

# Implementation of the Rapid Application Development (RAD) Model in the Web-Based MSME Product Sales System

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## Abstract

A web-based sales system is an effective solution to help micro, small, and medium enterprises (UMKM) manage sales efficiently and in a structured manner. This research was conducted at Anisa Store, one of the UMKM in Majasari Village, Prabumulih, which still uses a manual sales process, so it has difficulty in recording data. The purpose of this study is to build a web-based sales system using the Rapid Application Development (RAD) Model, which allows the system development process to be carried out quickly and actively involves users. The RAD model consists of several stages, namely needs planning, design, construction and relocation. The result of this study is a web-based sales system that can be used by the owner of Anisa Store to manage product data, sales transactions, and shipping. By implementing this system, it is expected to increase the marketing reach of Anisa Store.

**Keywords:** Sales, System, UMKM, RAD

## 1. Introduction

In today's digital era, information technology has become a vital part of all aspects of life, including business. Rapid advances in technology, such as the internet, have transformed the way businesses operate. MSMEs, as key drivers of the economy, need to leverage technology to improve their competitiveness and operations. Anisa Store, as a MSME in Majasari Village, has significant potential for growth by leveraging digital technology. The use of a web-based sales system can help Anisa Store expand its market, improve operational efficiency, and enhance customer satisfaction. The implementation of the RAD model in the development of Anisa Store's sales system is expected to facilitate the development process. With limited time and resources, this model allows development to focus on features needed by users. The web-based sales system developed using the RAD model will enable Anisa Store to better manage products, process transactions, and reach customers. This will also make it easier for customers to shop online. Based on the discussion above, the author is interested in writing a thesis entitled "Implementation of the Rapid Application Development (RAD) Model in a Web-Based MSME Product Sales System: A Case Study of Anisa Store in Majasari Village."

## 2. Theoretical Basis

### 2.1. Definition of Implementation

According to [1], implementation is the process of turning ideas, concepts, policies, or innovations into concrete actions that have an impact, whether in the form of changes in knowledge, skills, attitudes, or values. According to [2], the success of project implementation depends heavily on effective management, team coordination, and good communication between stakeholders. Furthermore, adjustments are often necessary to address challenges such as changing user needs or technical constraints. From the above definition, it can be concluded that implementation is the process of applying ideas, concepts, policies, or innovations into practical actions aimed at producing positive impacts, such as changes in knowledge, skills, values, and attitudes. Successful implementation depends heavily on effective management, team coordination, and good communication between all stakeholders.

### 2.2. Definisi Model Rapid Application Development (RAD)

According to [3], Rapid Application Development (RAD) is an information systems development method that focuses on completing projects quickly and is suitable for software development, such as website development. The RAD approach is iterative, with a working system model being developed early on to identify user needs, and this model can be adjusted as the project progresses. From the definition above, it can be concluded that Rapid Application Development (RAD) is a software development approach that focuses on rapid and iterative development. RAD enables application development in a shorter timeframe than traditional methods using prototyping and iteration.

### **2.3. System Definition**

According to [4], a system is a conceptual framework consisting of various interrelated and interacting functions, which work together in an integrated manner to achieve specific goals effectively and efficiently. From the above definition, a system can be concluded as a unit consisting of elements that interact with each other and function to achieve specific goals.

### **2.4. Definition of Sales**

According to [5], sales is the art and science of influencing people to purchase goods or services. From the definition above, sales can be concluded as the process of exchanging goods or services between a seller and a buyer, where the seller offers a product in exchange for money.

### **2.5. Product Definition**

According to [6], a product encompasses anything that can be offered to a market for use, including goods, services, and ideas, that satisfy consumer needs. From the above definition, it can be concluded that a product is anything offered to a market, whether in the form of physical goods or services, designed to meet consumer needs and desires.

### **2.6. Definition of UMKM**

According to [7], Micro, Small, and Medium Enterprises (MSMEs) have clear definitions for each type of business. Microenterprises are productive business activities owned by individuals or sole proprietorships that meet the criteria for microenterprises. Meanwhile, small enterprises are independent economic enterprises that have no direct or indirect links to medium or large businesses and have net assets or annual revenues that meet the requirements for small and medium enterprises. From the above definition of MSMEs, it can be concluded that MSMEs, an abbreviation for Micro, Small, and Medium Enterprises, are a category of businesses that play a vital role in the Indonesian economy.

