

INFORMATION SYSTEM DEVELOPMENT FOR WEB-BASED URSKYND SKINCARE E-COMMERCE USING RAPID APPLICATION DEVELOPMENT METHOD

**Aliya Zhafira Wastuyana^{1*}, Zahrah Aliyah Rachman², Nanda Salma Zhafira³,
Fahryan Putra Ramadi⁴, Muhammad Ananda Giovanny Ramadhan⁵**

^{1,2,3,4,5}Universitas Pembangunan Nasional "Veteran" Jawa Timur (Indonesia)

**) email: 22082010101@student.upnjatim.ac.id*

Abstract

The rapid advancement of information technology has accelerated the adoption of digital solutions across various business sectors, particularly through web-based e-commerce systems. This study aims to design and develop a web-based e-commerce information system for URSKYND Skincare using the Rapid Application Development (RAD) method, which emphasizes rapid development cycles, iterative prototyping, and continuous user involvement to support dynamic business needs. The research methodology consists of requirements planning, RAD design workshop, and implementation stages. System requirements were identified through observation and stakeholder discussions, while system design was modeled using Unified Modeling Language (UML). The developed system implements core e-commerce features such as user authentication, product management, shopping cart, order processing, invoice generation, and customer ratings. The results show that the system effectively improves transaction efficiency, data management accuracy, and user experience, demonstrating that the RAD method is suitable and effective for developing web-based e-commerce systems for small and medium-sized enterprises, particularly in the skincare industry.

Keywords: Innovation, Technology, E-commerce System, Rapid Application Development, Skincare Business

1. INTRODUCTION

The rapid advancement of information technology has accelerated digital transformation across various business sectors, particularly through the adoption of electronic commerce (e-commerce). E-commerce enables businesses to conduct online transactions, manage data efficiently, and improve customer services without geographical constraints, making it a strategic solution for small and medium-sized enterprises (SMEs) to enhance competitiveness, expand market reach, and improve operational efficiency in the digital era (Lesmana, 2025).

The skincare industry is one of the sectors experiencing significant growth in recent years, driven by increasing public awareness of health, beauty, and personal care. This growth is accompanied by changes in consumer behavior, where customers increasingly rely on digital platforms to access product information, make purchases, and interact with businesses. However, many local skincare brands still rely on manual or semi-digital sales processes and lack integrated web-based e-commerce information systems, resulting in inefficient transaction processing, unstructured sales

records, and suboptimal customer data management that negatively affect business performance and service quality (Saepudin et al., 2025).

The development of an effective e-commerce information system requires a software development methodology that emphasizes speed, flexibility, and active user involvement. Rapid Application Development (RAD) is a development approach that focuses on iterative processes, rapid prototyping, and continuous user feedback, enabling systems to be developed within a relatively short timeframe while remaining adaptable to changing business needs and user requirements (Adiyono et al., 2025).

Several studies have demonstrated that the application of the RAD method contributes positively to the efficiency and quality of web-based e-commerce system development. Nevertheless, research that specifically examines the implementation of RAD in developing web-based e-commerce systems for local skincare businesses remains limited. Therefore, this study aims to design and develop a web-based e-commerce information system for Urskynd Skincare using the Rapid Application Development method to support online sales activities, improve data management, and enhance overall user experience (Raihan & Hidayat, 2024).

1.1 Problem Statement

Based on the background described above, the problems addressed in this study are as follows:

1. How can a web-based e-commerce information system be designed to support the online sales process of Urskynd Skincare effectively?
2. How can the Rapid Application Development (RAD) method be applied in developing a web-based e-commerce system that meets user requirements?
3. How does the implementation of the RAD method contribute to improving system efficiency and usability in the e-commerce context?

1.2 Research Objectives

The objectives of this study are:

1. To design and develop a web-based e-commerce information system for Urskynd Skincare.
2. To implement the Rapid Application Development (RAD) method in the development process of the e-commerce system.
3. To produce an e-commerce system that improves transaction efficiency, data management, and user experience.

1.3 Research Benefits

The benefits expected from this study are as follows:

1. Practical Benefits
This research provides a functional web-based e-commerce system that can support business operations, improve online sales performance, and enhance customer service quality.
2. Academic Benefits
The study contributes to the field of information systems by providing a reference on the application of the Rapid Application Development method in

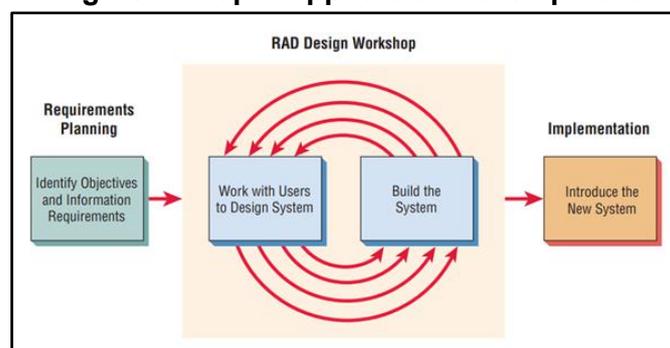
web-based e-commerce system development, particularly in the skincare industry.

