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Business Transformation: Online Sales Application Design Using Laravel (Case Study on One of The Perfume Collection Companies in Bandung)

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Abstract

In a progressively sophisticated digital age, e-commerce technology has emerged as an essential element in the commercial landscape. E-commerce allows businesses to access a broader market without geographical constraints and allows consumers to conduct transactions at any time and location. Bossq Parfume Collection functions within the fragrance retail industry. This study used a descriptive methodology. The development methodology is Agile, utilizing system design methodologies based on UML (Unified Modeling Language). The Bossq Parfume Collection has a WhatsApp ordering system that relies on manual documentation, rendering it susceptible to human errors and data loss. Challenges in real-time order monitoring may result in delays in confirmation and shipping, thereby diminishing customer happiness. Moreover, employing Excel for extensive, real-time data management is ineffective, leading to inconsistencies and recording inaccuracies. To resolve these challenges and reduce errors in company administration, we created an application utilizing a PHP framework and JavaScript as programming languages. As a result, we developed an online sales application utilizing the Laravel framework to facilitate effective business management for Bossq Parfume Collection. Adopting an integrated e-commerce system can increase operational efficiency, reduce data management errors, and ultimately promote consumer satisfaction and corporate competitiveness in the digital marketplace.

Keywords : *E-commerce, Bossq Parfume Collection, Agile, Unified Modeling Language, PHP*

INTRODUCTION

In a progressively sophisticated digital age, e-commerce technology has emerged as an essential element in the commercial landscape. E-commerce allows enterprises to access a broader market without geographical constraints and offers customers the ease of conducting transactions at any time and from any location. This benefit positions e-commerce as a primary catalyst for digital economic expansion in Indonesia.

A perfume collection company in Bandung continues to utilize a WhatsApp ordering system that depends on manual documentation, rendering it susceptible to human errors and data loss. Challenges in real-time order monitoring may result in delays in confirmation and shipping, thereby diminishing customer happiness. Furthermore, employing Excel for extensive, real-time data management is ineffective, leading to inconsistencies and recording inaccuracies. Decentralized and non-real-time data leads to mistakes in stock and sales, adversely affecting operational efficiency and corporate profitability. The manual procedure impedes response times to clients, reducing satisfaction and loyalty, which may result in the perfume collecting company in Bandung losing regular clientele and seeing a fall in sales.

Design

Design is the methodology of strategizing and defining the components constituting a system or product, assuring optimal

functionality, and attaining specified objectives. (Pratama, 2021) This procedure entails recognizing requirements, delineating specifications, and developing models or prototypes for evaluation (Alman Faluti Ashari & Rizqi Putri Nourma Budiarti, 2023).

Designing entails identifying the processes and data necessary for the new system. This design phase offers a comprehensive architectural framework to assist programmers in designing applications aligned with the components of the computerized system. Consequently, this phase must include the design of hardware, software, databases, and applications (Mahmood & Ashour, 2020; Ningrat & Tundjungsari, 2025).

Design Stage

The system design phases entail developing a comprehensive system derived from system analysis, culminating in a novel system model (Alhari et al., 2022; Putra W et al., 2023)

The further stages of system design are as follows:

1. Output Design: This aspect is crucial, as the generated reports must accommodate all human elements that necessitate them.
2. Input Design: This can enhance data entry efficiency, attain high precision, and guarantee that users comprehend the entered data.
3. System Process Design: This guarantees efficient data processing to yield precise information and oversees the system's operations.
4. Database Design: This encompasses a compilation of interconnected data.
5. Control Design: This design guarantees that the system, upon implementation, can consistently avert errors, damage, and failures in system processes.

Online Sales Application

An online sales application facilitates the sale of items or services online. This application generally comprises functionalities such as product catalogs, shopping carts, payment options, and order tracking (Yadav et al., 2019).

MySQL

MySQL is a relational database management system (RDBMS) that efficiently manages databases, handling substantial data volumes accessible by multiple users and facilitating synchronization (Lawahiz Zhafran Ferial Faiz Al Laitsi, 2022). MySQL is very efficient due to its capability to manage security layers, including host names, access rights at the subnet mask level, passwords, and its cost-free availability (Samosir et al., 2021).

E-Commerce

Yadav et al., (2019) defines e-commerce as purchasing and selling online products or services. E-commerce facilitates online purchases through diverse, efficient payment and shipping systems.

Unified Modeling Language (UML)

Gustiana Sugosha et al., (2021) assert that Unified Modeling Language (UML) is a prevalent standard language utilized in the industry for delineating requirements, performing analysis and design, and illustrating architecture in object-oriented programming. UML functions as a visual language for modeling and conveying information about a system via diagrams and accompanying prose.

Use Case Diagram: This representation delineates the system's interface from the users' perspective.

Class Diagram: This delineates the interrelations among classes and specifies each class inside the system design model.