## **3. Research Methods**

### **3.1. Research Methods**

The method used in this research is qualitative descriptive. According to [8], qualitative descriptive is a method used to obtain a picture of something as it is. In this study, the authors attempted to describe the data as it is, in accordance with the current phenomenon, and then describe it accordingly. The method used in this research is qualitative research, namely research that seeks scientific truth through in-depth study over a long period of time. Qualitative research aims to understand phenomena experienced by research subjects, such as behavior, perception, motivation, actions, and so on, holistically and through descriptive methods in the form of words and language in a specific, natural context, utilizing various natural methods. According to [9], qualitative research methods are research methods used to examine natural object conditions, where the researcher is the key instrument. Data collection techniques are triangulated (combined), data analysis is inductive, and qualitative research results emphasize meaning rather than generalization. In qualitative descriptive research, the type of data collected is in the form of words, images, and non-numerical data. This is because the various data collected may be the key to what will or has been researched.

### **3.2. Data Source**

1. **Primary Data**  
Primary data is data collected and processed by someone directly from the object. In this case, the researcher obtained it directly from the Anisa Shop in Prabumulih City.
2. **Secondary Data**  
Secondary data is data obtained through reading and studying media sources such as literature, books, journals, and documents.

### **3.3. Method of collecting data**

1. **Interview**  
An interview was conducted with Mrs. Erma Wati, the owner of Anisa Shop, who clearly understands the issues raised in this research.
2. **Observation**  
Conducting direct observations at Anisa's shop and analyzing existing problems.
3. **Literature Review**  
Collecting data from written sources, by reading and studying important points to obtain a comprehensive overview to support the preparation of a thesis.

### **3.4. Software Testing**

According to [10], black box testing is a software quality test that focuses on software functionality. Black box testing aims to identify incorrect functions, interface errors, data structure errors, performance errors, initialization and termination errors. According to [11], black box testing is a software quality evaluation method that focuses on functionality. Black box testing complements aspects that cannot be

accessed through white box testing, not as a replacement for it. The basic principle of black box testing is to identify various types of errors, such as incorrect or missing functions, interface errors, data structure and database access issues, suboptimal performance, and initialization and termination errors. Based on the definition above, Black Box Testing is testing that aims to find errors in the functional requirements of software. Black Box Testing attempts to find errors in the following categories:

1. Incorrect or missing functions
2. Performance errors
3. Interface errors
4. Errors in data structures or external database access
5. Initialization and termination errors.

#### 4. Proposed Use Case Diagram

In the current system design, the author proposes a system that will be a solution to the existing problem, as illustrated below:

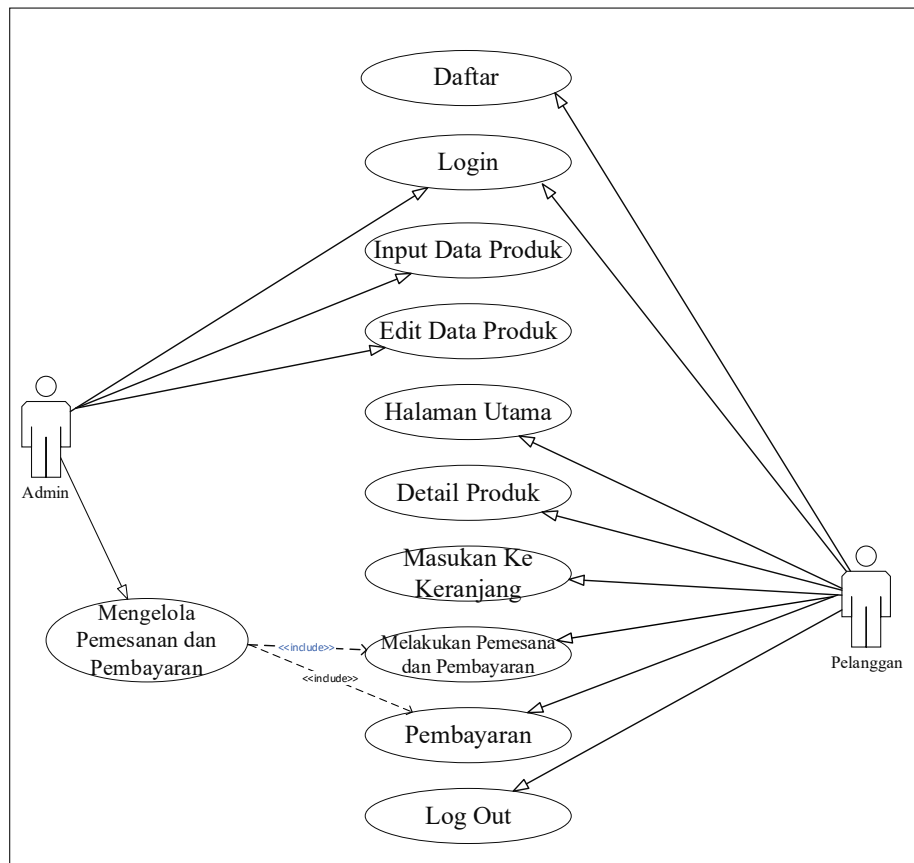


Fig. 1 : Proposed Use Case

This sales application use case diagram illustrates where the Admin and Buyer must log in first to input data and make transactions to produce reports in the application.

