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Web-Based Menu Ordering Information System for Resto Makyus Siborongborong

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Abstract

This study aims to design and develop a web-based food ordering system for Resto Makyus Siborongborong to improve service efficiency and simplify ordering and transaction management. The previous manual system was time-consuming and prone to errors. To overcome these issues, a web-based system was developed using the Waterfall methodology, covering requirement analysis, system design, implementation, and testing.

The system was built with PHP and MySQL, featuring a user-friendly interface. Key features include online menu ordering, automatic order recording, payment via cash or QR code, and admin functions to print receipts and update transaction statuses (pending, paid, completed).

System testing indicates that the application works well and supports restaurant operations more efficiently. This system is expected to enhance service quality, speed up processes, and reduce errors in order and transaction handling.

Keywords: *Information System, Menu Ordering, Café*

Introduction

Science and technology have now rapidly spread and been applied across various sectors of life. With these advancements, systems that were previously conducted manually have become increasingly computerized. This rapid technological development has significantly impacted society, particularly individuals and stakeholders who benefit from each stage of technological progress.

In this fast-paced digital era, the use of information technology in various aspects of life continues to grow, including in the culinary industry. Restaurants, cafés, and other food service businesses are shifting from manual systems to technology-based systems to enhance operational efficiency and customer satisfaction. One of the most crucial aspects in the culinary business is the food ordering system.

The implementation of an information system for food menu ordering allows business owners to optimize order management, improve service speed, and reduce errors in transaction recording. Customers also benefit from greater convenience in selecting menus, placing orders, and receiving queue numbers according to the available tables.

Based on the background described above, this study focuses on the development of a food menu ordering information system designed to improve the ordering process in culinary businesses and to enhance operational performance. This system is expected to increase the efficiency of the ordering process by enabling staff to input customer orders directly into the system without manual recording, thereby reducing errors and accelerating service time. In addition, it allows restaurants to easily update and revise menus, prices, and food descriptions quickly without the need to reprint physical menus. Furthermore, this system aims to enhance the customer experience by reducing waiting time and minimizing errors in the ordering process.

Literature review

System

A system is defined as a collection of elements or variables that interact and depend on one another. The purpose of a system is to improve data and information processing. A system can be described as a set of components or functional elements that work together to achieve a specific goal. Consequently, if one part of the system is

missing, the system will not function properly. Therefore, each component must be interconnected to form a unified whole in order to achieve the intended objective of the system being developed (Simarmata et al., 2024).

Information
Information is data that has been collected and processed in such a way that it provides added value to the recipient. This processing aims to enhance the usefulness of the data and reduce uncertainty when facing changes or dynamics in certain situations (Tarigan et al., 2024).

Information System
An information system is a system that involves the processes of collecting, storing, analyzing, and distributing information for specific purposes. This system integrates components such as hardware, software, data, procedures, and human resources to produce useful information for decision-making, coordination, and control (Simangunsong et al., 2022).

Information System Technology
Information system technology and its combinations, along with the people who use them for operations and management, form an integrated structure. The term "system" refers to a combination of interrelated structures that are organized as a whole and function together to achieve a specific goal. A system is a mixture of several subsystems that are designed to accomplish a fundamental objective. Information is defined as data that has been acquired and then processed to increase its value for the recipient and to reduce uncertainty within the dynamic cycle of a given situation. The processed data thus provides meaningful benefits to individuals (Tarigan et al., 2024).

Ordering System
Ordering is an agreement between two or more parties to reserve a place, which can include the reservation of a room, seat, or other space at a specified time, accompanied by the related service product. The service product refers to the services offered as part of the reservation agreement (Sihombing et al., 2024).

Database
A database is a collection of organized and structured data designed to facilitate access, management, and maintenance. Data in a database is typically stored in tables consisting of rows (records) and columns (fields). In the field of information technology, a database is a system used to store and manage data digitally through Database Management System (DBMS) software, such as MySQL, PostgreSQL, and MongoDB. In business, databases are used to manage customer information, transactions, inventory, and data analysis to improve operational efficiency and decision-making (Sihotang et al., 2023).

MySQL
MySQL is a free and open-source Database Management System (DBMS). Web server languages such as PHP and JSP are sometimes contrasted with database software. MySQL (My Structured Query Language) is a tool used to create and manage databases. It is a networked database access program that supports multiple users simultaneously (Sinaga et al., 2024).