Activity Diagram: This diagram illustrates the progression from one activity to another within a system. The user's action triggers the subsequent view.

Sequence Diagram: This diagram is utilized in system modeling to illustrate interactions among elements inside a scenario.

A solution is required to unify the business procedures of a perfume collection firm in Bandung into a consolidated system. Numerous studies indicate that employing a web-based application can improve efficiency and effectiveness in corporate management.

METHOD

The Agile development methodology is a software development approach that prioritizes swift execution and prompt adaptation to client-requested changes. It actively engages clients in the process to ensure that the resultant software or modules embody the collaboration of all stakeholders (Mediana et al., 2020). The Agile method is a conceptual framework that employs a development strategy informed by user feedback.

The phases of the Agile methodology are as follows:

1. Planning: This phase entails delineating the requirements for application development, being the preliminary step in Agile methodology.
2. Implementation: At this phase, developers construct or execute the program code or application by the specified design, utilizing various programming languages.
3. Software Testing: This phase entails assessing the software's functionality to determine if it operates as intended. The Black Box testing method evaluates software functionality without regard to its internal implementation.
4. Documentation: This phase entails the development team assembling documentation that delineates the modules and functionalities of the constructed information system. This paper furnishes resources for the team's future development and streamlines the information system's management.
5. Deployment: This procedure entails transferring the outcomes of program or application development to a web hosting service, rendering them accessible to users via the Internet. The deployment phase seeks to verify that the program or application operates correctly and fulfills user expectations.
6. Maintenance: This procedure entails the routine examination and administration of the information system uploaded to web hosting to mitigate bugs. It also seeks to ascertain the system's condition on the web hosting platform, identifying if it is experiencing issues or functioning normally. System maintenance encompasses operations such as bug rectification, software enhancements, and other essential measures to guarantee the

efficient operation of the information system.

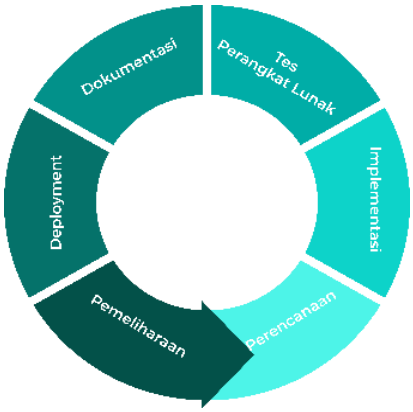


Figure 1. Agile Method

Framework Laravel

Laravel is an open-source PHP framework for developing web applications. It employs the Model View Controller (MVC) architecture, which delineates application logic, data, and presentation to enhance structure and manageability. Laravel provides numerous capabilities, including routing, authentication, sessions, and database administration, thereby enhancing the efficiency of online application development.

Model View Controller (MVC) is a design pattern for software development. The MVC architecture divides an application into three components: Model, View, and Controller. This framework enhances code reusability. In the MVC paradigm, application components are categorized into three segments:

The model encompasses all operations associated with data structure calls, including function invocations, input processing, and output rendering within the browser.

This relates to the interface's design or the output's arrangement.

The controller processes user input and converts it into commands for the model and/or view.

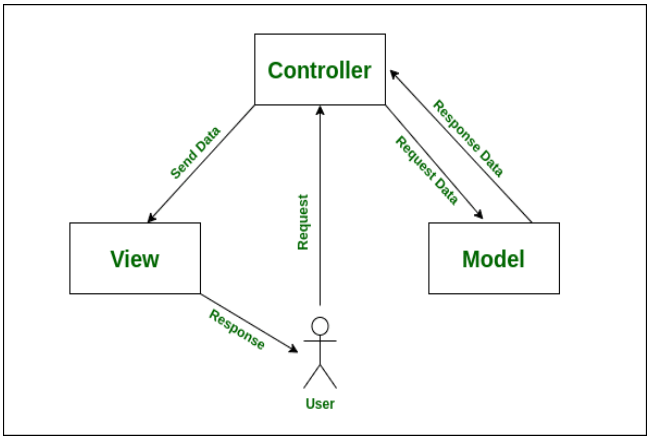


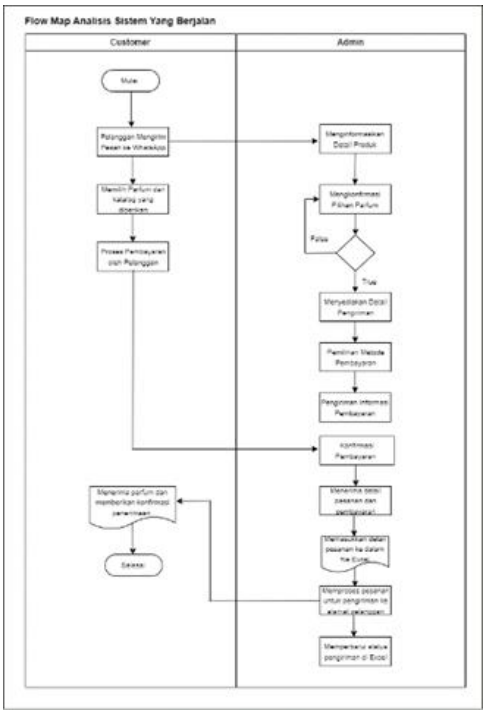
Figure 2. MVC Workflo

RESULT AND DISCUSSION

Flowmap of Ongoing Online Sales

Using the interview results, you may reference the information to construct the sales system by developing a flowchart and flow map.