#### 5. Implementation and Testing

##### 5.1. Interface View

In the interface implementation section, the researcher created a website display, as follow :

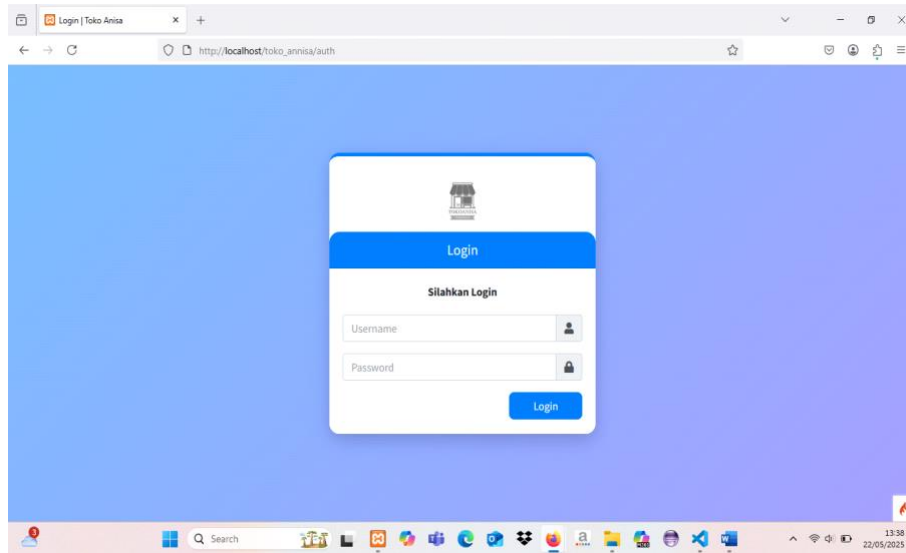


Fig. 2 : Admin Login Page Display

The image above shows the login page for Anisa's product sales store. Admins are required to enter a valid username and password to access the system.

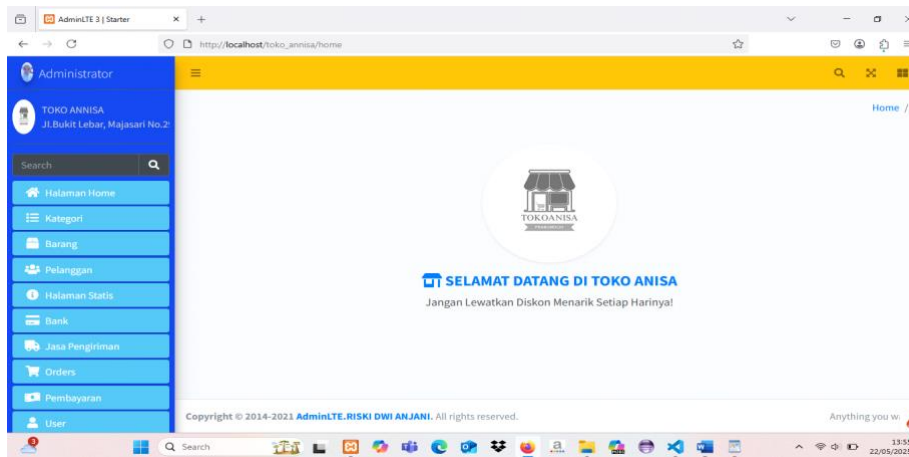


Fig. 3 : Home Page View

The image above shows the home page display all menus are on the home page so the admin can click through the home page.