XAMPP
XAMPP is developed by Apache Friends, a community aimed at providing an easy-to-use web server package for web developers worldwide. XAMPP was created to simplify the installation and configuration of local servers, allowing anyone, including beginners, to easily run a web server and database on their computers without complicated setup. Prior to XAMPP, developers had to install and configure each component such as Apache, MySQL, and PHP separately. This process was often time-consuming and complex, especially for beginners. With XAMPP, all these components are packaged into a single, easy-to-install bundle that can be configured with just a few clicks (Silalahi et al., 2024).

Data Flow Diagram (DFD)
A Data Flow Diagram (DFD) is a logical model of data or specific processes designed to illustrate raw data, the

system's purpose in using it, where the data is located, how the data is produced, and the interactions between the raw data and the summarized processes (Sihotang et al., 2023).

Flowchart

A flowchart is a chart that shows the flow within a program or system procedure logically. Flowcharts are primarily used as communication tools and for documentation purposes. A flowchart, also known as a process diagram, is a type of diagram that represents an algorithm or a sequence of instructions within a system.

Entity Relationship Diagram (ERD)

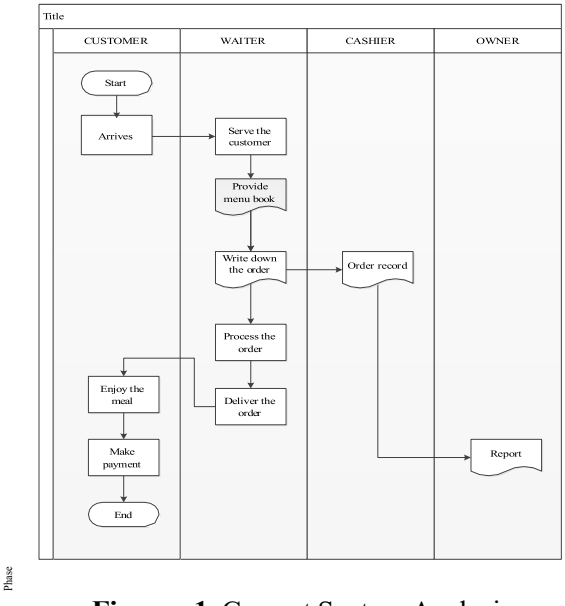
An Entity Relationship Diagram (ERD) is a diagram used to model the logical structure of a database. An ERD illustrates the relationships between entities (the main data objects) and attributes (the information associated with those entities), as well as the relationships among the entities themselves.

System Design

Current System Analysis

The current menu ordering process at Resto Makyus involves each customer being served by a restaurant staff member upon arrival. The staff provides a menu book that is still manually printed in the form of paper sheets. Customers then select their desired menu items and convey their orders. The current system implemented at Resto Makyus Siborongborong presents various challenges for the waitstaff, cashier, and customers during the ordering and payment processes. Additionally, the lack of a structured queuing system often leads to disorganized orders, resulting in longer service times and decreased customer satisfaction.The following is a description of the current menu ordering workflow at Resto Makyus Siborongborong:

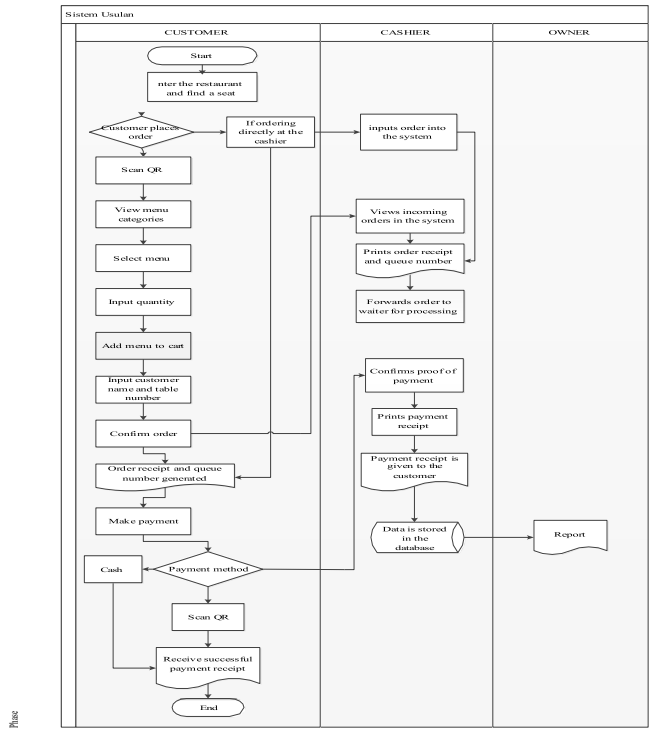
1. Customers arrive directly at the Resto Makyus location to place their food or beverage orders.
2. Upon entering, they are greeted by the staff, who are ready to assist with the ordering process.
3. The menu provided is still in the form of manually printed paper sheets.
4. The waiter manually writes down the customer's order on a piece of paper using handwriting.
5. Once recorded, the waiter submits the order slip to the cashier for documentation.
6. The waiter begins preparing the food and/or beverages as requested by the customer.
7. After the meals are ready, the waiter serves them to the customer's table.
8. The customer consumes the order that has been served.
9. Upon finishing the meal, the customer proceeds to the cashier to make the payment.
10. The cashier records the total payment and receives the cash from the customer to complete the transaction.