3. Methodological Benefits

The results of this research can serve as a guideline for future system development projects that require rapid development, user involvement, and flexibility in responding to changing requirements.

2. METHODOLOGY

Figure 1 . Rapid Application Development



Rapid Application Development (RAD) is a software development methodology that emphasizes rapid system delivery through iterative prototyping and active user involvement throughout the development cycle. Unlike traditional development approaches that follow rigid sequential stages, RAD uses short and incremental development cycles that allow systems to be quickly designed, tested, and refined based on continuous user feedback. This approach encourages close collaboration between developers and users so that requirement adjustments can be accommodated early and accurately.

RAD generally includes the phases of requirements planning, design workshop, and implementation, which are carried out interactively to reduce miscommunication risk and accelerate development time while maintaining system effectiveness (Meyliana, Rapiyanta, & Andriani, 2024). The RAD methodology consists of three key phases:

2.1 Requirements Planning

Requirement Planning is the initial phase of the Rapid Application Development (RAD) method that focuses on identifying and defining system requirements through close collaboration between developers and stakeholders. In this phase, both parties work together to analyze business processes, determine user needs, and clarify system objectives to ensure a shared understanding of the system to be developed. The main activities include requirements gathering, problem identification, and the specification of functional and non-functional requirements as the foundation for the next RAD stages.

A well-conducted requirement planning phase helps reduce miscommunication and minimizes development errors by ensuring that requirements are clearly defined and mutually agreed upon from the beginning of the project lifecycle (Meyliana, Rapiyanta, & Andriani, 2024).

2.1.1 Problem Identification

Problem Identification explains the underlying reasons for developing a web-based e-commerce system. URSKYND Skincare faces limitations in product promotion and sales management when relying on conventional or non-integrated methods. Customers encounter difficulties in accessing complete and up-to-date product information, while transaction processing and order management are handled inefficiently in manual or fragmented systems. Modern e-commerce literature emphasizes that digital commerce platforms are necessary to integrate product information, ordering, and payment processes into a unified system to support broader market reach and operational efficiency (Laudon & Traver, 2023).

These limitations may lead to restricted market exposure, higher risk of data inconsistency, and lower service quality. Therefore, a web-based e-commerce system is required to provide an integrated platform for product catalogs, online transactions, and order management, ultimately improving business effectiveness and customer experience through structured electronic commerce activities (Laudon & Traver, 2023).

2.1.2 System Requirement Analysis

Based on identified problems and business objectives, detailed system requirements were defined through collaborative requirement workshops involving key stakeholders. This approach emphasizes active user participation to ensure that system requirements accurately reflect business needs and operational processes. Collaborative requirement elicitation sessions allow developers and stakeholders to discuss, validate, and refine requirements directly, reducing ambiguity and improving requirement quality.

Such stakeholder-centered requirement activities are widely recommended in modern software engineering practices to achieve better alignment between system design and organizational needs (Sommerville, 2022). System Requirement Analysis for this project focuses on identifying the needs of a web-based e-commerce system for URSKYND Skincare.

The system is required to provide features for displaying product information, managing product data, handling online orders, and processing customer transactions. In addition, the system must support user management for administrators and customers, ensure secure data handling, and provide an easy-to-use interface. These requirements are defined to ensure the system can improve sales management, expand market reach, and enhance customer experience for URSKYND Skincare (Sommerville, 2022).

2.2 RAD Design Workshop

Rapid Application Development (RAD) Design Workshop in this project covers the system design and system build stages. In this phase, the requirements of the URSKYND Skincare e-commerce system are translated into detailed designs through collaboration between developers and users. Design activities include creating use case diagrams, database structures, workflows, and interface prototypes to validate requirements quickly.

The system is then developed and integrated based on approved designs using an iterative approach that allows continuous user feedback to refine features and usability. This iterative design and build process supports alignment with business goals and improves user experience (Pressman & Maxim, 2023).

