

**USER INTERFACE DESIGN OF E-COMMERCE WEBSITES FOR MICRO, SMALL, AND MEDIUM ENTERPRISES (MSMEs) IN THE CULINARY INDUSTRY**

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**Abstract**

Micro, Small, and Medium Enterprises (MSMEs) in the culinary sector play a strategic role in supporting economic growth, increasing employment opportunities, and strengthening local economies. However, many culinary MSMEs still experience challenges in adopting digital technology, including limited digital literacy, inadequate technological infrastructure, and manual sales and transaction management. These limitations hinder market expansion and reduce operational efficiency, making digital transformation increasingly necessary. This study aims to design a responsive and user-friendly user interface for a web-based e-commerce platform specifically intended for culinary MSMEs. The research method involved requirement analysis through observation, literature review, user needs identification, product data collection, order workflow analysis, and transaction management analysis. The interface design process was carried out using Figma to develop a prototype representing the overall system workflow, including customer and administrator interactions. The resulting design includes several key features such as the home page, login and registration page, product menu, payment system, order history, best seller recommendations, contact information, and logout functionality, as well as administrative features for product and transaction management. Black Box Testing was conducted to evaluate the functionality of each feature and ensure compliance with system requirements. The testing results demonstrated that all system functionalities operated successfully and consistently according to expected outcomes. The developed interface design is expected to support culinary MSMEs in improving digital marketing activities, simplifying transaction management, and increasing operational efficiency. Therefore, the proposed web-based e-commerce interface has strong potential to support the digital transformation and sustainability of culinary MSMEs in Indonesia.

**Keywords:** culinary msme; e-commerce; user interface; digital transformation; prototype.

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**1. INTRODUCTION**

Micro, Small, and Medium Enterprises (MSMEs) play a pivotal role in driving economic growth and reducing unemployment, particularly in developing nations. In Indonesia, MSMEs encompass a wide range of activities conducted by individuals, household enterprises, and small business entities, with the culinary sector standing out as one of the most resilient and widely established. Given Indonesia's rich gastronomic heritage and consistently high domestic consumption rates, culinary MSMEs significantly contribute to local economic development and serve as strong drivers of community livelihoods. The enduring demand for food-related businesses underscores their strategic importance in sustaining regional economic stability and attracting both domestic and international visitors [1]–[3].

Despite their economic significance, many culinary MSMEs, particularly those operating in rural or semi-urban areas, continue to face substantial barriers to digital transformation. Limited digital literacy, insufficient technical resources, and inadequate infrastructure hinder their ability to effectively adopt e-commerce platforms. Consequently, these businesses often rely heavily on traditional offline sales, lack structured digital marketing strategies, and struggle with systematic financial record-keeping. While e-commerce presents a viable pathway to expand market reach and improve operational efficiency, the absence of accessible, tailored, and user-friendly digital solutions remains a critical bottleneck for small-scale food vendors [4], [5].

To address these challenges, this study proposes the development of a responsive, web-based e-commerce platform specifically designed for culinary MSMEs. The system is intended to bridge the digital adoption gap by providing an intuitive interface that facilitates online product marketing, streamlined order processing, and simplified business documentation. The scope of this research is strictly confined to culinary enterprises, excluding other MSME

sectors such as fashion, crafts, or services. Furthermore, the platform’s core functionalities are deliberately limited to product catalog management, customer ordering workflows, and basic sales record-keeping, ensuring alignment with the technical readiness and operational capacity of small-scale food businesses[6]–[8].

The primary objectives of this research are threefold: (1) to design and implement a web-based e-commerce platform that enables culinary MSMEs to market and sell their products digitally; (2) to simplify administrative tasks by centralizing product data, order tracking, and sales documentation in a single, easy-to-use system; and (3) to expand the market reach of culinary businesses by reducing dependency on physical storefronts and offline transactions. By addressing these objectives, the proposed system seeks to enhance the operational efficiency, digital visibility, and long-term sustainability of culinary MSMEs in Indonesia’s rapidly evolving digital economy[9]–[11].