Figures 1. Current System Analysis

Proposed System Analysis

The web-based menu ordering information system enables customers to select available menu items, specify the quantity, and confirm their orders. Once confirmed, the order data is stored in the database and sent to the cashier for further processing. On the administrative side, the cashier functions as the system administrator with full control over menu management, including adding, editing, or deleting menu items, as well as updating food prices and availability in real-time to ensure customers receive accurate and up-to-date information. To enhance operational efficiency, the system also features transaction reports that record all incoming orders, including order time, quantity, and total revenue, which can be accessed directly by the restaurant owner.



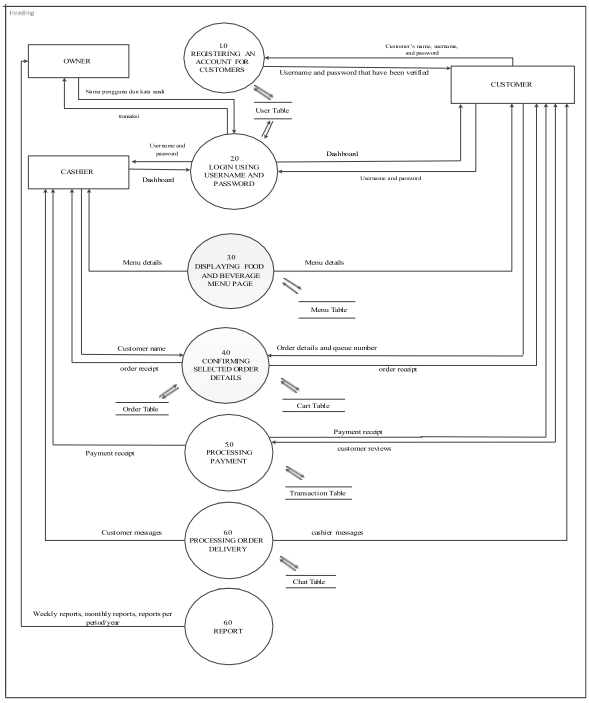
Figures 2. Proposed System Analysis

System Flow Explanation of the Menu Ordering Data Flow Diagram at Resto Makyus Siborongborong

1. Customers who wish to use the menu ordering service must first create an account by completing the registration form. The data entered by the customer, such as name, email, username, and password, will be stored in the user table. Upon successful registration, the customer will receive a notification and can proceed to log in to the system. This registration process is only applicable to customer entities, as other users such as cashiers and waiters are pre-registered by the admin or restaurant management.
2. After successful registration, customers can log in to the system using the account they have created. Likewise, cashiers and waiters can log in using their respective credentials, which are stored in the admin, waiter, or user tables. The system will validate the entered login credentials against the data
3. stored in the database. If the credentials match, the login is deemed successful and the user is redirected to the main page according to their role. This login mechanism ensures that only registered users can access system features based on their access rights (role-based access).
4. Users with the role of cashier or admin can access the menu management module. Within this module, the cashier can add, update, or delete food and beverage menu items. Managed information includes menu name, category (food/beverage), price, and availability status. All managed data are stored in the menu table and will be automatically displayed to customers. Customers can view the menu via their own devices (e.g., by scanning a QR code on the table), which is then used for placing orders.
5. Customers who have logged in and browsed the available menu can proceed to place orders for the desired food or beverages. Each order is initially stored in the cart table as a temporary order. Once confirmed, the data is transferred to the orders table. Order information is then forwarded to both the

waiter and the cashier for further processing.