2.2.1 System Design

System Design in this project focuses on defining the structure and functionality of the web-based e-commerce system for URSKYND Skincare. This stage translates system requirements into detailed technical designs, including system architecture, use case diagrams, database schemas, and user interface layouts to ensure the system supports business processes effectively.

The resulting design acts as a development blueprint that guides implementation and integration of features such as product management, customer transactions, and order processing within a single web platform. A well-defined design model helps ensure system consistency, operational efficiency, and improved user experience (Sommerville, 2022).

2.2.2 Build The System

Build the System is the stage where the approved system design is implemented into a functional web-based application. In this phase, system components are developed, coded, and integrated into working software that can be evaluated and refined through iterative cycles. The build process emphasizes incremental development, continuous testing, and user feedback to improve system functionality and quality. In this project, development includes implementing features such as product management, user authentication, online ordering, and transaction processing to ensure the system meets defined requirements and operates reliably (Pressman & Maxim, 2023).

2.3 Implementation

Implementation is the phase where the completed system is deployed and made available for actual use in the target environment. This stage includes system installation, configuration, data preparation, and operational validation to ensure all functions run according to the approved design and specifications. Implementation also involves final verification and adjustment so the system can operate reliably in real conditions. In this project, the web-based URSKYND Skincare e-commerce system is deployed on a server and made accessible to administrators and customers.

System testing at this stage is conducted using black-box testing, which focuses on validating system functionality based on input and output without examining internal code structures. This testing method ensures that each feature operates according to functional requirements and supports the business processes effectively. Final testing results confirm that the system functions properly and meets user needs (Pressman & Maxim, 2023).

3. FINDINGS AND DISCUSSION

3.1 Requirement Planning

The requirements planning phase focuses on identifying business problems, determining system requirements according to user needs. This phase ensures that the system developed is aligned with the operational needs of URSKYND Skincare and the needs of users.

3.1.1 Problem Identification

Based on observations and discussions with stakeholders, several issues were identified in the existing business process of URSKYND Skincare. Product promotion is still conducted through limited channels, making it difficult for customers to access

comprehensive product information. In addition, sales transactions and order records are managed manually or using non-integrated tools, which increases the risk of data inconsistency and delays in order processing.

These problems limit market reach, reduce operational efficiency, and affect service quality. Therefore, an integrated web-based e-commerce system is required to support online sales, manage transaction data efficiently, and improve customer experience.

3.1.2 System Requirement Analysis

Table 1. Functional Requirement

Code	Role	Requirement	Description
FR01	Customer & Admin	Authentication	The system regulates access rights that differentiate roles for each user
FR02	Admin	Managing Products	Admin can add, change and delete product data
FR03	Admin	Managing Orders	Admin can add, change and delete customers order data as well as confirm customers order status
FR04	Admin	Managing Customers	Admin can see and add customer data
FR05	Customer & Admin	Managing Profile	Users can an add, change and delete profile data
FR06	Customer	View Products	Customer can view product and its detail
FR07	Customer	Managing Cart	Customer can add, change, and delete cart data
FR08	Customer	Managing Order	Customer can add, change and delete their order data, as well as view its status
FR09	Customer	Provide Feedback and Rating	Customer can add feedback and rating for products they purchased
FR10	Customer	View and Download Invoice	Customer can view and download their invoice

All requirements that can solve the problem are written in the functional requirements table above as a reference for further system development.

3.2 RAD Design Workshop

The RAD Design Workshop is a key phase in the Rapid Application Development methodology that integrates system design and early development activities. During this phase, system requirements are transformed into detailed designs through iterative discussions and feedback between developers and users. This approach allows the e-commerce system of URSKYND Skincare to be designed efficiently while maintaining alignment with user needs and business processes.