Table 1. Flowmap of Current System Analysis



Proposed Analysis Flowchart

Table 2. Proposed Analysis Flowmap

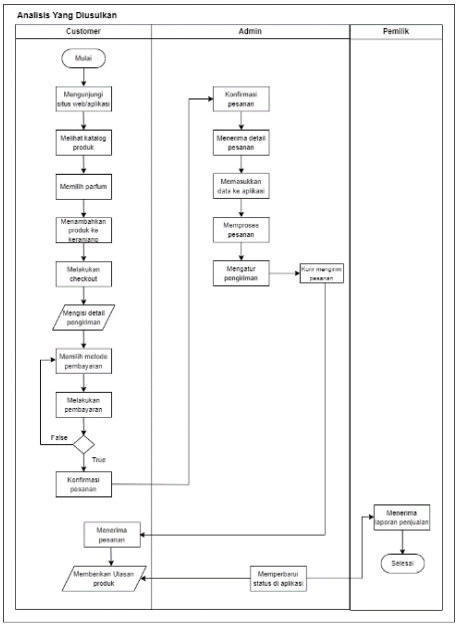
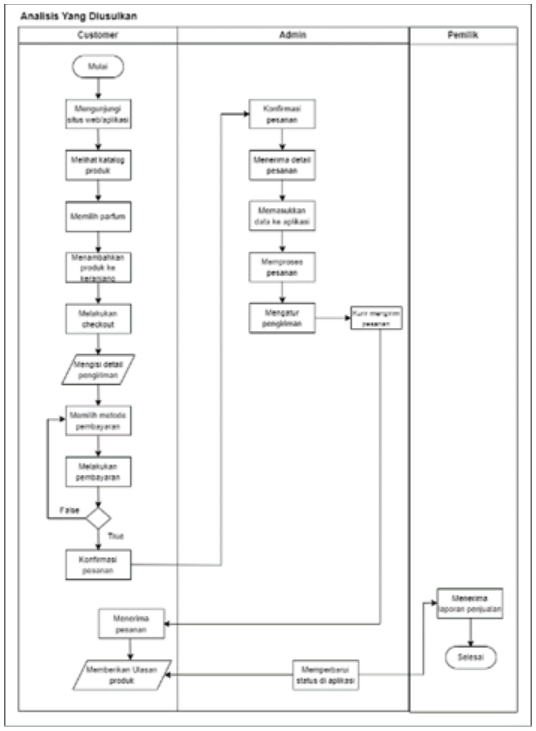


Table 2. Proposed Analysis Flowmap



Design

A use case refers to a specific operation, such as system login, data creation, and deletion. In this sense, an actor is a human entity that engages with the system to execute a specific task. The use case diagram for the sales information system features three actors: Admin, Customer, and Owner. The administrator can oversee user information by adding, modifying, and removing users. The following is a detailed account of the business events and how users engage with the system.

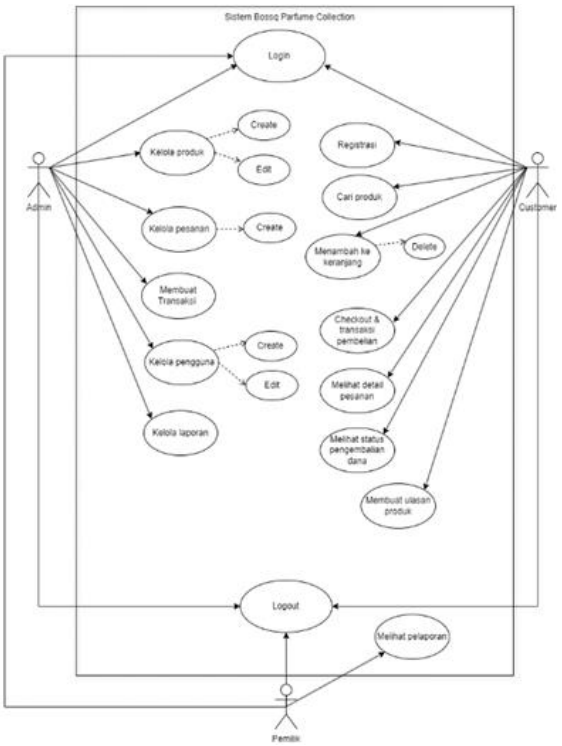


Figure 3. Use Case Diagram

Table 3. Use Narrative Registration

Use Narrative Registration	
Objective	Register to create an account in the sales information system.
Description	This system allows actors to access the sales information system.
Actor	Customer
Initial Conditions	The system displays the website page
Actor	System Reaction
Opening the Bossq Perfume Collection website	Menampilkan halaman website
Select the “Register” menu	Displaying the registration page
Fill out the registration form (first name, last name, email, password, confirm password).	
Clicking the “Register” button	
Final Condition	Displaying the login page