6. Once the order is finalized and the customer proceeds to make a payment, the cashier processes the payment based on the previously received order data. Customers may pay using cash or other available methods, depending on the implemented system. The payment data is automatically recorded by the system and stored in the transactions table. After the transaction is successfully completed, the customer receives a payment receipt. This process ensures that all transactions are well-documented and traceable if needed.
7. If there are any messages or questions to be communicated between the customer and the cashier (or vice versa), a built-in chat feature can be used to facilitate communication.
8. All data originating from orders and transactions are processed by the system to generate reports. These reports may include detailed transaction summaries and other relevant information needed for operational and managerial purposes.



Figures 3. Data Flow Diagram

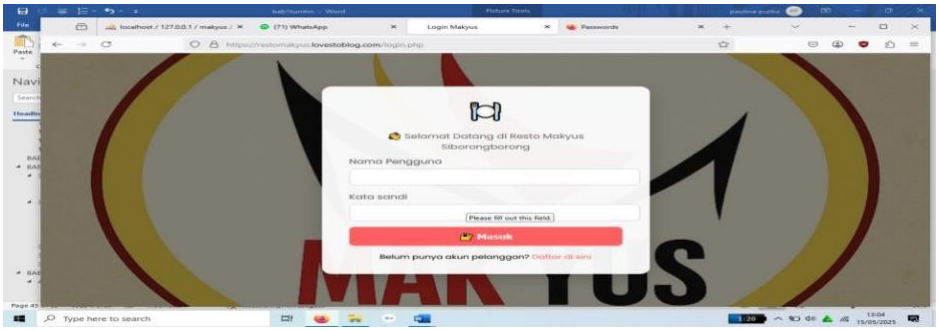
Result and Discussion

The ordering process begins when the customer scans the barcode available on the table to view and place menu orders at Resto Makyus Siborongborong.

Figures 4. *Barcode*

Login Page

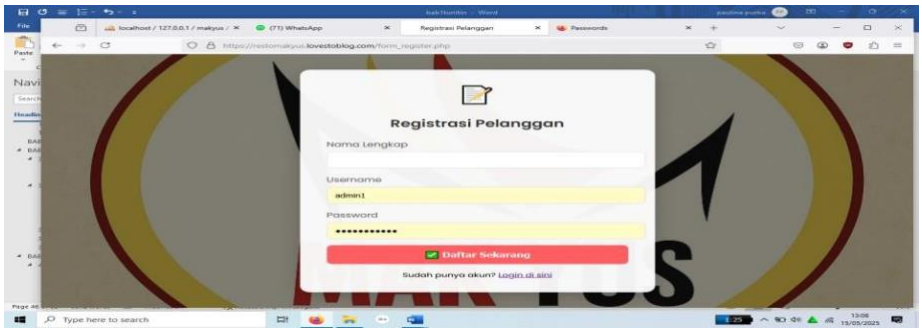
This page displays login options for users, including admin, customer, and owner roles. The interface is designed to facilitate user access according to their respective roles.



Figures 5. Login Page

Customer Registration Page

This page is a registration form for new customers, allowing them to create an account by filling in their full name, username, and password, followed by clicking the Register button. A link is also provided to return to the Login page for users who already have an account.



Figures 6. Customer Registration Page

Dashboard Page

This page serves as the main homepage, featuring quick navigation links to the Food, Drinks, Cart, Orders, and Transactions pages. It also provides contact information and the restaurant's operating hours. The design is clean, user-friendly, and incorporates the restaurant's signature red color theme.

Figures 7. Dashboard Page

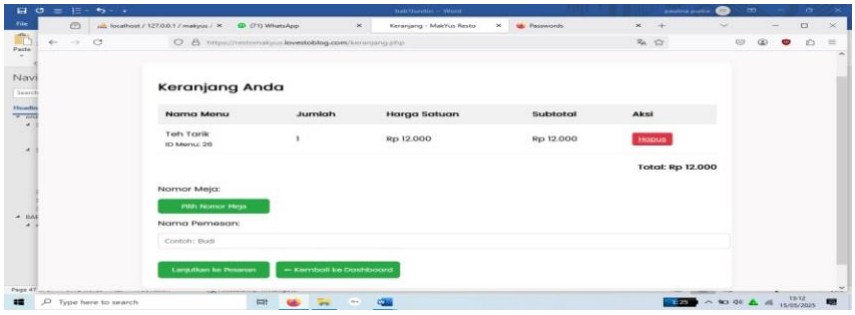
Menu Page

This page displays a list of menu items, allowing users to view images, names, and prices of the food. Users can select the quantity and click the Buy button to add items to the cart.