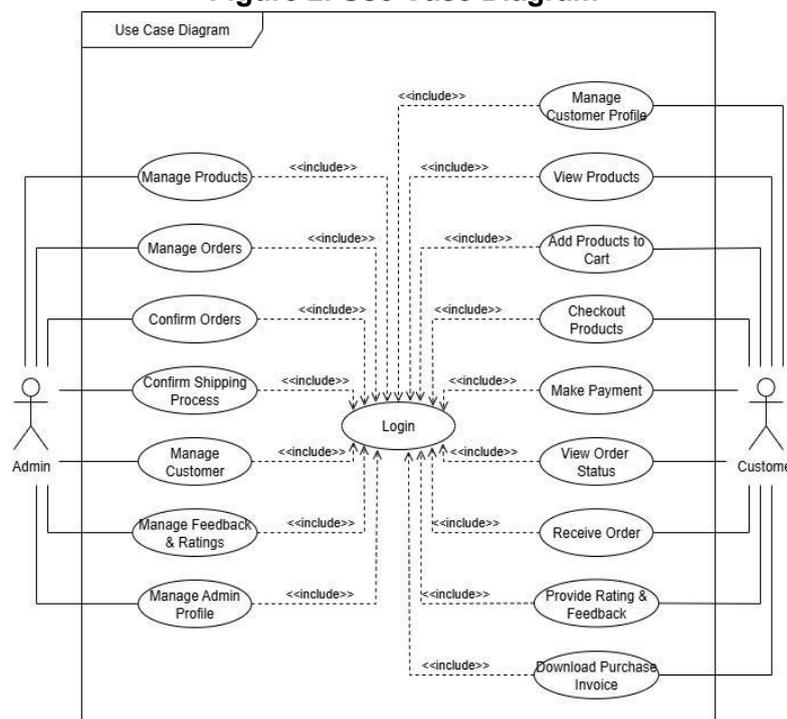
3.2.1 System Design

The system design stage focuses on defining the functionality, workflow, and structure of the URSKYND Skincare web-based e-commerce system using an object-oriented approach with Unified Modeling Language (UML). In this phase, use case

diagrams are used to represent interactions between actors and the system, activity diagrams describe the workflows of key business processes such as product ordering and checkout, and class diagrams define the system structure by illustrating classes, attributes, and relationships that support e-commerce operations. These diagrams provide a clear and standardized blueprint for system development during the implementation phase.

A. Use Case Diagram

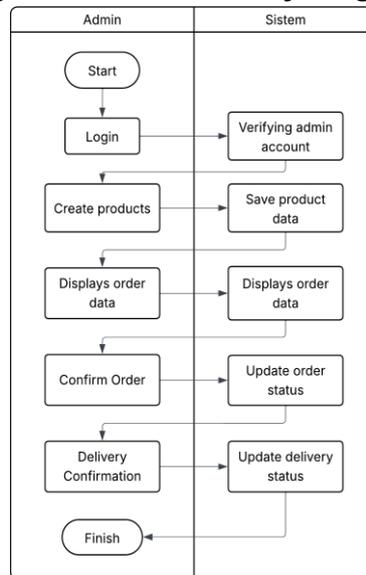
Figure 2. Use Case Diagram



The use case diagram represents the functional requirements of the URSKYND Skincare website based on interactions between users and the system. This diagram illustrates the roles and access rights of two main actors, namely admin and customer, in utilizing the features provided by the e-commerce system. The admin is responsible for managing products, orders, shipping processes, customer data, and feedback, while the customer can browse products, add items to the cart, perform checkout and payment, track order status, and provide ratings and feedback. The use case diagram provides a clear and structured overview of user interactions and system functionality within the URSKYND Skincare platform.

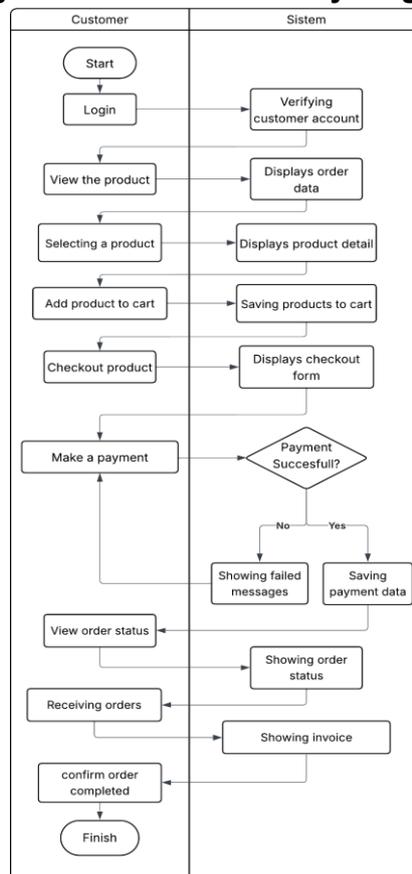
B. Activity Diagram

Figure 3. Admin Activity Diagram



The admin activity diagram shows the flow of system management activities by the admin. The process starts from login, then the admin manages the product data and incoming orders. The admin confirms the order and processes the delivery until the order status is updated. This activity aims to ensure that the transaction process runs smoothly and customer orders can be completed properly.

