account Registration Page

h. Seller Dashboard Page

On the seller dashboard page, several menu options are provided, such as Home, Store Profile, Products, Sales, Reports, Change Password, and Logout. This can be seen in Figure 10.

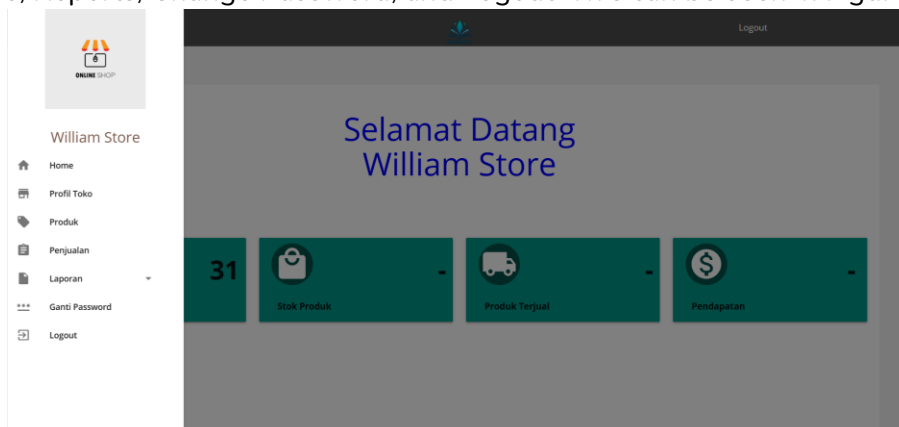


Fig 10. Seller Dashboard Page

i. Product Menu Page

The product data page contains the products that will be sold by the store. To add a new product, the seller must click Add Data, which is used to insert a product or book into the store's catalog.

Several interactions are also available, such as search, delete, edit, and view details. This can be seen in Figure 11.

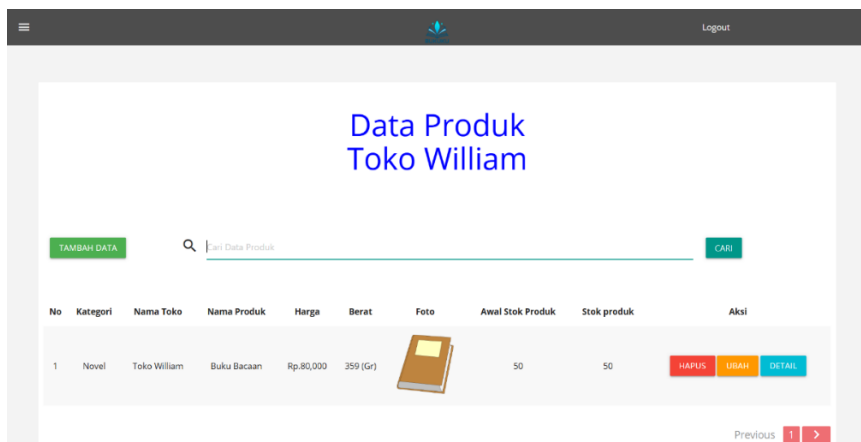


Fig 11. Product Menu Page

j. Add Data Page

The Add Data page is intended for entering products that will be sold by the store. On this page, the seller is required to fill out a form containing information about the book to be sold. This can be seen in Figure 12.

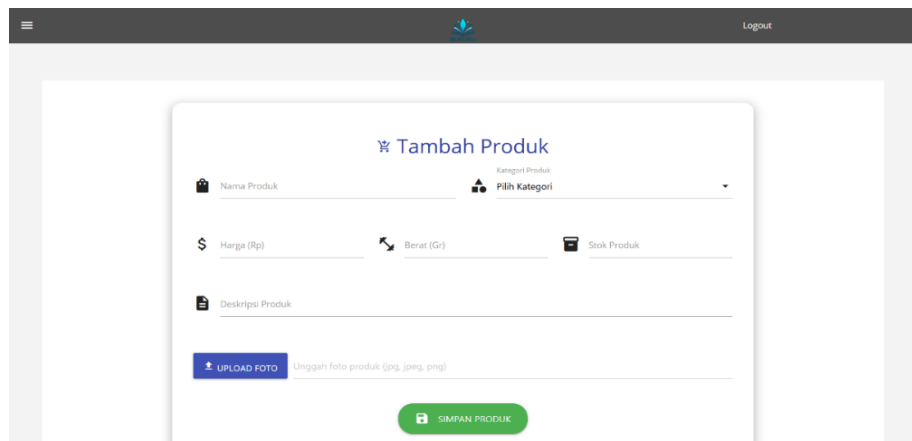


Fig 12. Add Data Page

k. Edit Data Page

The Edit Data page is intended for modifying book information that is incorrect or no longer valid. This can be seen in Figure 13.

