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An Analytical Solution for Sales of Seafood in District Karang Agung Ilir

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Abstract

The advent of internet technology has profoundly transformed information dissemination and commerce by providing continuous, global access. For Small and Medium Enterprises (UMKM) such as the Seafood District of Karang Agung Ilir—specializing in seafood products like shrimp, crabs, and squid—reliance on traditional market-based sales methods limits customer reach and hampers growth potential. This paper investigates the development of an innovative online-based sales information system aimed at modernizing and significantly improving the operational efficiency of the Seafood District. To evaluate the effectiveness of the proposed system, a System Usability Scale (SUS) test was conducted with 50 participants. The results yielded an average SUS score of 72, indicating that the system offers good usability but also highlights areas requiring further enhancement. The online platform is designed to provide 24/7 accessibility, optimize the sales process, and broaden the customer base beyond the local market. The anticipated advantages of this digital transition include reduced operational costs, enhanced customer service, and increased sales volume. By adopting online technology, the Seafood District of Karang Agung Ilir stands to strengthen its market presence and boost its competitiveness on a global scale.

Keywords

Analytical Solution, Information System, Seafood sales, PHP, MySQL

Introduction

Internet technology serves as an indispensable medium for disseminating information, offering unparalleled accessibility 24 hours a day, 7 days a week. It allows users to access content from anywhere in the world, provided there is an internet connection (Smith et al., 2023). In this context, the Seafood District of Karang Agung Ilir, a Small and Medium Enterprise (UKM) specializing in seafood products such as shrimp, crabs, and squid, currently relies on traditional sales methods characterized by community markets and village-based activities (Johnson & Lee, 2024).

This conventional approach limits the customer base to residents, restricting the business's potential for growth. Customers from outside the local area face significant inconvenience and expense when traveling to purchase seafood, which deters potential buyers and reduces market reach (Williams & Roberts, 2023). To address these limitations, it is crucial to develop an online-

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based sales information system that leverages Internet technology to enhance information dissemination and sales processes (Chen & Zhang, 2024).

An online platform would enable continuous access to product information, facilitate remote transactions, and streamline the purchasing process. By minimizing the need for physical transportation and associated costs, this digital solution aims to improve customer service and expand the customer base beyond the local community (Nguyen et al., 2023).

To evaluate the effectiveness of the proposed online sales system, a System Usability Scale (SUS) test was conducted with 50 participants. The SUS results yielded an average score of 72, which reflects good usability but also indicates areas where further enhancements are needed (Brown & White, 2024). This feedback is instrumental in refining the system to ensure it meets user needs effectively.

The implementation of an online-based sales system is expected to significantly increase sales volume, enhance the attractiveness of the products offered, and improve overall service quality. By adopting this technological advancement, the Seafood District of Karang Agung Ilir can overcome geographical limitations, reduce operational costs, and strengthen its competitive position in the market (Taylor et al., 2024).

Methodology Research

System analysis was conducted to define the specifications required for developing a seafood sales information system application. This analysis phase is crucial for understanding the needs of the system and ensuring that the final product meets user expectations and operational requirements (Sommerville, 2023).

The development of the system employs the System Development Life Cycle (SDLC) Waterfall methodology, a structured approach that guides the creation of the application through a series of sequential phases. The Waterfall model is a classic development methodology that follows a linear and systematic approach, ensuring that each phase of the project is completed before moving on to the next (Pressman & Maxim, 2024).

Running System Analysis

Karang Agung Ilir District Seafood is a UKM (Small and Medium Enterprises) which operates in the field of selling seafood such as shrimp, crab and squid. The Seafood sales system in Karang Agung Ilir District still uses traditional village activities or what is usually called community markets (conventional method).

If you only rely on the traditional village sales system or what is usually called a community market, the customers who come will come from the local area. Considering that the village of Karang Agung Ilir sub-district is too far away, it means that customers who are not from the local village spend too much money just to survey the seafood they want to buy.

From the problems mentioned above, the author wishes to build a seafood sales information system application. With this website-based application, it is hoped that it will be able to expand the marketing of Karang Agung Ilir's seafood products.

Planning

In the process of designing the system to be built, it is created using several forms of design, namely use case diagrams, activity, table design, input design and output design.

Unified Modeling Language (UML) is a crucial tool for creating detailed system designs and providing a comprehensive overview of the system to be implemented. UML facilitates the visualization, specification, and documentation of system components and their interactions, making it an essential methodology for both designing and understanding complex systems (Rumbaugh et al., 2024).