Table 4. Use Narrative Login

Use Narrative Login	
Objective	Login and enter the system
Description	This system allows actors to access the sales information system.
Aktor	Admin, Customer, Owner
Initial Conditions	Displaying website pages
Actor	System Reaction
Opening the Bossq Perfume Collection website	The system will display the website page
Select the "Login" button menu	The system will display the login page.
Fill in the login form (email, password)	
Clicking the "Login" button	
Final Condition	If the command is correct, it will enter the sales system and the actor can carry out activities within it.

Table 5. Use Narrative Managing Orders

Use Narrative Manage Orders	
Objective	The Admin section manages incoming customer orders.
Description	This system allows actors to process customer data, goods data, user data, sales orders, delivery orders, and invoices.
Actor	Admin
Initial Conditions	Displaying the order page
Actor	System Reaction
Open the order menu	The system will display the order page.
Select the order details to be processed.	
Clicking the triangle arrow icon	
	The system displays the order page that will be processed such as invoice, send, and cancel.
Check order details	
Clicking on invoice	
	The system displays the new invoice sheet
Clicking the "create invoice" button	
	The system displays a message that the invoice was successfully created and the order status is being processed.
Arrange order delivery	
	Sistem menampilkan *sheet* untuk pengiriman baru
Fill out the form (sender name, tracking number, and source)	
Clicking the "Create Shipment" button	
	The system displays a confirmation message "Shipment successfully created"
Final Condition	If the order is correct, the system will display the order status as completed.

Table 6. Use Narrative Sales Report

Use Narrative Sales Report	
Objective	Admin and Owner sections can view sales reports
Description	This system allows actors to see sales performance, monitor selling products, and manage stock
Actor	Admin and Owner
Initial Conditions	Actor Shows the reporting menu
Actor	System Reaction
Open the reporting menu	The system will display the reporting menu.
Open sales menu	The system will display the sales page and the option to select the desired time period.
Selecting a time period	The system processes sales data according to the selected period and generates sales reports.
Final Condition	If the command is correct, the system will display the sales report in a format such as a table or graph.

Activity Diagram

This activity diagram depicts the process of a menu system within the sales information application:

A use case delineates tasks such as system login, data creation, and deletion. In this sense, an actor is a human entity that engages with the system to execute a specified task. The use case diagram for the sales information system features three actors: Admin, Customer, and Owner. The administrator oversees user data by adding, modifying, and removing users. The following is a detailed account of the business events and user interactions with the system.