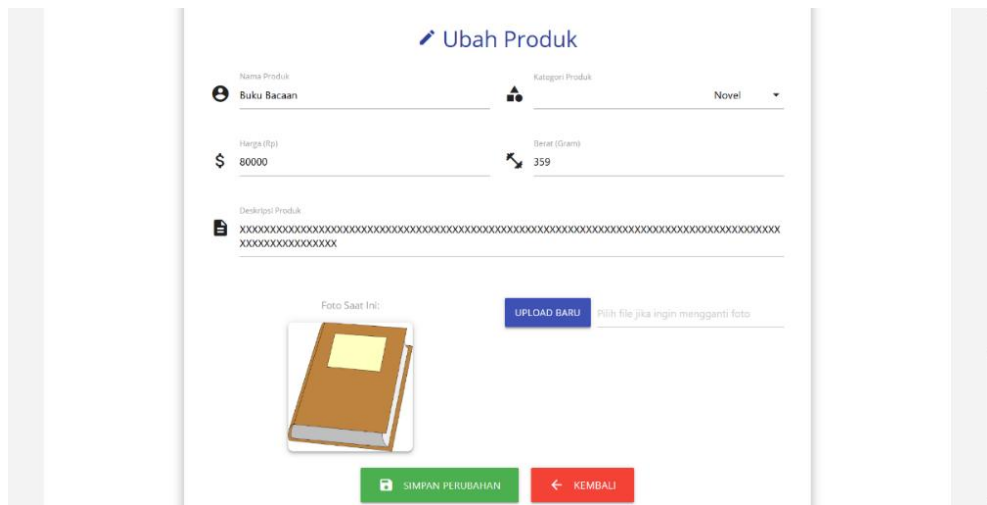


Fig 13. Edit Data Page

l. Report Page

The report page is divided into two types, namely the Purchase Report and the Stock Report. This can be seen in Figure 14.

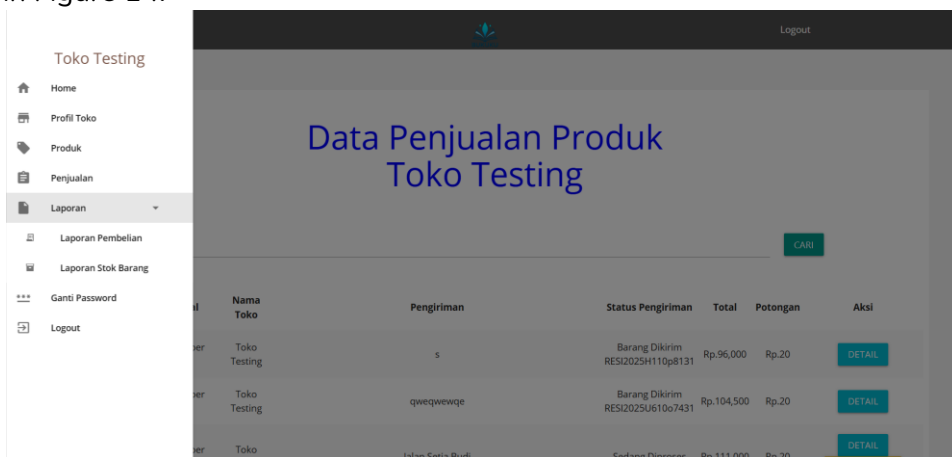


Fig 14. Report Page

m. Admin Login Page

The admin login page is slightly different from the regular user login page. This can be seen in Figure 15.

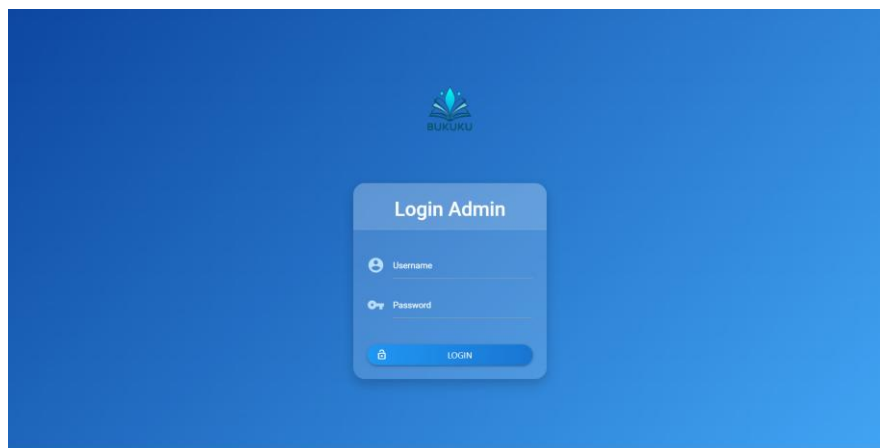


Fig 15. Admin Login Page

n. Admin Dashboard Page

The admin dashboard page contains various information and menu options, such as Home, Products, Purchases, Reports, Customers, Sellers, Change Password, and Logout. This can be seen in Figure 16.