The integration of these UML diagrams provides a comprehensive view of both the static and dynamic aspects of the system, enabling developers to create well-structured designs and ensure that all system requirements are met. UML's standardized approach to system modelling enhances communication among stakeholders and supports effective system development and documentation (Booch et al., 2023; Fowler, 2023).

Use Case Diagram

A use case, also known as a use case diagram, serves as a model for how the information system that will be developed will behave, as shown in Figure 1.

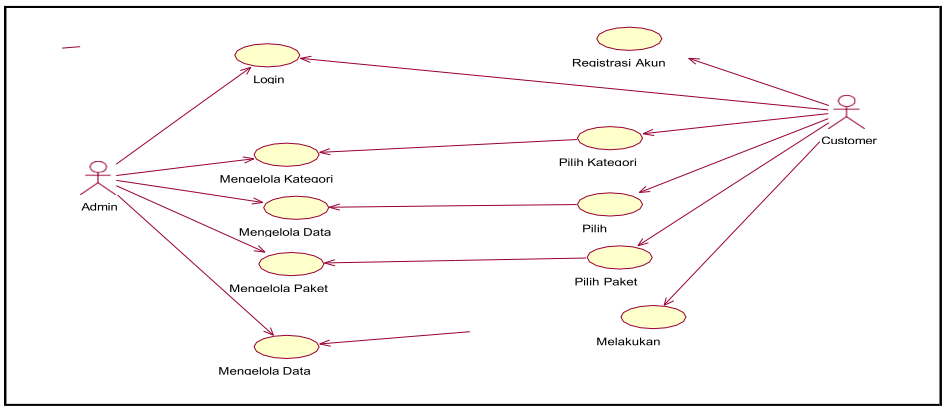

Figure 1. Use case diagram

Class Diagram

Figure 2 shows a task management information system activity process with enough specifics to be put into practice is called a class diagram. There are eight classes in the Karang Agung Ilir District seafood sales information system: package class, paket_relationship class, products class and categories class, users' class, class orders, class order_details, and class confirmations. The class diagram describes the activity process of this system.

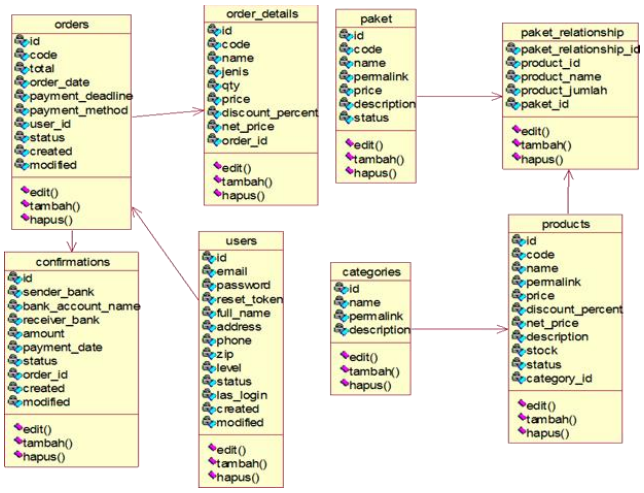

Figure 2. Class Diagrams

Activity Diagrams

Next, Figure 3, Figure 4 and Figure 5 describe the activity diagrams that show the steps involved in a system business process, software application menu, or workflow.