Figures 8. Menu Page

Shopping Cart Page

This is the Shopping Cart page of the Resto Makyus Siborongborong website. It displays a list of orders that have been added to the cart.



Figures 9. Shopping Cart page

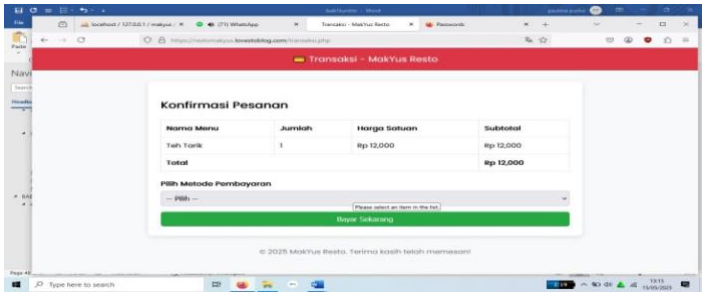
Order Page

This page displays a detailed list of restaurant orders. Each row in the table provides information about the customer, table number, ordered menu items, quantity, total price, order status, and order time.

Figures 10. Order page

Transaction Page

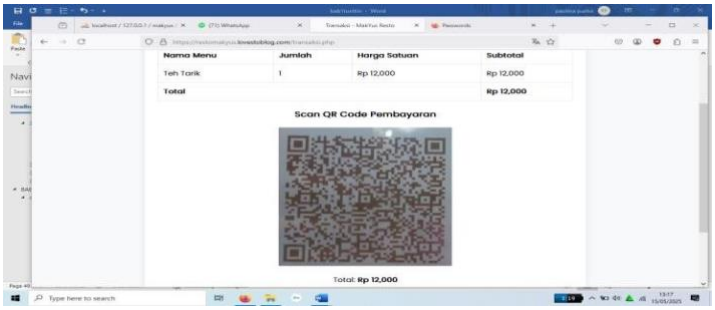
This page serves to display a summary of the user's transactions. It also allows customers to choose their preferred payment method.



Figures 11. Transaction page

QR Payment Page

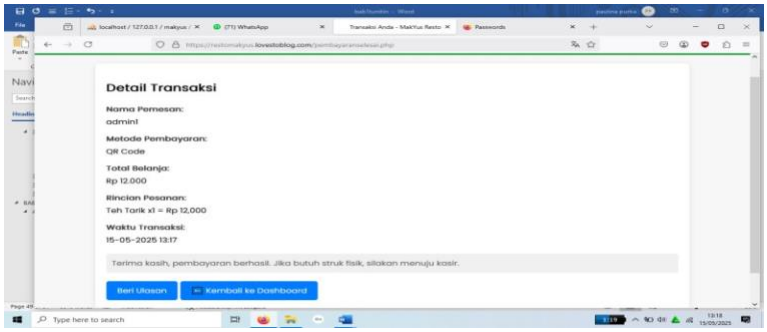
This page serves as the restaurant's payment interface, displaying the total amount due and providing options for selecting a payment method.



Figures 12. QR Payment page

Payment Success Page

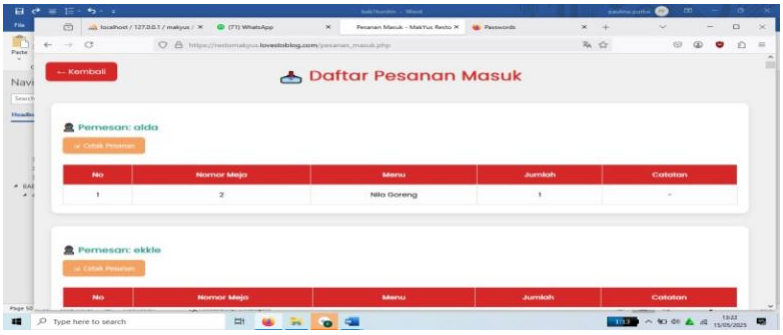
This page displays a confirmation that the payment was successful, along with a "Return to Homepage" button to navigate back to the main page. Additionally, customers are given the option to leave a review.