Registration Activity Diagram

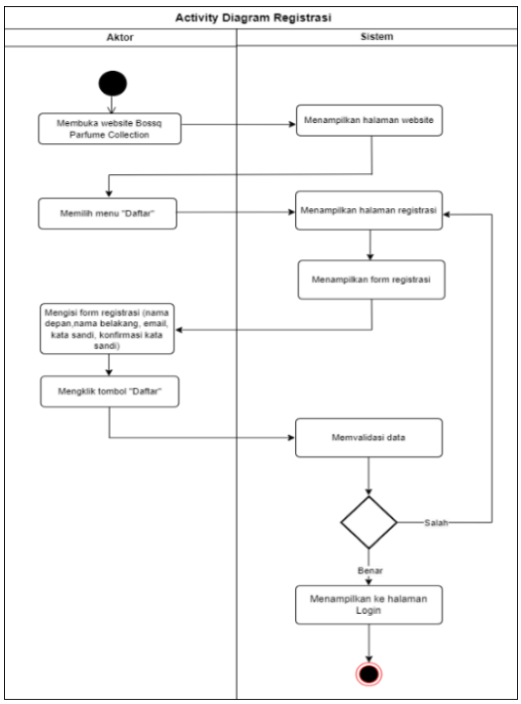


Figure 4. Registration Activity Diagram

Activity Diagram Login

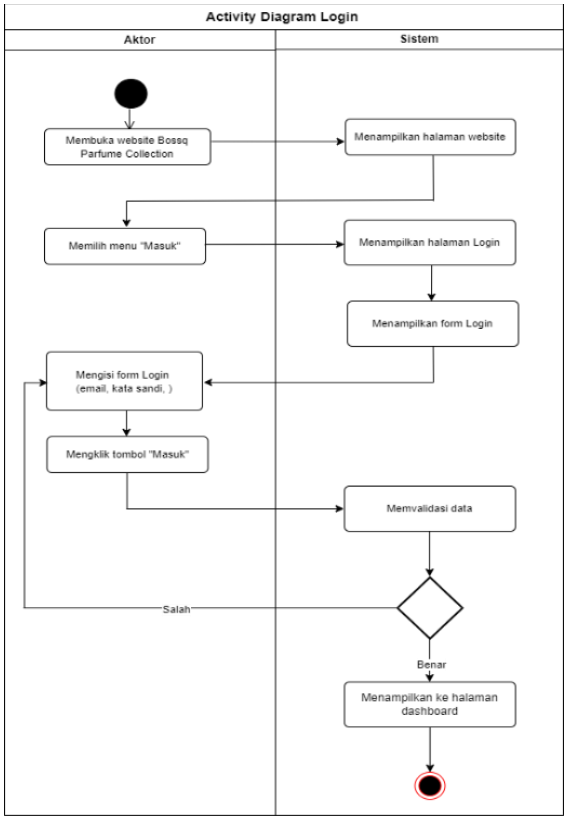


Figure 5. Login Activity Diagram

Activity Diagram Managing Orders

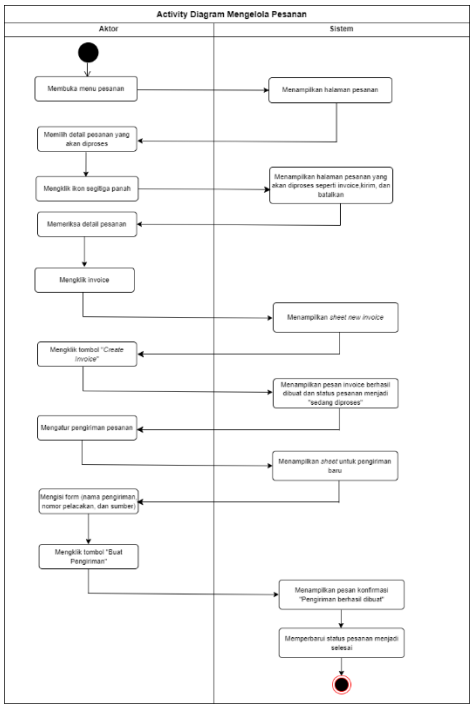


Figure 6. Activity Diagram Managing Orders (Admin)

Activity Diagram Sales Report (Owner)

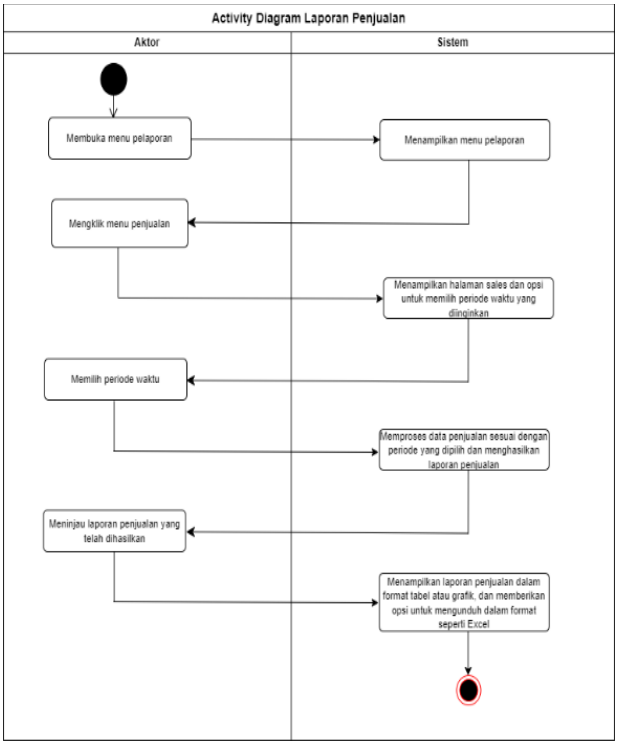


Figure 7. Activity Diagram Sales Report (Owner)

Sequence Diagram

The Sequence Diagram illustrates the order of messages sent between objects at particular moments during system execution. Boxes, lines, and arrows illustrate objects,cts represenrepresentings, and a vertical progression denotes time. The following is the sequence diagram for the login procedure of the sales information system:

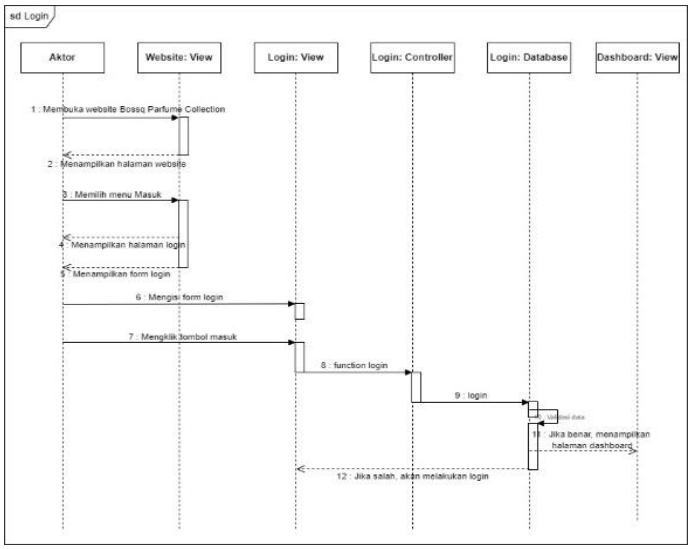


Figure 8. Login Sequence Diagram

Class Diagram

This class diagram depicts the entities constituting a system and the interrelations among the object classes inside that system.

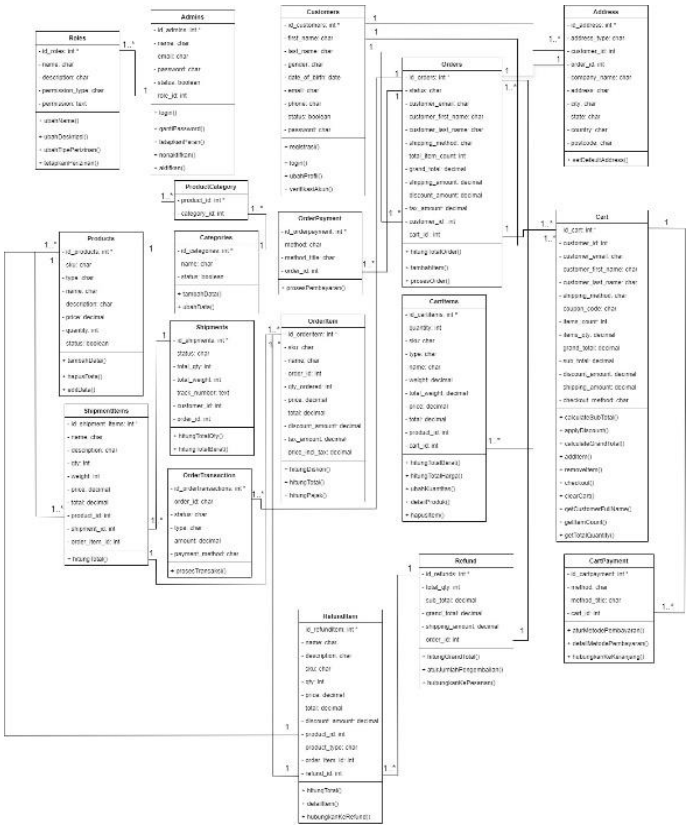


Figure 9. Class Diagram

Interface Design

Interface design entails creating a system before its implementation as software, emphasizing input and output design. The following is the interface design for the online sales application for business management.

