

Website-Based Information System for Recording Sales and Purchase Activities at Rayyan's Grocery Store

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Abstract— Toko Sembako Neena Solo is a grocery store business located in Surakarta, specializing in the sale of staple products such as rice, cooking oil, sugar, and eggs. The store conducts transactions by purchasing products from suppliers and reselling them to customers. However, the transaction records for both purchases and sales are still manually documented in a notebook, which poses risks such as the loss or damage of documents and makes it difficult for the store owner to perform financial calculations. Therefore, there is a need to develop a web-based information system to facilitate the recording of sales and purchase transactions, as well as to support the store's financial report management. This information system is designed for three types of users: admin, store staff, and the store owner. The system development follows the waterfall method, which includes requirement analysis, system design, coding, testing, and system maintenance. System testing is conducted using the Black Box method. The result of this research is a web-based transaction recording system that helps store staff and owners manage transaction data and generate sales and purchase reports.

Keywords : purchasing, sales, information systems, transactions, websites.

I. INTRODUCTION

In today's digital era, information technology has rapidly advanced and offers numerous benefits to its users by simplifying various tasks. One example of this advancement is the creation of information systems, which can be applied in various fields, including managing sales and purchase transactions. Toko Sembako Neena Solo, located in Surakarta, sells staple products such as rice, eggs, sugar, and cooking oil. The store purchases products from suppliers and resells them to consumers. However, the store still uses manual record-keeping, writing transactions in a ledger. This has led to damaged records and difficulties for the store owner in generating financial reports. The manual process also slows down transactions and product tracking and often results in calculation errors. Previous studies have demonstrated the benefits of information systems in various sales sectors, such as bicycle sales at Orbit Station, furniture sales at CV. Satria Hendra Jaya, and fish sales at Sembako Putrasena. These systems have made it easier to manage transactions and product selection. Based on the issues at Toko Sembako Neena Solo and the proven advantages of information systems, there is a need to develop a web-based information system for recording sales and purchase transactions. This system will be developed using the Waterfall method and tested using Blackbox Testing and the System Usability Scale (SUS). The outcome of this research is a web-based system that will help store staff and owners efficiently record transactions and generate financial reports.

II. RESEARCH METHODS

Data collection was conducted by observing the process of recording sales and purchases at the store, followed by interviews with the store employees and owner to gather the necessary data for the system design.

The system development followed the Waterfall method. The Waterfall method consists of a series of phases where each step flows sequentially, like a waterfall, from one phase to the next. This method includes five stages, as illustrated in Figure 1.

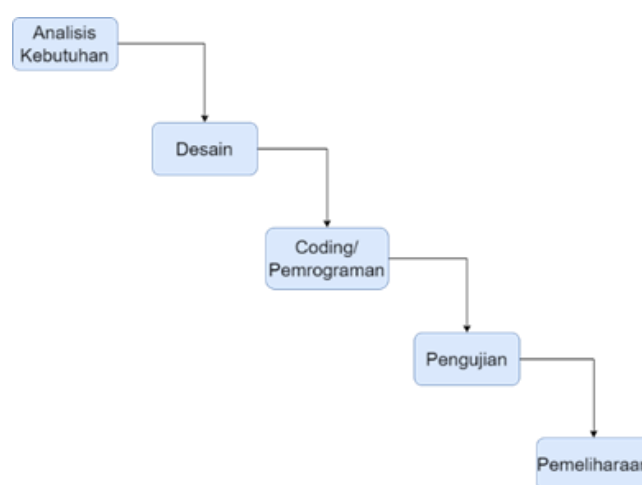


Figure 1. Stages in the Waterfall method (Royce, 1987)

Figure 1 outlines the five stages of the Waterfall method, which are: requirement analysis, system design, coding, testing, and maintenance.

2.1. Requirement Analysis

The researcher identified the user needs for the system to be developed, followed by an analysis of both functional and non-functional requirements.

2.2. System Design

This phase involves creating the system design, which translates the requirements into a "blueprint" before the coding process begins. The purpose of this phase is also to implement the needs outlined in the previous.

A. Use Case Diagram (UCD)

The UCD is part of the Unified Modelling Language (UML) used to define how users interact with the system, showing a series of actions that users can take within the system.

B. Entity Relationship Diagram (ERD)

This diagram is used to map out the relationships between data elements in the database (Utami & Welas, 2019). It includes entities that represent potential tables and their relationships, which serve as links to other entities. Designing an ERD helps developers by offering a detailed visual representation of the system.

2.3. Programming

The design created in the previous stages is then implemented using a programming language. The system was developed using PHP version 8.1 and the Laravel 9 framework, with AdminLTE 2 utilized for the dashboard page layout. The front-end is styled using Bootstrap for better aesthetics, MySQL is employed for the database, and Visual Studio Code serves as the text editor.