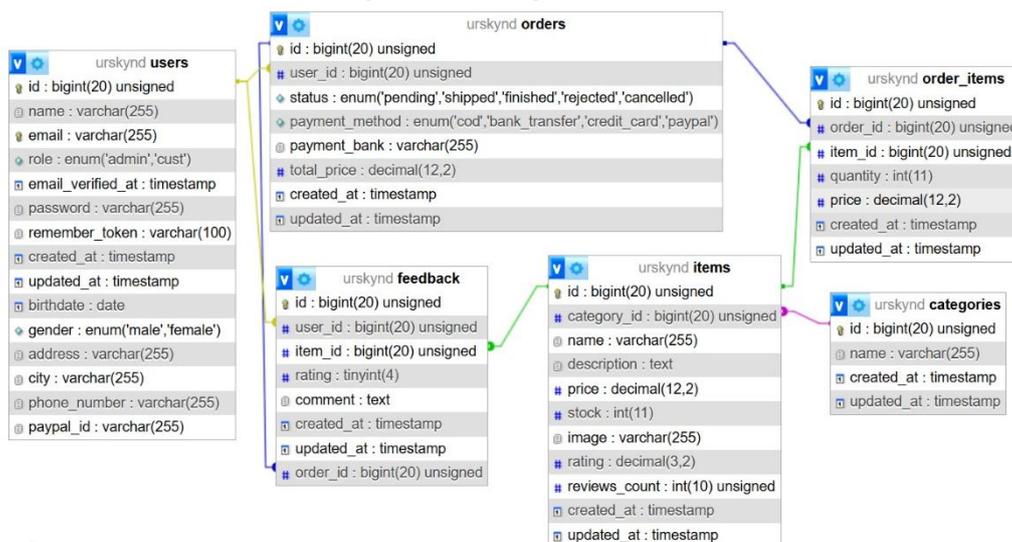
Figure 4. Customer Activity Diagram



The customer activity diagram describes the flow of user activities in making product purchases on the URSKYND Skincare e-commerce system. The process starts from login, continues with viewing and selecting products, adding products to the cart, checking out, and making payments. After a successful payment, the customer can view the order status until the order is received and the purchase process is completed.

C. Design Database

Figure 5. Design Database

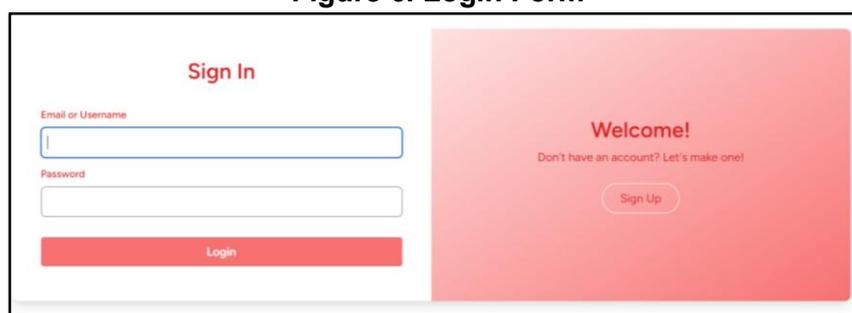


The database design represents the data structure of the URSKYND Skincare e-commerce system by defining database tables, attributes, and relationships that support system operations. This design includes key entities such as users, products, orders, order items, categories, and feedback, which collectively store and manage transactional and user-related data. The database design describes how data is organized, stored, and related within the system, serving as a foundation for data integrity, efficient transaction processing, and consistent system implementation.

3.2.2 Build The System

To build the web-based e-commerce system, several integrated features are designed to support business processes and user interaction effectively. The feature design focuses on improving usability, transaction efficiency, and overall service quality.

Figure 6. Login Form



Sign In

Email or Username

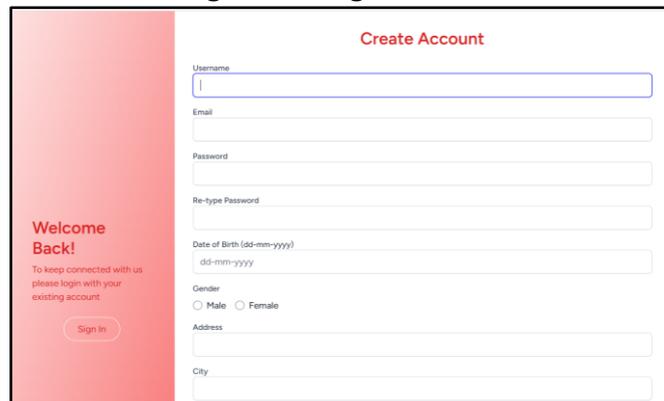
Password

Login

Welcome!
 Don't have an account? Let's make one!
 Sign Up

The login form is used to authenticate users before accessing the system. User credentials are verified by the system.