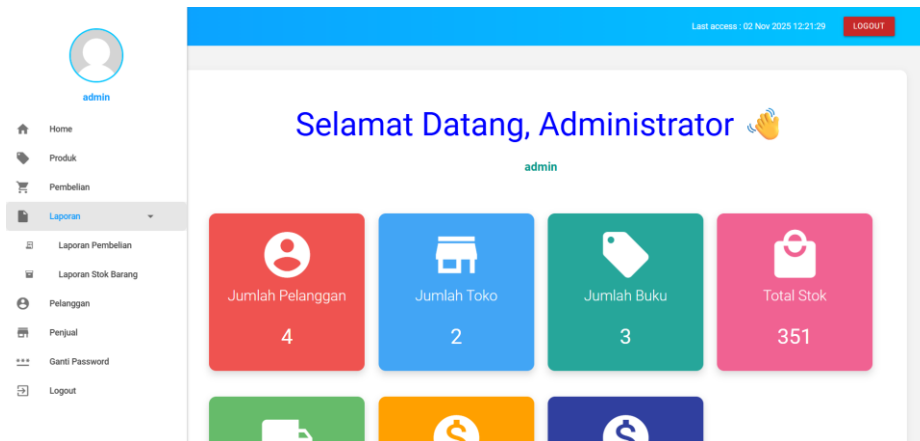


Fig 16. Admin Dashboard Page

o. Product Page

The product page contains the products that will be sold by the store. Several interactions are also available, such as the search feature and product details. This can be seen in Figure 17.

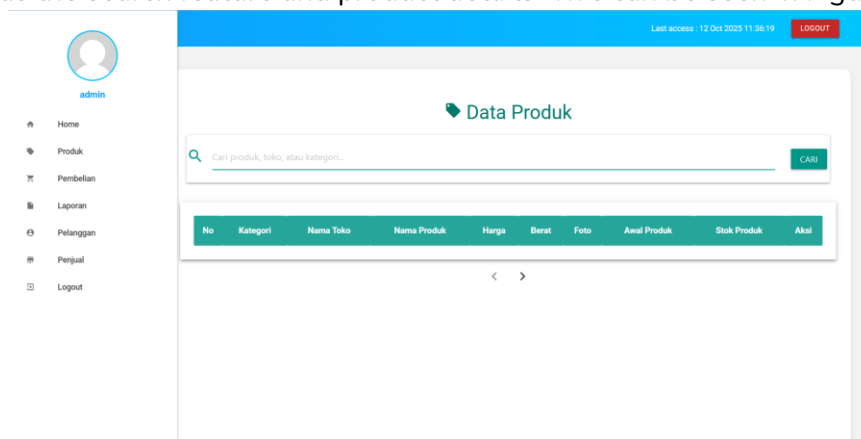


Fig 17. Product Page

p. Purchase Page

The purchase page contains information about transactions or orders that have been made by customers. Several interactions are also available, such as the search feature, details, and payment options. This can be seen in Figure 18.

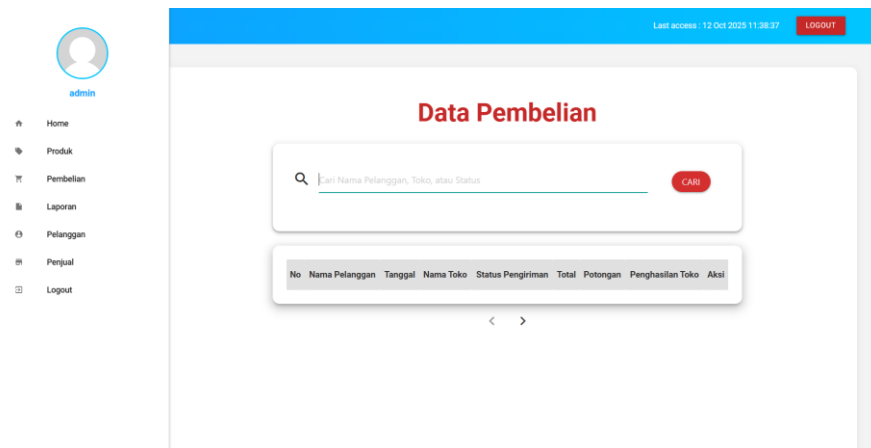


Fig 18. Purchase Page

q. Report Page

The report page contains a record of the order history made by customers. On this page, users can use search features based on date and shipping status, including Unpaid, Processing, and Shipped. Purchase reports can also be downloaded in PDF format. This can be seen in Figure 19.