III. RESULT AND ANALYSIS

This research has produced a web-based sales information system that can be implemented at Toko Sembako Putrasena. Below are the results from the requirement analysis, system design, system development, and testing of the developed information system.

3.1. Requirement Analysis

Based on the interviews with the store owner, a list of functional and non-functional requirements was obtained as follows:

3.1.1. Functional Requirements

The developed information system can be accessed by three main actors: admin, store staff, and store owner, each of whom has different access rights.

3.1.2. Non-Functional Requirements

This information system is web-based, meaning it can be accessed and operated through web browsers on computers and smartphones, as long as there is an internet connection. The system also requires a printer to print reports and a PDF reader to view PDF versions of the reports.

3.2. System Design

3.2.1. Use Case Diagram (UCD)

The UCD for the Admin level is shown in Figure 2.

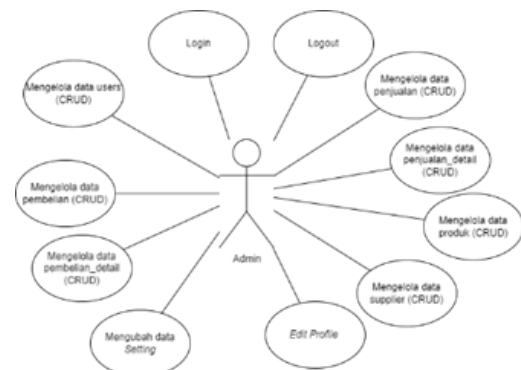


Figure 2. Admin UCD

Figure 2 illustrates the Admin UCD, where the admin can manage user data, system settings, product data, and supplier data. The admin can also manage transaction data such as purchases, purchase details, sales, and sales details. Additionally, the admin has the right to generate reports. The UCD for store staff and the store owner is shown in Figure 3.



Figure 3. Store Staff and Store Owner UCD

Figure 3 shows the UCD for store staff and the store owner, each with different activities. Store staff can manage sales details and update their personal profile, while the store owner can view sales and purchase data, generate financial reports, and modify their personal profile.

3.2.2. Entity Relationship Diagram (ERD)

The database design for this information system is shown in Figure 4.

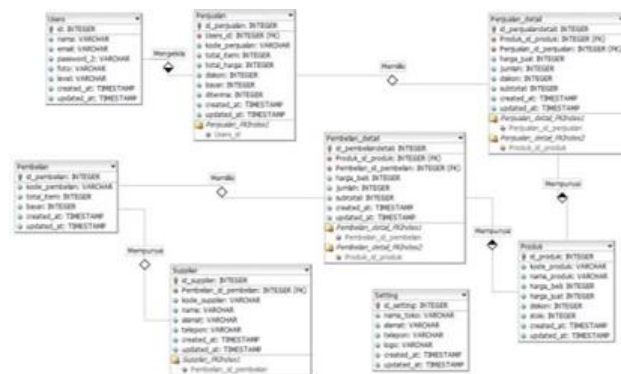


Figure 4. ERD Design

Figure 4 illustrates the database design, which consists of the users table that relates to the sales table. The sales table is linked to the sales_detail table and the products table. The purchases table has a relationship with the purchase_detail and supplier tables, while the purchase_detail table is connected to the products table. The settings table is isolated as it only stores information related to the store.

3.3. Information System Results

Before using the information system, users are required to log in first on the login page shown in figure 5.

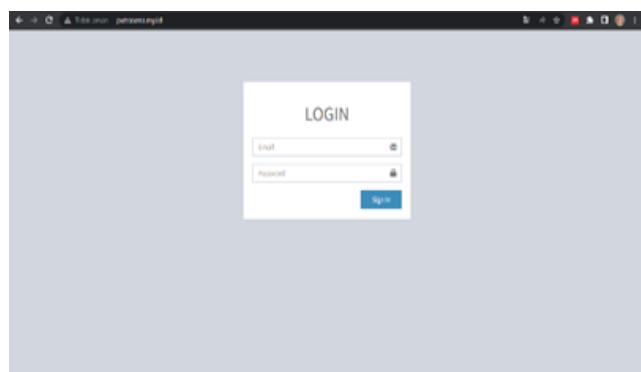


Figure 5. Login Page

Figure 5 shows the login page used to differentiate access levels between the user, admin, cashier staff, and store owner. On the login page, users must enter their email and password. Once logged in successfully, the

dashboard page will appear based on their access rights. If the username or password is incorrect, the user will remain on the login page. After successful login, the dashboard page will be displayed as shown in Figure 6.