Figure 7. Register Form



The screenshot shows a 'Create Account' form with a red sidebar on the left containing a 'Welcome Back!' message and a 'Sign In' button. The form fields include: Username, Email, Password, Re-type Password, Date of Birth (dd-mm-yyyy), Gender (Male/Female), Address, and City.

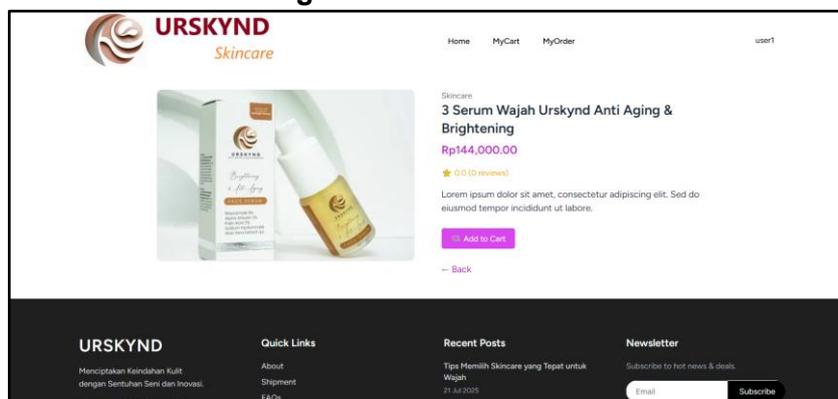
The register form allows new users to create an account in the system. The submitted data is stored as user account information.

Figure 8. Landing Page



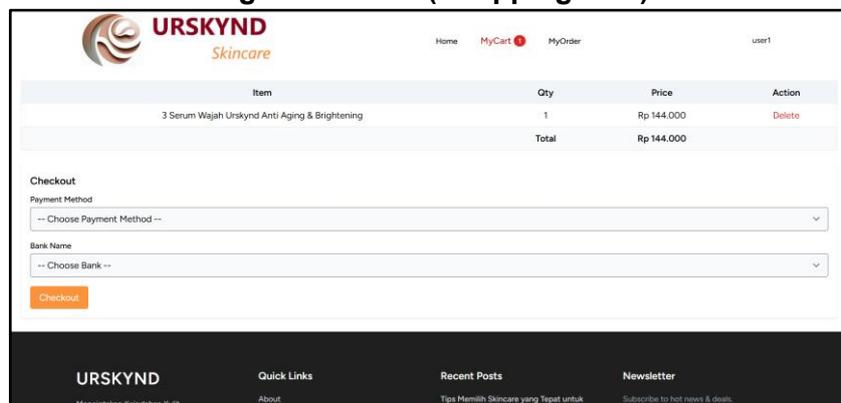
The landing page is the main page that presents general information and system navigation. It is designed to attract users to explore available products.

Figure 9. Detail Product



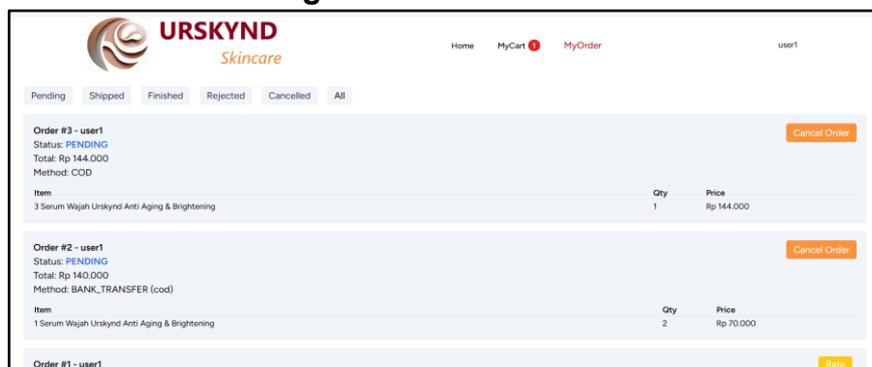
The product detail page displays complete information about a product. This information supports user purchase decisions.

Figure 10. Cart (Shopping Cart)



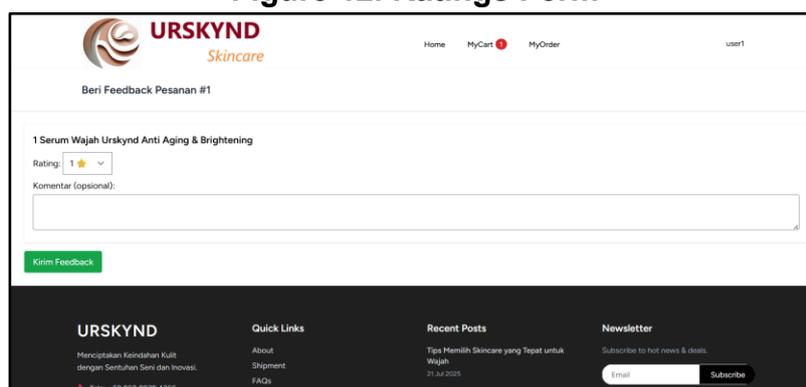
The cart is used to store selected products temporarily. Users can review their selected items before proceeding to order.