## 2. RESEARCH METHODS

This study integrates multiple data types obtained through systematic requirement identification to support the design and development of a web-based e-commerce platform for culinary MSMEs. This study was conducted systematically through several stages, including problem identification and analysis of culinary MSME user needs, data collection through observation and literature review, system requirements analysis, UI/UX design using Figma, implementation of the design in the form of a prototype, and evaluation of the design outcomes. Each stage was intended to ensure that the resulting interface design meets user requirements, is easy to use, and can effectively support marketing activities, ordering processes, and product management in a more efficient and organized manner[12], [13].

User requirement data were collected to map essential features and services needed by both customers and administrators for effective platform operation. Product or menu data, including item names, prices, descriptions, and images, served as the primary reference for constructing the digital catalog and structuring the user interface. Order workflow data were analyzed to model and optimize the end-to-end business process, covering product selection, order confirmation, and payment settlement. System user data were utilized to define distinct roles, authentication mechanisms, and differentiated access privileges between customers and business administrators. Transactional sales data, encompassing purchase history, product sales volume, and records of income and expenditure, formed the basis for developing a simplified financial reporting module. Additionally, chat communication data were processed to design an integrated messaging feature that facilitates direct interaction between buyers and sellers. All aforementioned data variables were subsequently synthesized into a coherent database schema design to ensure data consistency, security, and storage efficiency. Collectively, this comprehensive data foundation underpins the development of an intuitive user interface, standardized business workflows, and a responsive e-commerce architecture aligned with the operational capacity and digital readiness of culinary MSMEs.

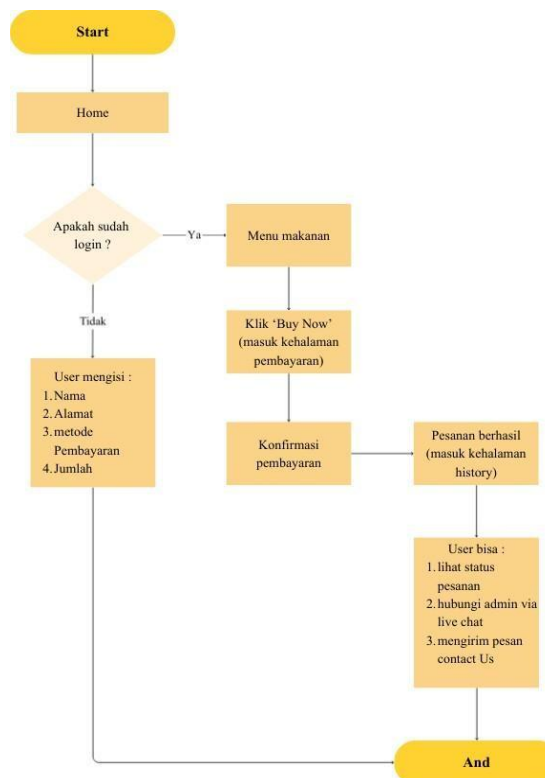


Figure 1. Activity Diagram Users

The system design phase was established to provide a structured and systematic foundation for the subsequent software development process. Central to this phase is the development of a UML Activity Diagram, which visually models the operational workflow of the e-commerce platform. This diagram systematically delineates all sequential and conditional activities executed by both end-users (customers) and system administrators, encompassing the complete interaction cycle from initial login authentication to final session termination (logout). By formalizing these process flows, the activity diagram serves as a critical architectural blueprint, ensuring logical task sequencing, clarifying role-based responsibilities, and aligning system functionality with predefined operational requirements[14]–[16].

### 3. RESULTS AND DISCUSSION

This study resulted in a series of interface designs that illustrate how the application operates from beginning to end. The developed designs describe the overall application workflow, starting from the main interface viewed by users to the specialized interfaces used by administrators for data management. These designs provide a clear representation of the system flow and demonstrate how each feature supports the interaction between users and administrators within the application.