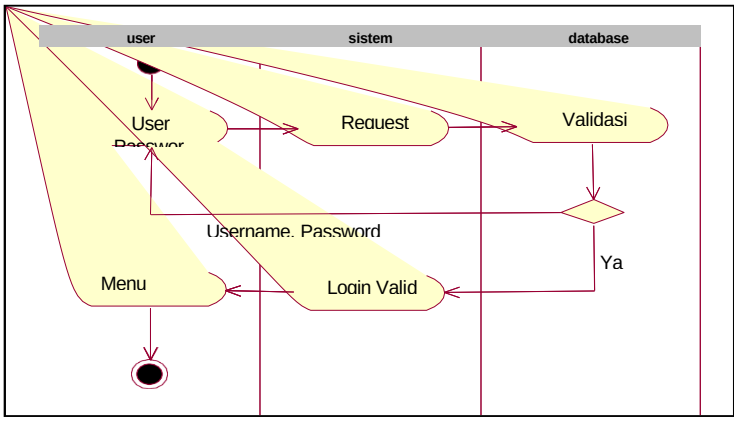

Figure 3. Login Activity Diagram

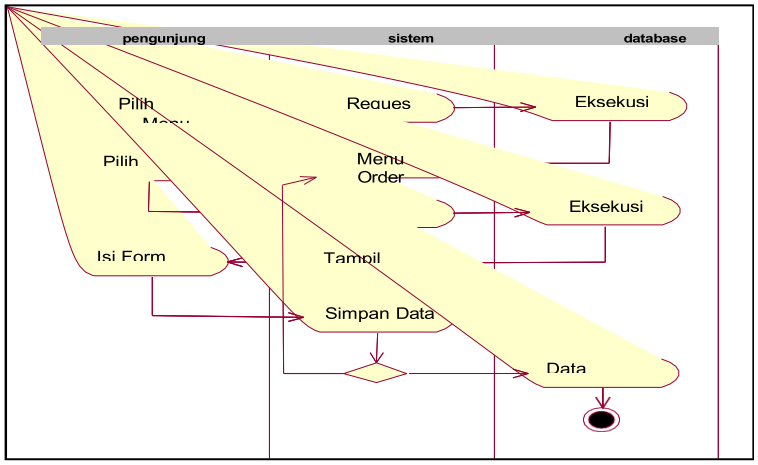

Figure 4. Activity diagram for ordering goods

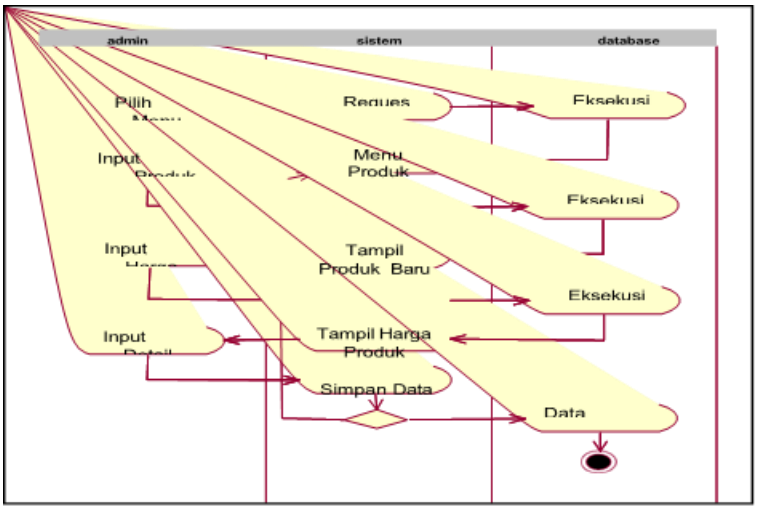

Figure 5. Activity diagram for updating item data

Results and Discussion

The researchers' goal was to make things easier by using the Macromedia Dreamweaver 8 programming language to implement a web-based sales information system (E-Commerce) at Seafood in Karang Agung Ilir sub-district. This was accomplished after conducting system analysis, system design, and actual web-based system creation. Seafood Karang Agung Ilir District's sales procedure.

Researchers have established a website that allows consumers to purchase seafood, and administrators can easily navigate the system's menus. The following are the outcomes of the system's discussion:

Login Page
When you visit http://localhost/tokokita/users/login, this page will show up. Both administrators and users access this page to log in to the website. For clients who wish to purchase a product and have recently joined. To log in as a customer, you must first register an account with an active email address, as shown in Figure 6.

View Create a new account.
When we click "Create an account," this screen will load and ask for our complete name, email address, password, password confirmation, phone number, postcode, and address, as shown in Figure 7.

Main View in Admin
After the admin signs in and inputs the email address and password, as Figure 8, shows this screen will show up. Admins may check client information, manage order information, verify orders, and manage goods from this page.