Figure 11. Order Detail



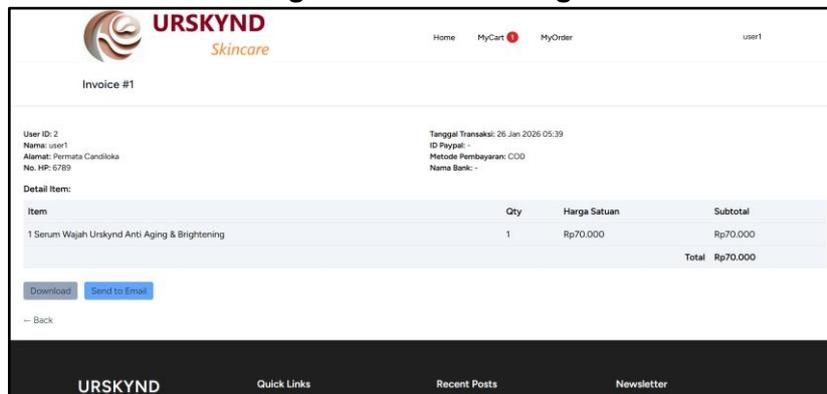
The order detail page displays complete order information after the user places an order. It includes product details, quantity, and order status.

Figure 12. Ratings Form



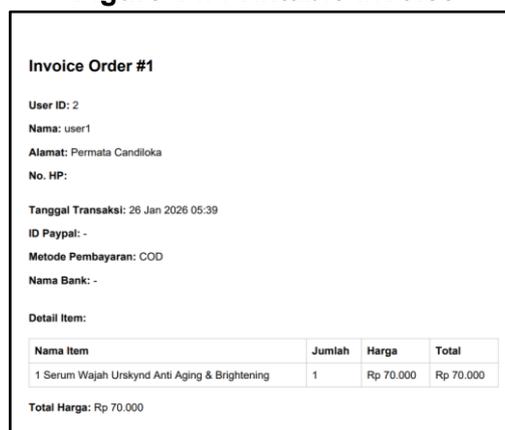
The rating form allows users to provide ratings and reviews for purchased products. This feature helps improve service quality and user trust.

Figure 13. Invoice Page



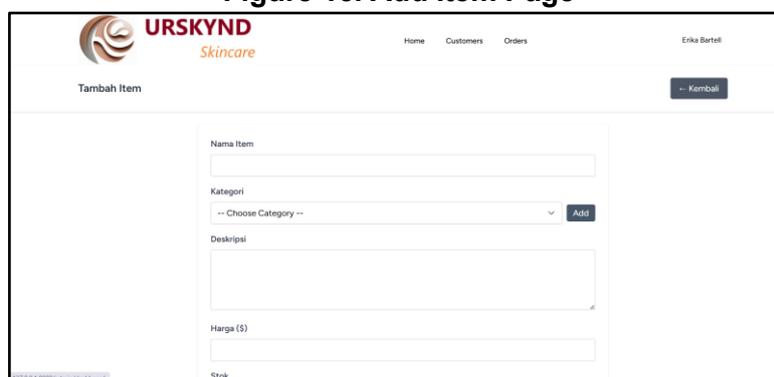
This figure shows the invoice page that displays transaction details after a successful order. The information includes user data, product details, payment method, and the total amount to be paid.

Figure 14. Printable Invoice



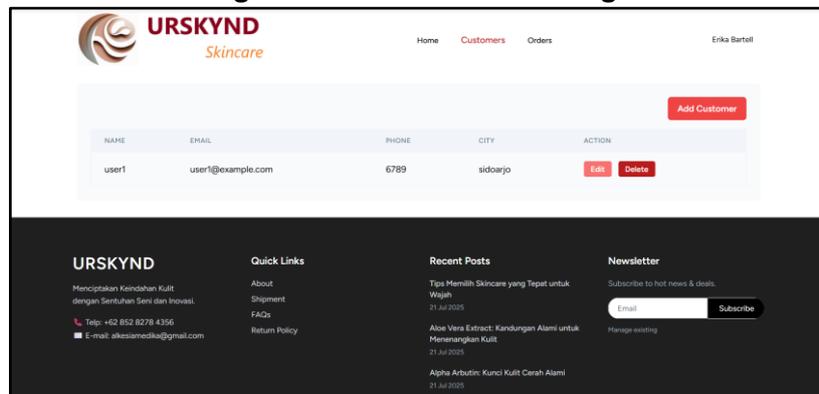
This figure presents a simplified invoice format that can be used for printing or digital delivery. The page serves as an official transaction proof for users after placing an order.