#### 3.1. System Implementation

##### a. Home Page

The home page is the initial interface displayed to users when accessing the application. This page provides brief information about the store, including a short profile, service descriptions, and an overview of the available products. In addition, the page is equipped with navigation buttons that allow users to easily access the main menus of the application. This design enables users to explore the available features efficiently and serves as the primary gateway for interaction within the system.

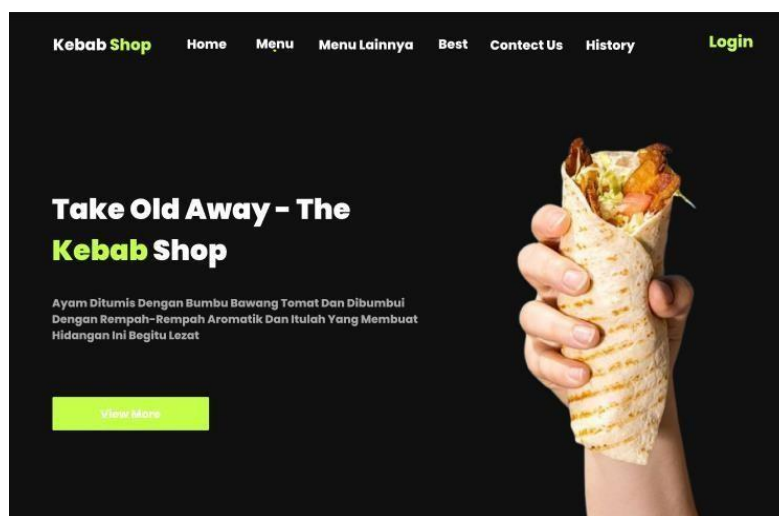


Figure 2. Home Interface

##### b. Login Page

The login page functions as an authentication medium for users to access the website. On this page, users are required to enter their username and password in the provided fields to gain access to the system. Additionally, for users who do not yet have an account, a registration feature is available, allowing them to create a new account before logging into the website. The presence of this page enhances system security by ensuring that only registered users are able to access and utilize the available services.

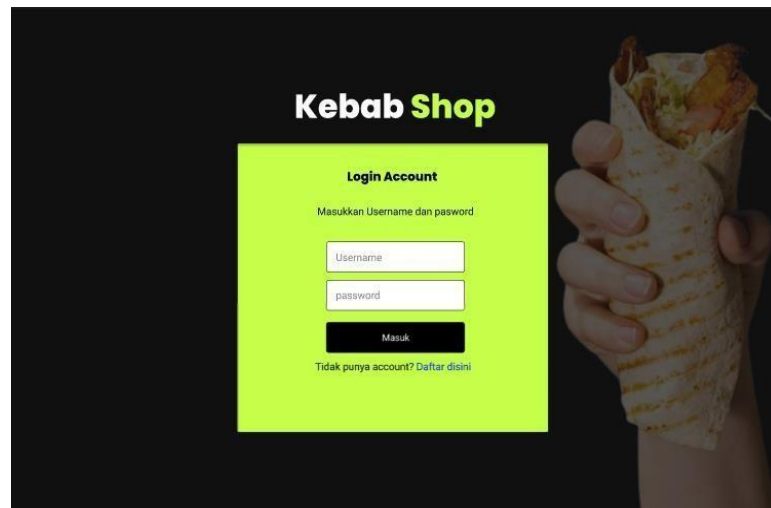


Figure 3. Login Page

- c. Menu page  
This page displays a list of food items available for sale. Each menu item is presented with an image, name, and price, making it easier for users to choose according to their preferences.