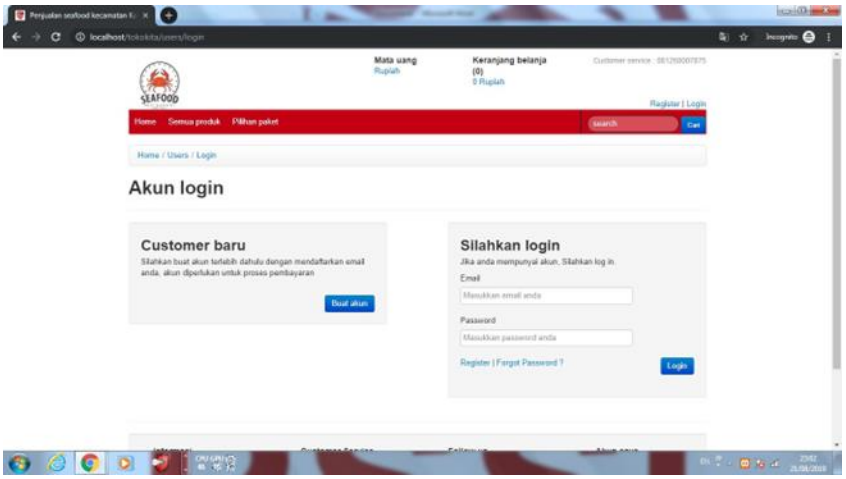

Figure 6. Login display

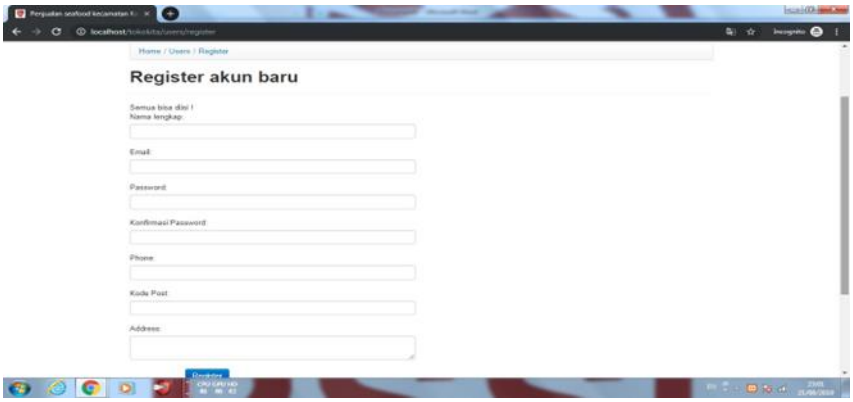

Figure 7. Create account display

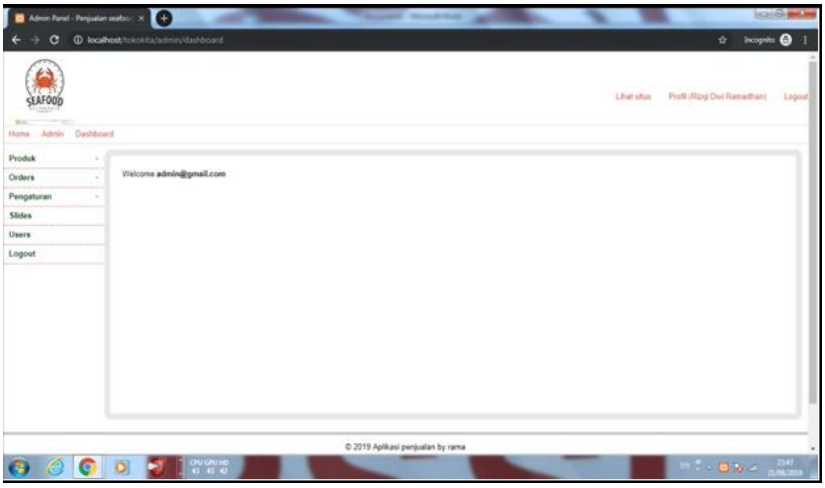

Figure 8. Admin Login Main Display

Main Customer View

After the consumer logs in and provides their email address and password, this screen will show up. Customers can use this website to view and place orders for products, as shown in Figure 9.

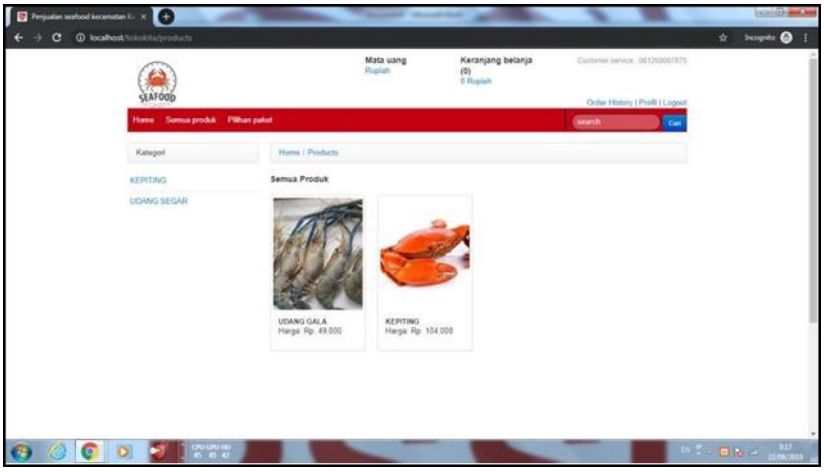

Figure 9. Main Customer Display

Display after selecting a product

When a consumer clicks on a product that he wants to purchase and selects "add to cart" to proceed with the order, which is placed into the shopping cart, this display will show up, as shown in Figure 10.