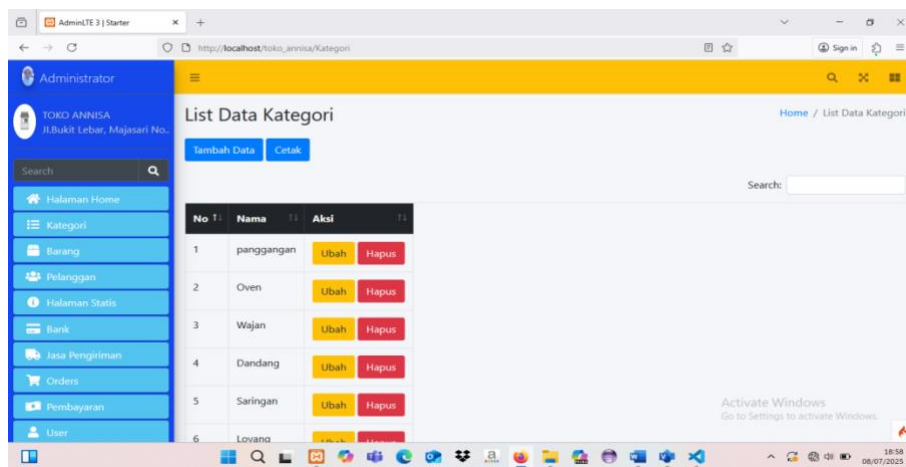


Fig. 4 : Category Page View

The image above displays the category data page for Anisa's product sales. On this page, admins can view a list of product categories available in the store. They can also add, edit, and delete data.

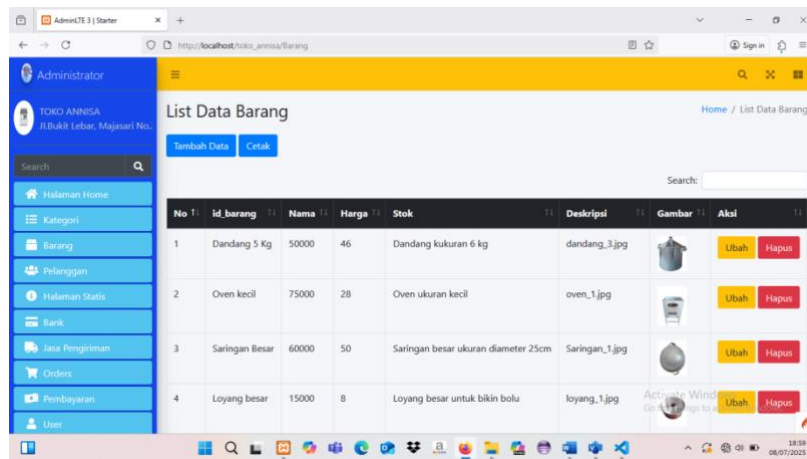


Fig. 5 : Item Page View

The image above shows the display of the goods data page which functions as a center for processing goods data for Anisa's shop sales, where the admin can add, change and print goods easily.

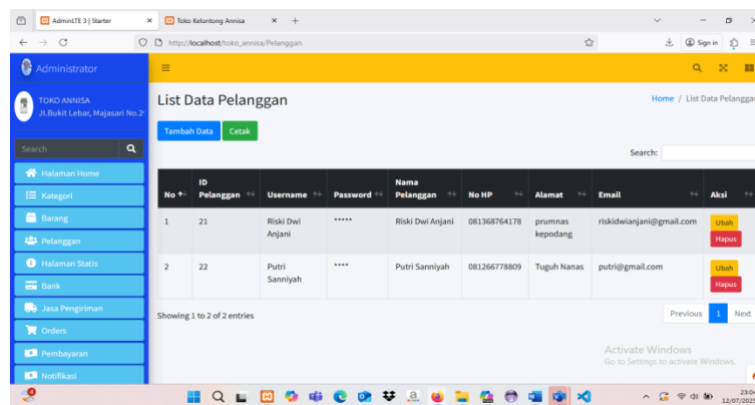


Fig. 6 : Customer Page View

The image above shows the customer data page for Anisa's store sales. Admins can easily add, edit, delete, and print customer data, simplifying customer data processing and improving store service.