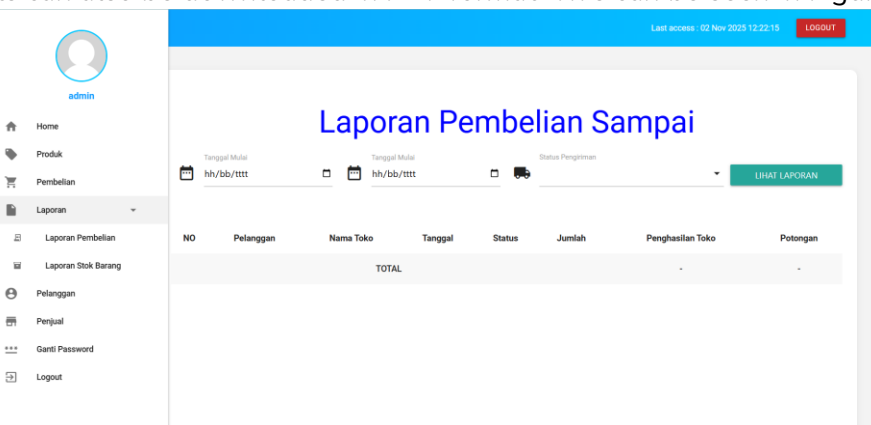


Fig 19. Report Page

r. Costumer Page

On the customer page, the system displays information about registered customers. Several features are available on this page, including search, details, and delete. This can be seen in Figure 20.

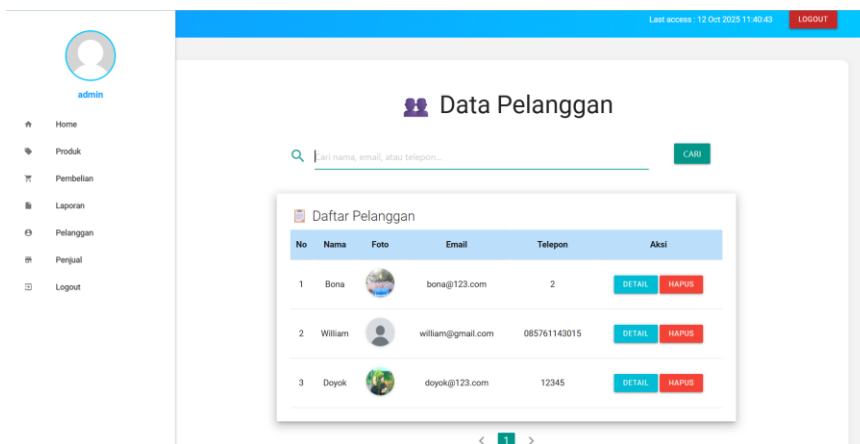


Fig 20. Costumer Page

s. Seller Page

On the seller page, the system displays information about registered stores. Several features are available on this page, including search, details, and delete. This can be seen in Figure 21.

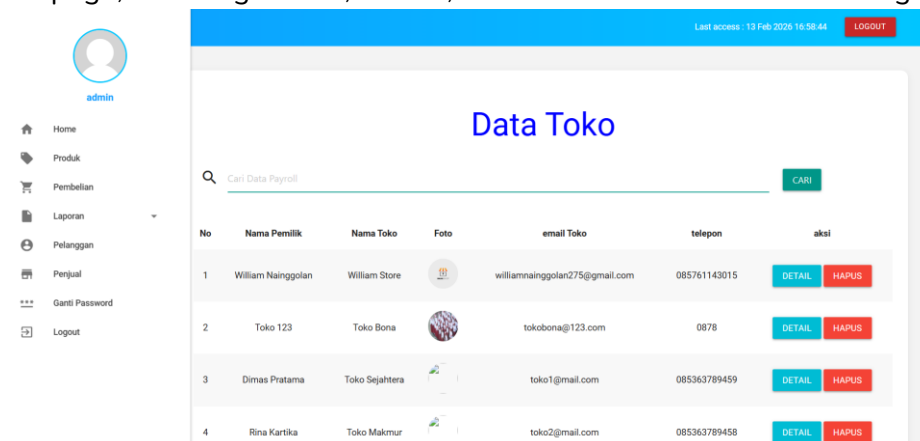


Fig 21. Seller Page

4. Conclusion

Based on the results of the research, design, and testing of the web-based book dropshipping system at William Bookstore, several conclusions can be drawn as follows:

- The developed system functions properly and has successfully provided highly useful features that simplify the ongoing book sales process.
- The use of the Waterfall method enabled a structured and systematic development process. Meanwhile, testing using Blackbox Testing demonstrated that sellers understood the system's functions, including login, adding books, editing, deleting, and other features.
- The features available in the system help record and display stock, sales, and several essential functions that are beneficial for both sellers and buyers in making decisions. It is expected that this system can facilitate and support the economic growth of sellers while also making it easier for buyers to obtain the books they want efficiently, without the need to visit the store directly.

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