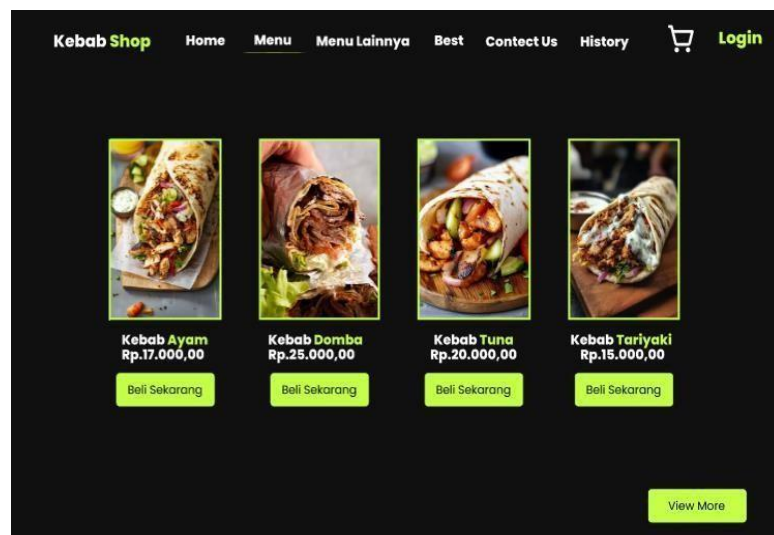


Figure 4. Menu Page

- d. Payment Page  
The payment page functions as a medium for users to enter and review payment-related information, such as order quantity, product details, total price, and the selected payment method. The interface is designed to be simple, clear, and well-structured in order to facilitate a smooth transaction process. This design helps minimize the possibility of errors during order placement, ensuring that the payment process can be completed more accurately, securely, and efficiently.

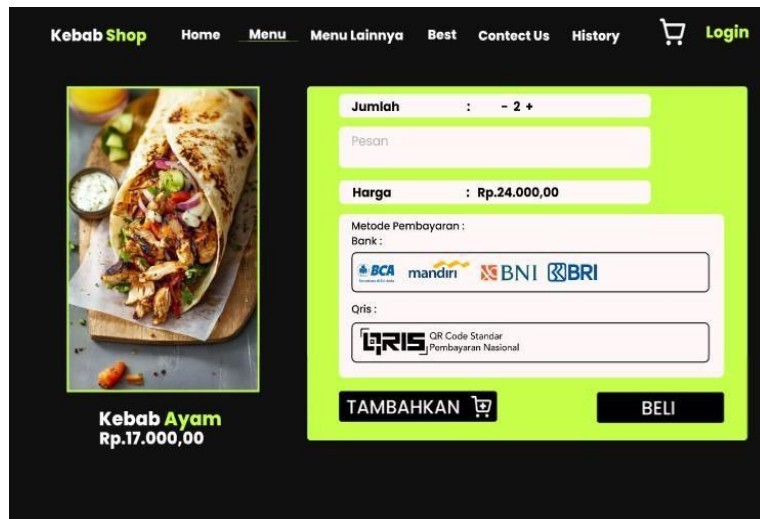


Figure 5. Payment Page

e. History Page

The history page displays a complete list of orders previously made by users as part of the transaction records within the application. Through this page, users can monitor and review the status of each order in detail, such as pending confirmation, being processed, shipped, or completed. This feature enables users to easily track the progress of their orders and obtain clear information regarding ongoing as well as completed transaction processes.