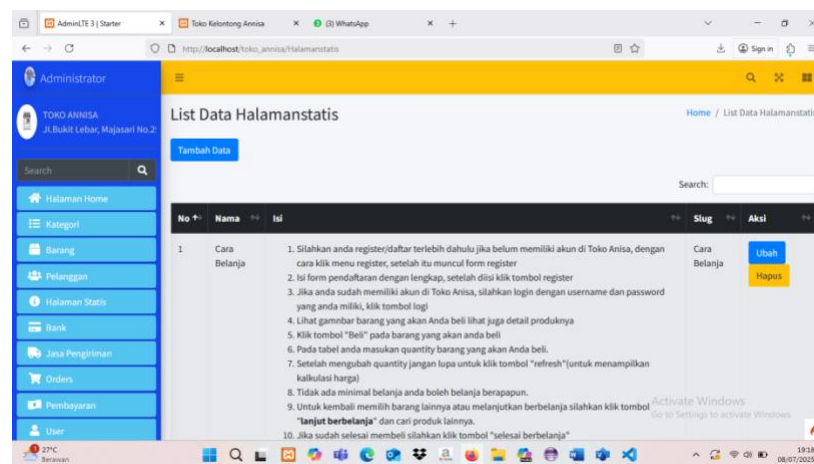


Fig. 7 : Static Page View

The image above shows the Static page in Anisa's sales store. It's used to manage static content, such as the Anisa store user guide. Admins can easily add, edit, delete, and search for static page data.

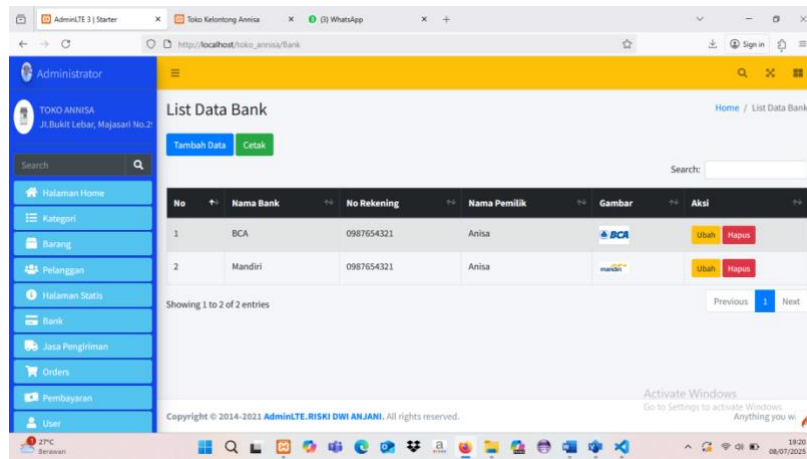


Fig. 8 : Bank Page View

The image above shows the bank page for Anisa's store. It's used to manage bank details. Admins can add, edit, delete, and print bank details. This interface makes it easier for admins to manage the bank accounts used for transactions.

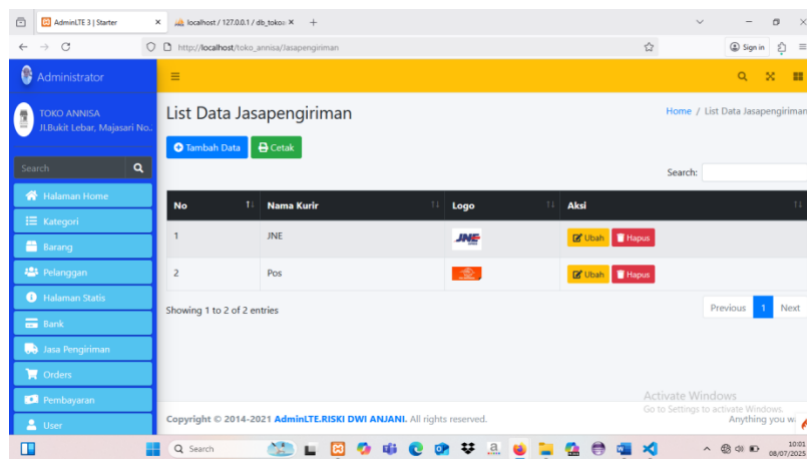


Fig. 9 : Delivery Services Page View

The image above shows the shipping service data page for Anisa's product sales. On this page, the admin can view a list of available shipping services, such as JNE and Pos. The admin can add, print, and edit and delete each shipping service's data.