Figure 10. Registration Page Design

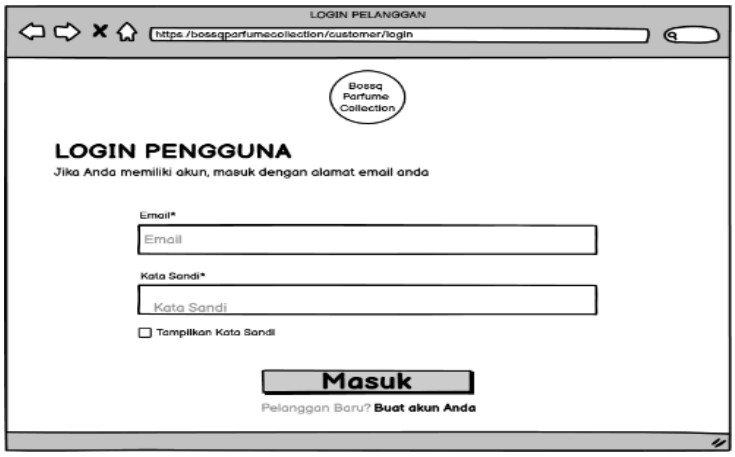


Figure 11. Login Page Design

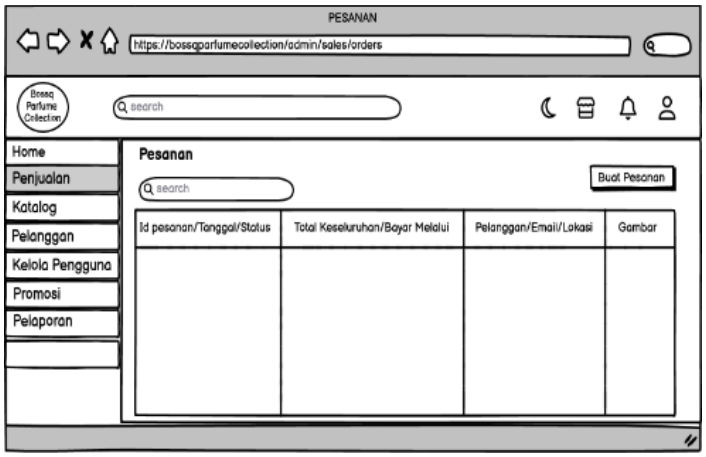


Figure 12. Design of the Manage Orders Page

Figure 13. Sales Report Page Design

Implementasi Database

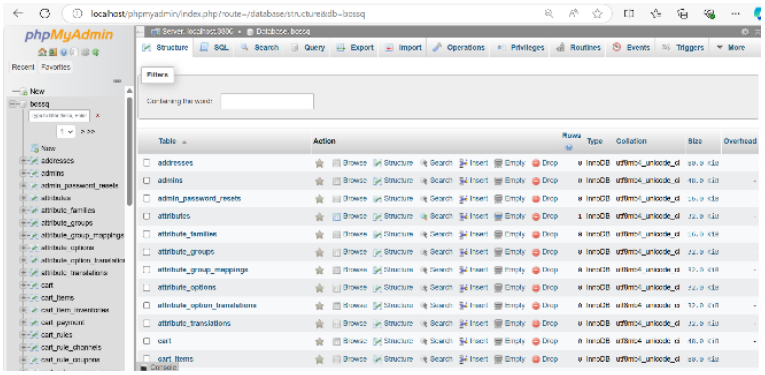


Figure 14. Database Table

Interface Implementation

During the implementation stage, the interface is created based on the design completed in the previous phase to facilitate user understanding of the system.