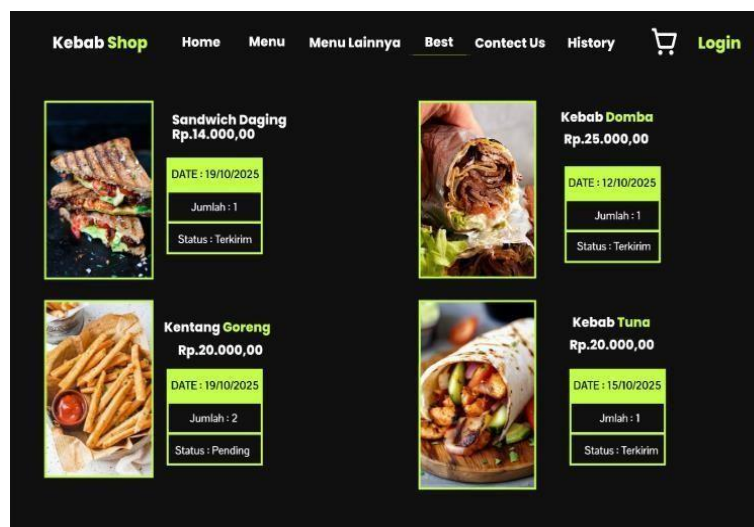


Figure 6. History Page

f. Best Seller Page

The best seller page displays a list of menu items that are most frequently purchased by customers based on transaction data recorded in the application. These menu items are presented as recommendations to assist users in selecting popular and highly preferred products. This feature enables users to make purchasing decisions more quickly while providing references to the products that are most favored by other customers.

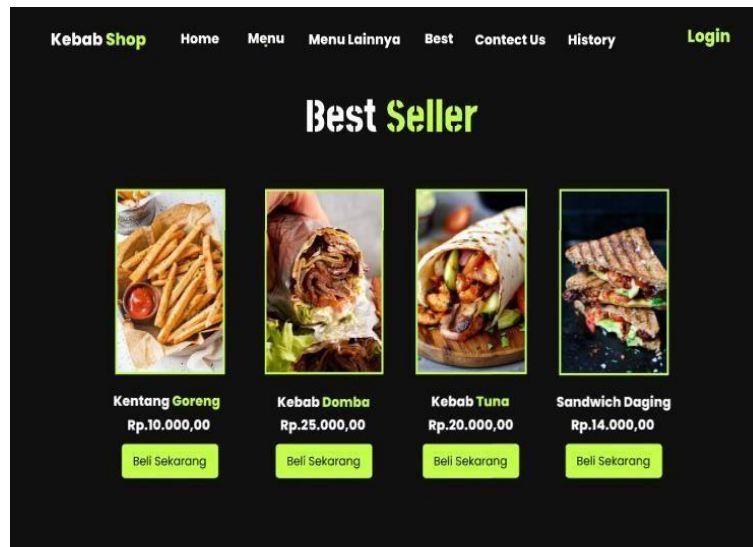


Figure 7. Best Seller Page

g. Contact Us Page

The Contact Us page provides contact information that can be used by users to reach the store for assistance, additional information, or to submit questions and complaints. The information displayed includes the store's phone number, social media accounts, and other relevant contact details. The availability of this page facilitates easier, faster, and more effective communication between users and the store management.

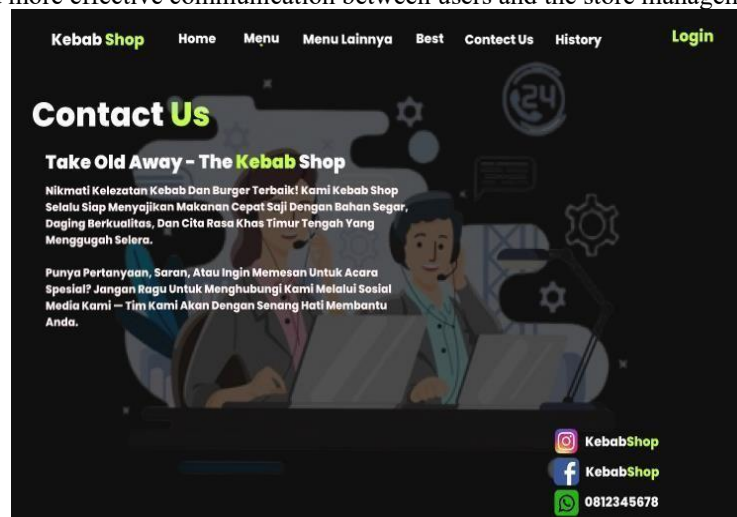


Figure 8. Contact Us page

h. Logout Page

The logout page is displayed when users decide to exit the application. This page serves as a final confirmation step to ensure that users intentionally want to end their current session. The presence of this confirmation page helps minimize the risk of accidental logout, thereby providing greater convenience and security during application usage.