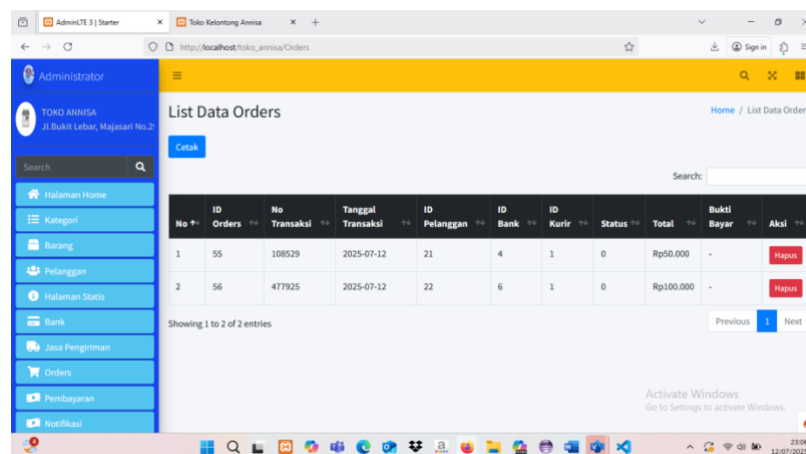


Fig. 10 : Orders Page View

The image above shows the order data page for Anisa's product sales. On this page, admins can view a list of incoming orders, complete with information such as order number, transaction number, transaction date, customer ID, bank ID, courier ID, status, total payment, and proof of payment. Admins can also delete unnecessary order data.

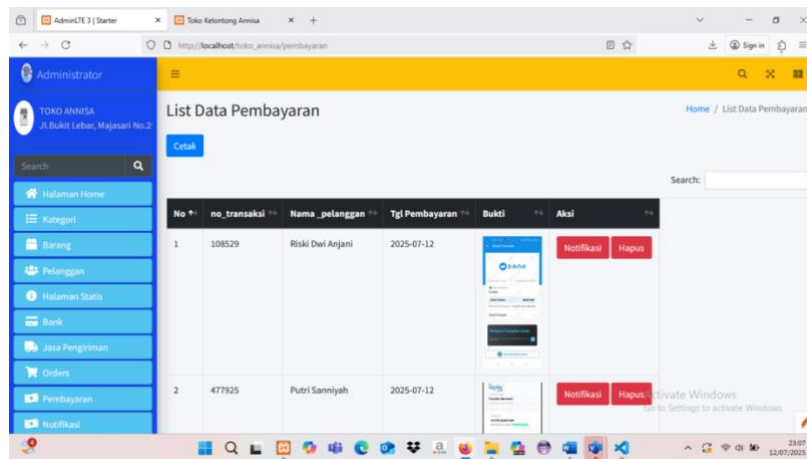


Fig. 11 : Payment Page View

The image above shows the payment data page for Anisa's store. This page allows the admin to view a list of payments made by customers.

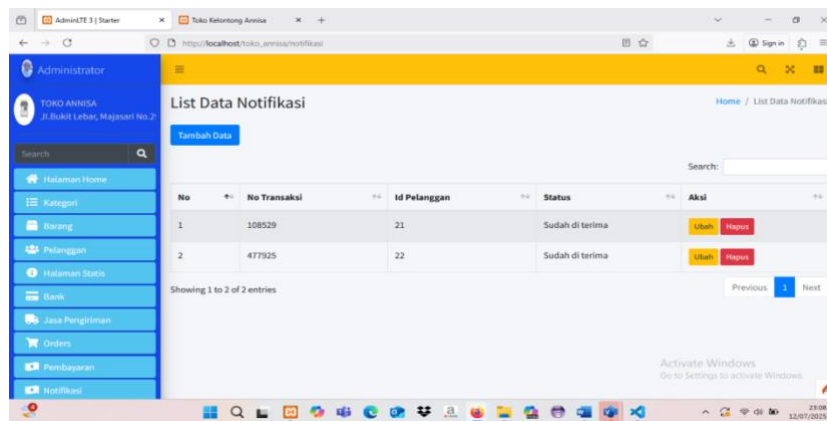


Fig. 12 : Notification Page View

The Image above shows notifications in the running application system.

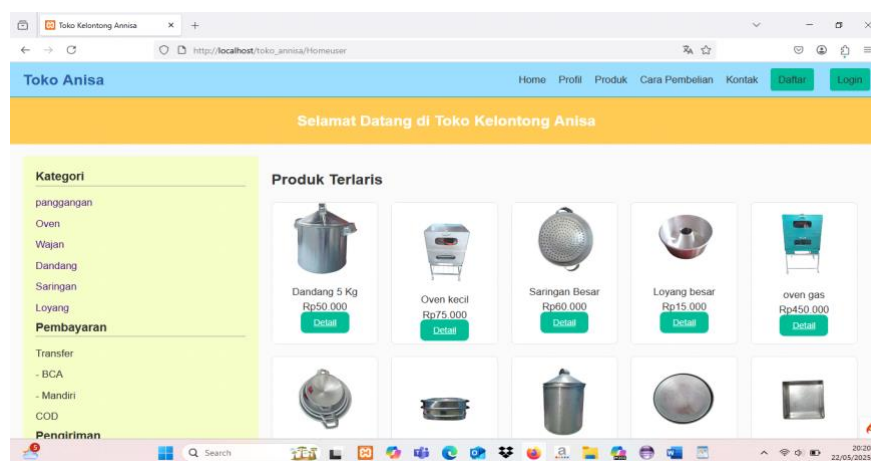


Fig. 13 : Customer Page View

The image above shows the customer homepage for Anisa's product sales. This page serves as the initial display users see when accessing the Anisa site.