Figure 6. Dashboard Page

Figure 6 illustrates the dashboard page, which provides information about the store's data, such as product count, supplier count, total purchases, total sales, and revenue charts that can be sorted by date, month, and year.

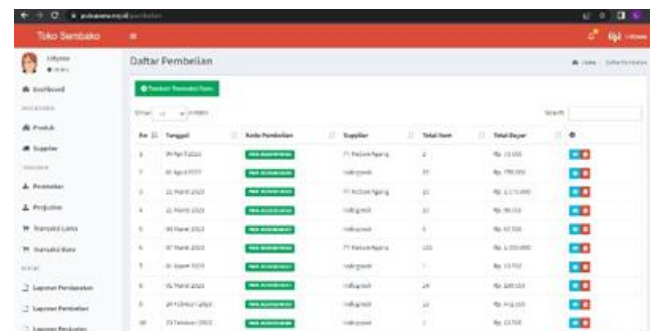


Figure 7. Purchase Page

The purchase page, shown in Figure 7, allows users to view the list of purchase transactions that have been made. This page includes purchase details such as date, purchase code, supplier, total items, and total payment. On this page, admin users can add, view, or delete purchase transactions.

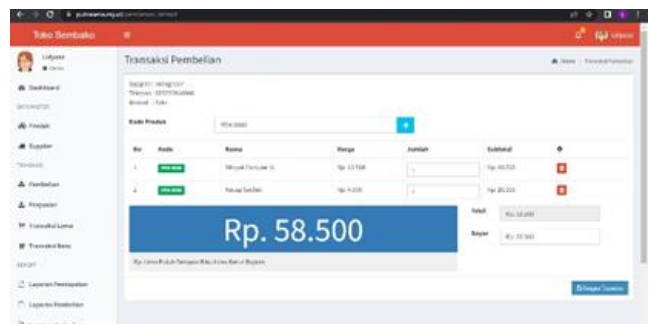


Figure 8. Purchase Transaction Page

Figure 8 shows the purchase transaction page that contains details such as supplier name, product code, product name, unit price, quantity, subtotal, and total

payment. This page allows users to add new purchase transactions. Admin users can also add or remove products in the purchase transaction section.

No	Tanggal	Kode Penjualan	Nama Supplier	Total Harga	Diskon	Total Bayar	Kasir
1	08 April 2021	001	PT. ABC	Rp. 100.000	0%	Rp. 100.000	Admin
2	09 April 2021	002	PT. ABC	Rp. 150.000	0%	Rp. 150.000	Admin
3	10 April 2021	003	PT. ABC	Rp. 120.000	0%	Rp. 120.000	Admin
4	11 April 2021	004	PT. ABC	Rp. 180.000	0%	Rp. 180.000	Admin
5	12 April 2021	005	PT. ABC	Rp. 200.000	0%	Rp. 200.000	Admin
6	13 April 2021	006	PT. ABC	Rp. 160.000	0%	Rp. 160.000	Admin
7	14 April 2021	007	PT. ABC	Rp. 140.000	0%	Rp. 140.000	Admin
8	15 April 2021	008	PT. ABC	Rp. 170.000	0%	Rp. 170.000	Admin
9	16 April 2021	009	PT. ABC	Rp. 130.000	0%	Rp. 130.000	Admin
10	17 April 2021	010	PT. ABC	Rp. 190.000	0%	Rp. 190.000	Admin

Figure 9. Sales Page

The sales page, shown in Figure 9, is used to view completed sales transactions. This page includes sales details such as date, sales code, supplier, total items, total price, discount, total payment, and cashier name. Admin users can view sales details or delete sales records on this page.

No	Kode	Nama	Harga	Jumlah	Diskon	Subtotal
1	001	Beras Merah 5 Kg	Rp. 15.000	1	0%	Rp. 15.000
2	002	Kopi Jawa 5 Kg	Rp. 12.000	1	0%	Rp. 12.000

Bayar: Rp. 77.000

Figure 10. Sales Transaction Page

Figure 10 shows the sales transaction page, where users can add new sales transactions. The page includes transaction details such as product code, product name, unit price, quantity, discount, subtotal, and total payment. On this page, both admin and cashier staff can add or remove products from the sales transaction.

3.4. Information System Testing

Testing at this stage is carried out to check whether the system created can operate properly and as expected. To carry out testing, researchers used an approach in the form of Black Box testing

IV. CONCLUSION

The existence of a website-based information system for recording sales and purchase transactions can make it easier for employees and shop owners to manage sales and purchase transactions. The system is tested using Black Box testing. The results of Black Box testing state that the system can be used and the available features can also work properly.

This research can still be developed further such as adding new features. One of them is by adding a barcode feature. This feature is very useful because it can minimize buyers' waiting time.

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