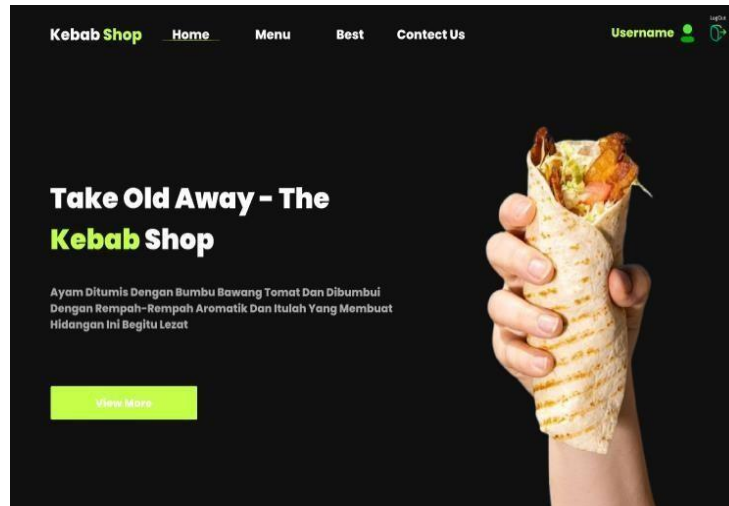


Figure 9. Halaman Logout

### 3.2. System Testing

Black Box Testing was conducted to evaluate whether each function of the developed web-based culinary e-commerce platform operated according to the specified functional requirements. This testing method focuses on validating system outputs based on user inputs without examining the internal program code structure. The evaluation covered the main features available in the system, including login, menu display, ordering, payment, transaction history, best seller recommendations, contact information, and logout functionality. The testing process aimed to ensure that all interfaces and system workflows functioned properly, accurately, and consistently from the user perspective.

Table 1. Black Box Testing Results

No	Tested Page/Feature	Test Scenario	Input	Expected Result	Actual Result	Status
1	Home Page	User accesses the website homepage	Open application URL	Homepage is displayed successfully with navigation menu and store information	Homepage displayed properly	Valid
2	Login Page	User logs in with valid account	Correct username and password	User successfully enters the system dashboard/home page	Login successful	Valid
3	Login Page	User logs in with invalid credentials	Incorrect username/password	System displays error message and denies access	Error message displayed	Valid
4	Registration Feature	User creates a new account	Valid registration data	New account successfully created and stored in database	Registration successful	Valid
5	Menu Page	User views available food menu	Select menu page	Food menu list with image, name, and price appears correctly	Menu displayed properly	Valid
6	Menu Selection	User selects a menu item	Click selected product	Selected menu item added to order/cart	Product successfully selected	Valid
7	Payment Page	User enters payment details correctly	Valid quantity and payment method	System calculates total price and processes order	Payment processed successfully	Valid
8	Payment Validation	User submits incomplete payment data	Empty payment field	System displays validation warning	Warning displayed	Valid

9	History Page	User checks order history	Open history menu	Previous order list and transaction status displayed	Order history shown correctly	Valid
10	Best Seller Page	User opens best seller feature	Open best seller page	Popular menu recommendations displayed	Best seller menu shown properly	Valid
11	Contact Us Page	User views store contact information	Open contact page	Contact information appears completely	Contact details displayed	Valid

Based on the Black Box Testing results presented in Table 1, the developed web-based culinary e-commerce platform successfully demonstrated proper functionality across all tested features. The testing process began with the home page, where users were able to access the website successfully and view essential store information along with navigation menus. This indicates that the initial interface effectively functions as the main entry point for users to interact with the application. Furthermore, the login feature was tested using both valid and invalid credentials. The system successfully granted access when correct usernames and passwords were entered while appropriately rejecting unauthorized access attempts and displaying validation messages for incorrect inputs. Similarly, the registration feature performed as expected by allowing new users to create accounts successfully and store user data within the system database.