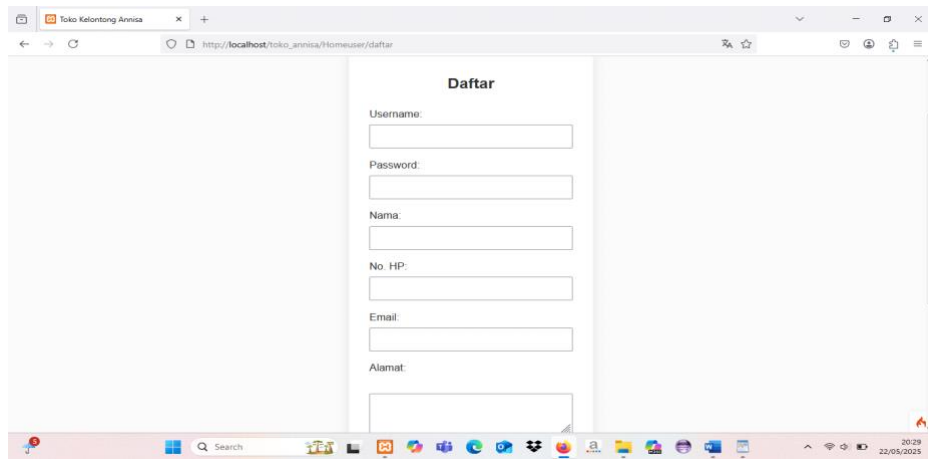


Fig. 14 : List Page View

The image above shows the product sales listing page for Anisa's shop. This page allows new users to create an account and log in.

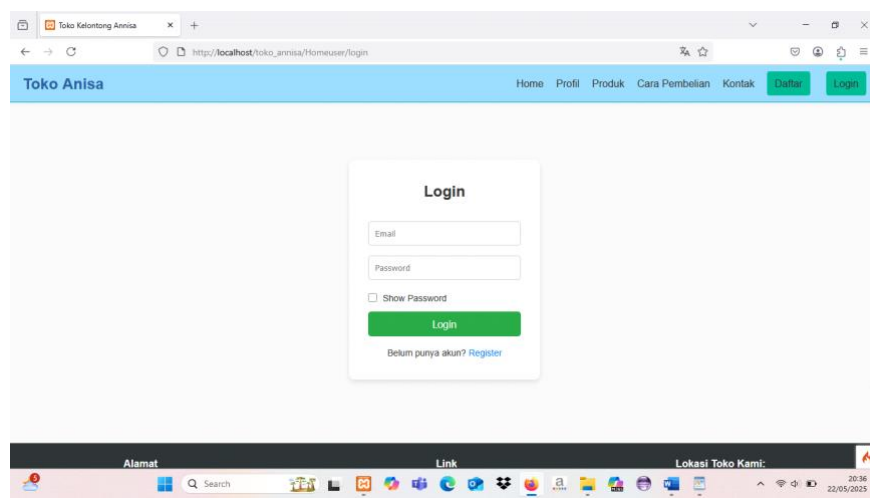


Fig. 15 : Login Page View

After successfully completing the registration process, the user will be directed to the login page as shown in Figure 5.14. This login page functions for users before accessing the features available in the system, such as viewing product details, placing orders, and confirming payments.