Figure 15. Add Item Page



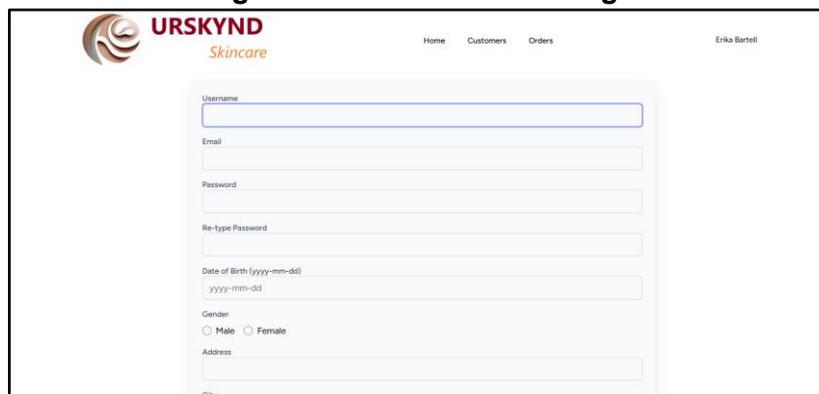
This figure illustrates the add item page used to input new product data into the system. The form includes product name, price, stock, and product description.

Figure 16. Edit Customer Page



This figure shows the edit customer page used to update registered customer data. This feature helps ensure customer information remains accurate and up to date.

Figure 17. Add Customer Page



This figure presents the add customer page used to input new customer data into the system. The page facilitates structured and efficient customer data management.

4. CONCLUSION

This study successfully developed a web-based e-commerce information system for URSKYND Skincare using the Rapid Application Development method. The system is able to support online sales processes, manage transactions efficiently, and improve customer interaction through integrated features. The application of the RAD method proved effective in accelerating system development while ensuring alignment with user requirements, making it a suitable approach for web-based e-commerce system development in dynamic business environments.

REFERENCES

Adiyono, B. D. P., Najaf, A. R. E., & Permatasari, R. (2025). Information system development for web-based creative services e-commerce using rapid application development method. *bit-Tech*, 8(1), 501–512. <https://doi.org/10.32877/bt.v8i1.2615>

- Laudon, K. C., & Traver, C. G. (2023). *E-commerce: Business, technology, and society* (17th ed.). Pearson. <https://www.pearson.com/en-us/subject-catalog/p/e-commerce-business-technology-society/P200000003544>
- Lesmana, M. (2025). The impact of e-commerce platform usage on the economic benefits of SMEs during the pandemic. *Priviet Social Sciences Journal*, 5(9), 115–132. <https://journal.privietlab.org/index.php/PSSJ/article/view/660>
- Meyliana, A., Rapiyanta, P. T., & Andriani, A. (2024). *Application of the Rapid Application Development (RAD) Method for Web-Based Financial Management and Wood Inventory Using CodeIgniter*. *ARRUS Journal of Engineering and Technology*, 4(1), 81–89. <https://doi.org/10.35877/jetech2722>
- Pressman, R. S., & Maxim, B. R. (2023). *Software engineering: A practitioner's approach* (9th ed.). McGraw-Hill Education. <https://www.mheducation.com/highered/product/software-engineering-practitioner-s-approach-pressman/M9781260548002.html>
- Raihan, M., & Hidayat, A. T. (2024). Rapid Application Development (RAD) in the development of mobile-based e-commerce application. *MALCOM: Indonesian Journal of Machine Learning and Computer Science*, 5(1), 93–100. <https://doi.org/10.57152/malcom.v5i1.1742>
- Saepudin, A., Kusumo, A. T., & Rudianto, B. (2025). Implementasi rapid application development pada pengembangan sistem e-commerce. *Profitabilitas*, 3(1). <https://jurnal.bsi.ac.id/index.php/profitabilitas/article/view/1970>
- Sommerville, I. (2022). *Software engineering* (11th ed.). Pearson. Link: <https://www.pearson.com/en-gb/subject-catalog/p/software-engineering/P200000003189>