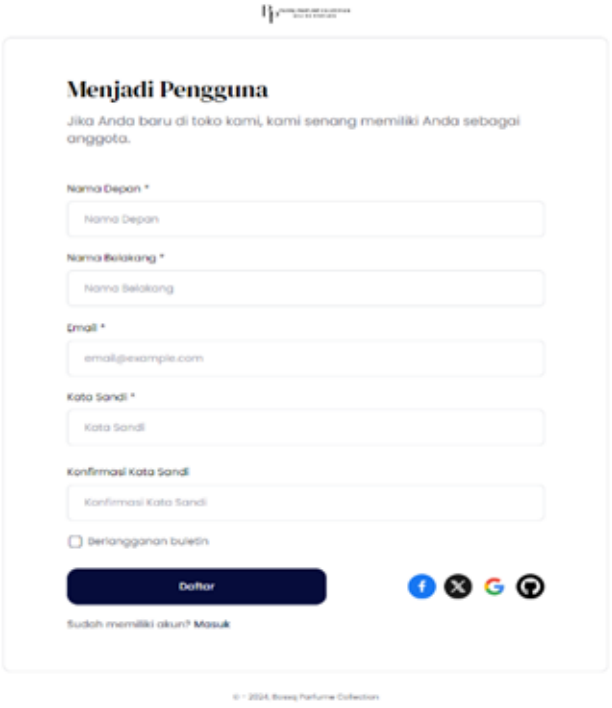


Figure 15. Registration Form View

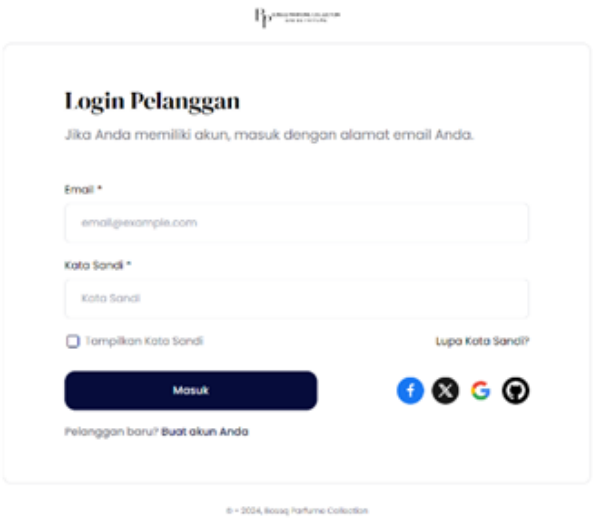


Figure 16. Login form display

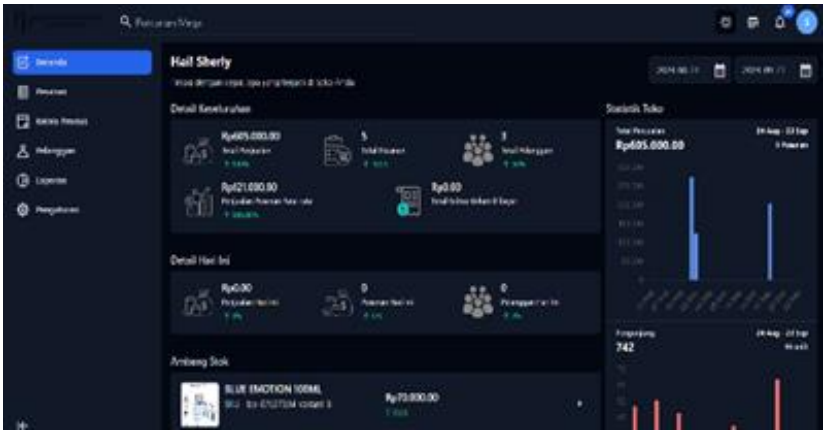


Figure 17. Admin Dashboard View

Manage Orders Page (Admin)

The Manage Orders (Admin) page has a form for overseeing customer orders. Upon verification of the order form by the Admin, the validation column will display "Order in Process."

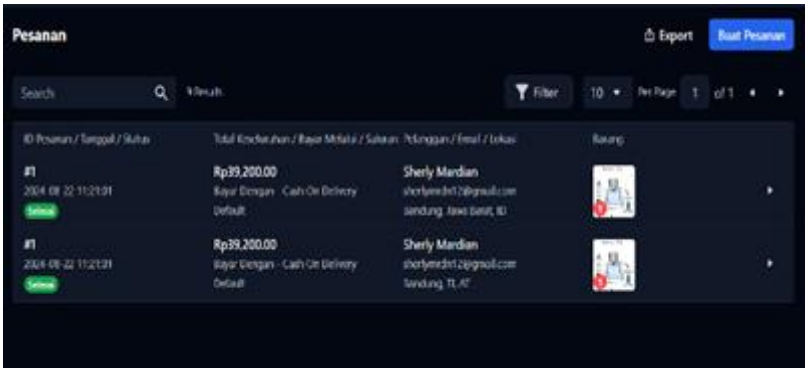


Figure 18. Manage Orders View (Admin)

The admin's Sales Report tab offers a detailed analysis of sales performance, tracks top-selling products, and aids the owner in making informed business decisions on inventory management and marketing methods.

Figure 19. Sales Report View (Admin. Owner)

Testing

Application system testing is the evaluative procedure for verifying that the application operates according to the defined requirements. The objective is to detect and rectify flaws or problems in the code, assure the application's quality and performance, and confirm that the application operates well in diverse conditions. Testing additionally guarantees that the system is secure, efficient, and user-friendly.

Table 7. User Login Function Test

Objective	Input	Expected output	Results
Knowing the login display response, if the user username and password are correct	Username and password	Displays the dashboard page of the system.	√
Knowing the login display response, if the user username and password are incorrect.	Username and password	Displays information that the entered data is incorrect.	√
Mengetahui respon tampilan *login*, jika *username* dan *password user* tidak diisi.	Username and password	Displays information that the entered data is incorrect.	√
Knowing the response to the forgot password display, if the email is correct	Email	Displays information to enter verification code.	√
Know the response to the forgot password display, if the email is incorrect or not filled in.	Email	Displays information that the entered data is incorrect.	√
Know the display response if the verification is correct	Verification Code	Displays the dashboard page of the system.	√
Know the response to the forgot password display, if the verification code is wrong.	Verification Code	Displays information that the entered data is incorrect.	√

Table 8. System Function Trial in managing orders (Admin)

Objective	Input	Expected output	Results
Create a new order	Product ID, quantity, address, payment	Order successfully created, stock reduced, confirmation notification sent	√
Cancel order	Order ID, cancellation reason	Order cancelled, stock returned, cancellation notification sent	√
Processing payments	Order ID, payment details	Payment verified, status changed to "paid" notification sent	√
Print order invoice	Order ID	Order invoice successfully generated and can be printed	√
View order details	Order ID	Order details are displayed	√
Sending orders	Order ID, Receipt Number	Status "shipped" updated, tracking number recorded, notification pengiriman terkirin	√
Filter and sort orders	Order status, date range	Orders are filtered according to criteria	√

CONCLUSION

The research findings indicate that the web-based online sales system created for Bossq Perfume Collection markedly improves operational efficiency through enhanced record accuracy, real-time order tracking, and reduced manual errors. This technology enhances service speed and responsiveness while augmenting consumer loyalty and happiness. We advocate advancing the system into a mobile application service and augmenting features to satisfy client requirements more effectively. Furthermore, it is vital to do frequent performance optimization, encompassing enhancements in loading speed and effective server management. Surveillance for potential bugs or faults, prioritizing defenses against cyber attacks, and executing regular data backups will guarantee the application's security and reliability.

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