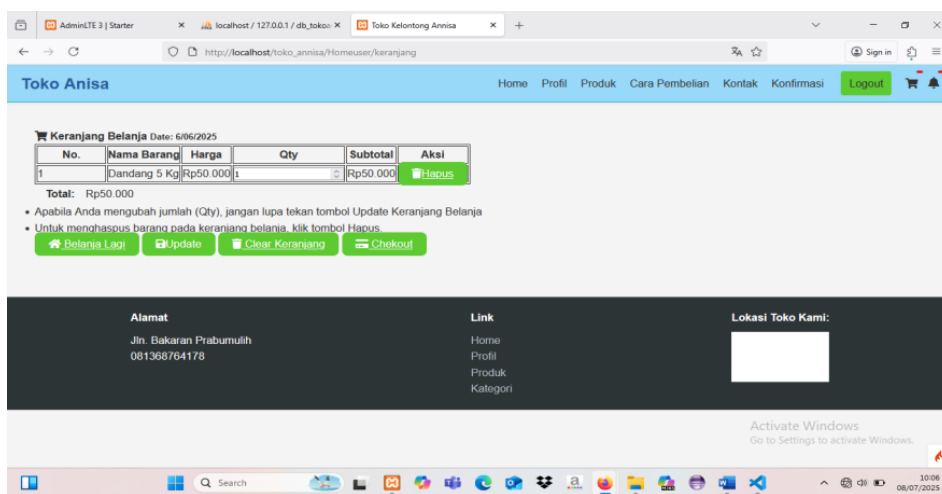


Fig. 16 : Cart Page View

The image above shows the shopping cart display in Anisa's shop. This page displays a list of products the user has selected before proceeding to checkout.

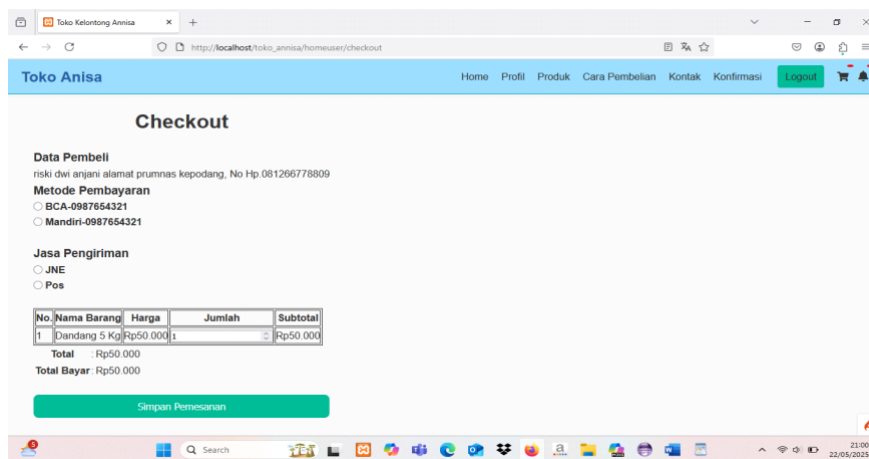


Fig. 17 : Checkout Page View

The image above shows the checkout page for Anisa's shop. This page displays the buyer's details, payment method, shipping service, and details of the customer's order.

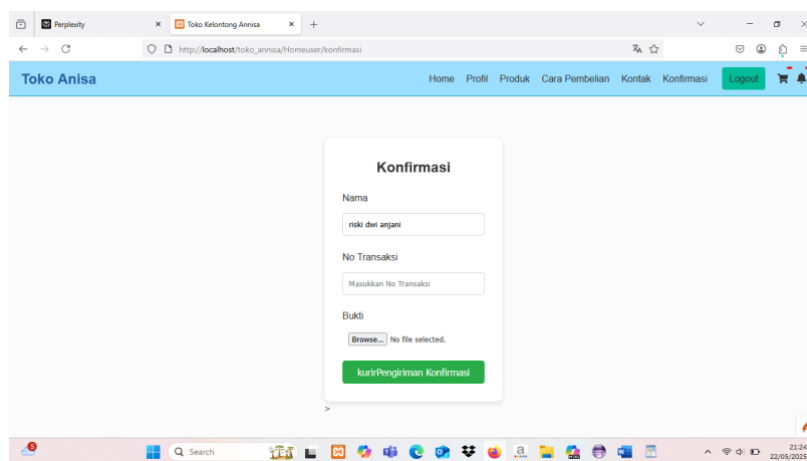


Fig. 18 : Confirmation Page Display

The image above shows the confirmation page for a sale at Anisa's shop. This page allows customers to submit proof of payment after completing a transaction.

## 5.2. Result Software Testing

In the system testing phase, the primary focus is on logical and functional aspects to ensure that all system components have been thoroughly tested. This testing aims to minimize errors and ensure that the output meets expectations. In this study, the black-box software testing method used. The test results indicated that all items were valid.

## 6. Conclusion

Based on the research conducted, several conclusions can be drawn:

1. The web-based sales system developed simplifies sales transaction management, product recording, and structured sales reporting.
2. With this system, the previously manual sales process is now more organized, reducing the risk of errors and accelerating customer service.
3. The sales system developed has several components: product data management, categories, products, shopping carts, sales transactions, payment methods (transfer and cash on delivery), and delivery services (courier). These components make the sales process easier to manage.

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