The functionality of the menu page was also validated during testing. The system successfully displayed available food products complete with images, names, and prices, enabling users to browse and select menu items according to their preferences. Additionally, product selection features operated correctly, ensuring that selected menu items could be added to the ordering process without errors. In terms of transaction management, the payment page effectively handled user input by correctly calculating payment details and processing orders when valid information was provided. Conversely, when incomplete or invalid payment information was submitted, the system successfully generated warning messages, demonstrating effective input validation and reducing the possibility of transaction errors.

Further testing was conducted on supporting features such as the history page, best seller page, contact us page, and logout functionality. The history feature accurately displayed previous transaction records and order statuses, enabling users to monitor purchase progress efficiently. The best seller page successfully provided product recommendations based on frequently purchased items, assisting users in making purchasing decisions more quickly. Meanwhile, the contact page effectively displayed store communication details, facilitating interaction between customers and business administrators. Finally, the logout feature functioned correctly by terminating active user sessions and displaying logout confirmation, thereby enhancing account security and preventing unintended access.

### 3.3. Discussion

The results of the Black Box Testing indicate that the proposed web-based e-commerce system fulfills its intended functional requirements and performs consistently across all tested modules. From a usability perspective, the successful operation of navigation, authentication, and product browsing features suggests that the interface design is sufficiently intuitive and user-friendly for culinary MSMEs and customers with varying levels of digital literacy. This is particularly important considering that one of the main objectives of the study is to support culinary MSMEs that may have limited experience with digital technologies.

Moreover, the successful validation of payment processing and input verification mechanisms highlights the system's reliability in handling transaction-related activities. The presence of validation features for incomplete or invalid user inputs contributes to minimizing transaction errors and improving system dependability. This finding demonstrates that the platform is capable of supporting operational efficiency by streamlining ordering workflows and reducing manual administrative burdens commonly experienced by small-scale culinary businesses.

Additionally, supporting functionalities such as transaction history tracking, best seller recommendations, and communication channels further enhance the practicality of the system in real-world implementation. The order history feature improves transparency and customer trust by allowing users to monitor transaction progress, while the best seller recommendation feature may contribute to increasing sales by guiding customer purchasing behavior toward popular products. The contact feature also strengthens communication effectiveness between customers and business owners, which is essential in maintaining service quality.

Overall, the Black Box Testing results confirm that the developed e-commerce platform is functionally feasible and suitable for implementation within culinary MSMEs. The system successfully supports core business activities, including product promotion, order management, payment processing, and sales documentation, thereby contributing to improved business efficiency, wider digital market reach, and enhanced sustainability of culinary MSMEs in the digital economy era.

#### 4. CONCLUSION

This study successfully designed and developed a responsive web-based e-commerce platform specifically intended for culinary Micro, Small, and Medium Enterprises (MSMEs). The developed system provides several essential features, including product catalog display, user authentication, online ordering, payment processing, transaction history, best seller recommendations, contact information, and logout functionality. The platform was designed to support culinary MSMEs in conducting digital business operations more efficiently, particularly in marketing products, managing customer orders, and maintaining sales records in a more structured manner. Based on the results of the Black Box Testing, all tested system functionalities operated successfully according to predefined requirements. Each feature demonstrated valid performance without significant functional errors, indicating that the system is capable of supporting user interactions effectively. The successful implementation of authentication, ordering, payment validation, and supporting features further confirms that the platform offers a practical and user-friendly solution suitable for culinary MSMEs with varying levels of digital readiness. Furthermore, the proposed system contributes to reducing dependency on traditional offline sales methods by enabling culinary businesses to expand their market reach through digital platforms. The integration of organized transaction management and accessible communication channels also enhances operational effectiveness and customer convenience. Therefore, this study concludes that the developed web-based e-commerce platform is functionally feasible and has strong potential to support the digital transformation and long-term sustainability of culinary MSMEs in Indonesia. For future research, additional features such as online payment gateway integration, real-time order tracking, promotional systems, customer reviews, and mobile application support may be incorporated to further improve system performance and user experience.

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