Figures 13. Payment Success Page

Incoming Orders Page

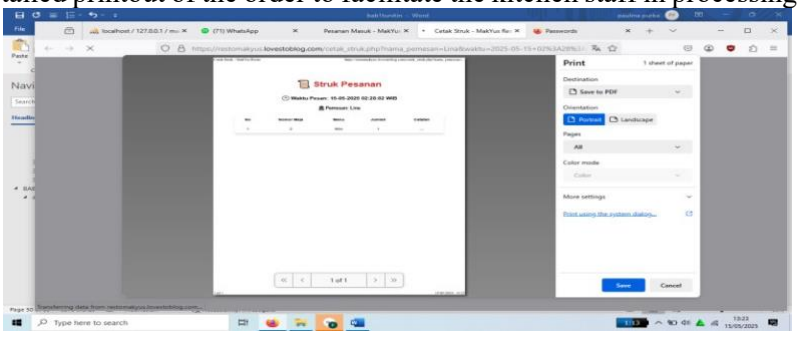
This page serves as a place where all incoming orders can be viewed and printed to be handed over to the kitchen staff.



Figures 14. Incoming Order Page

Printed Order Details for the Kitchen

This is a complete detailed printout of the order to facilitate the kitchen staff in processing and delivering the food.



Figures 15. Printed Order Details for the Kitchen

Order Management Page

This page serves as the order management interface where all completed transactions are stored. It allows printing of payment receipts for customers as well as transaction reports for the owner.

Figures 16. Order Management Page

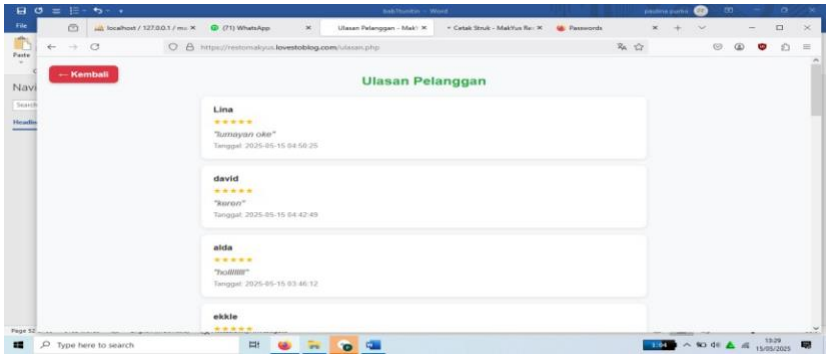
Report Page

This page contains all orders with a completed status, compiled as a report organized chronologically based on the transaction time.

Figures 17. Report Page

Review Page

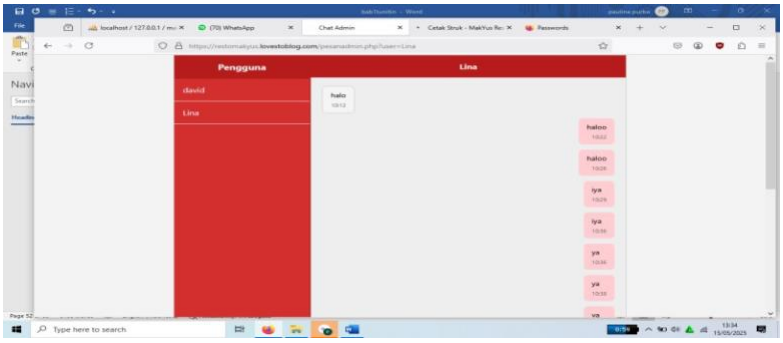
This page displays reviews and ratings submitted by customers after completing their payments.



Figures 18. Review Page

Chat Page

This page serves as a platform for communication between customers and admins, allowing either party to engage in conversations when needed.



Figures 19. Chat Page

About Page

This page presents the background information of Resto Makyus Siborongborong.

Figures 20. About Page

Conclusion

The menu ordering information system at Resto Makyus has significantly improved the speed and ease of transactions between customers and the restaurant. Key points of this system include:

1. Each menu order is automatically recorded in the system without manual input into the order table.
2. The checkout process records data into the transaction and order tables, supporting both cash and QR Code payments, there by offering convenient payment methods for customers.
3. Receipt Printing for the Kitchen Admins can print receipts for incoming orders to support kitchen operations, enabling faster and more accurate food preparation.
4. Informative and Responsive Menu Display Menus are presented in card format and can be filtered by food categories, making it easier for customers to browse and choose.

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