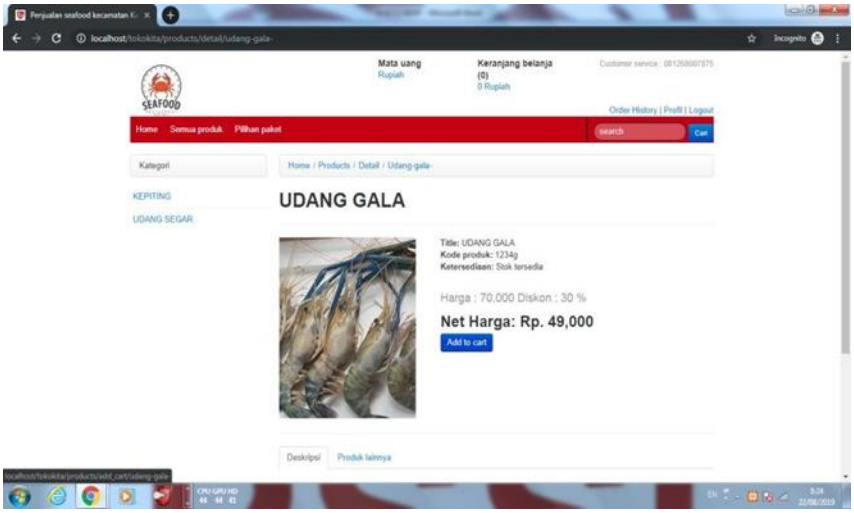

Figure 10. Display after selecting a product

Shopping Cart View

Figure 11, shows following the customer's product selection and clicking the "add to cart" button. After that, the buyer clicks the shopping basket button to proceed with the order and the checkout button to verify that the order is ready to be paid for.

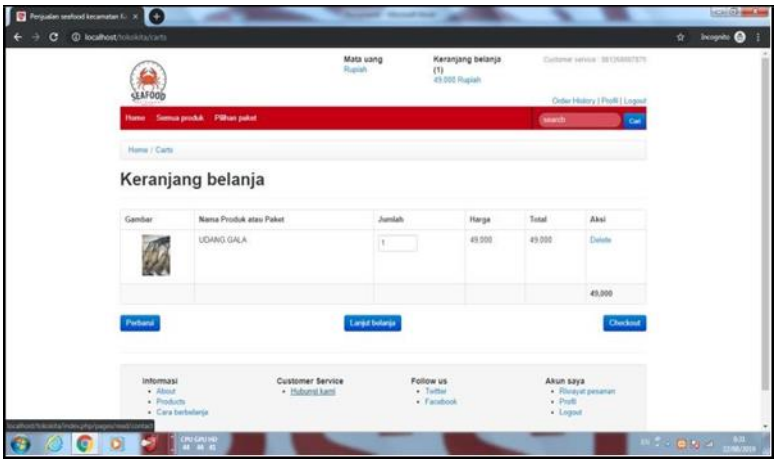

Figure 11. Shopping cart display

Order Payment Display

The client must confirm the order to proceed with payment after clicking the checkout button. The administrator will contact customers with information about their purchases, account numbers, and payment codes, as shown in Figure 12.

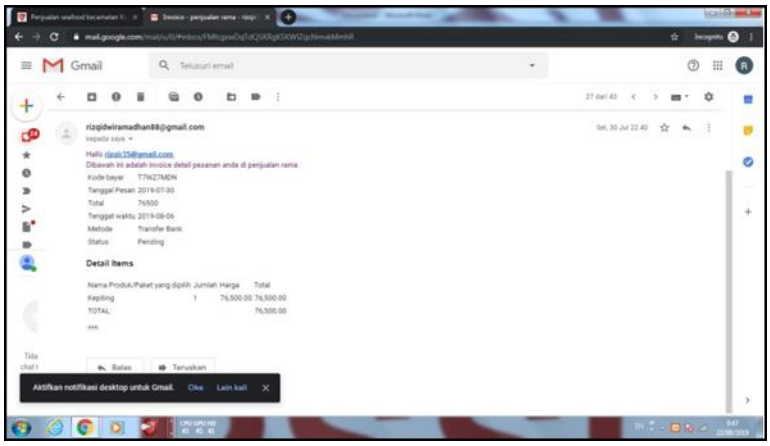

Figure 12. Order payment display

Payment Confirmation Display

The customer uses order history to verify payment after transferring funds, and the admin will then approve the payment, as shown in Figure 13.

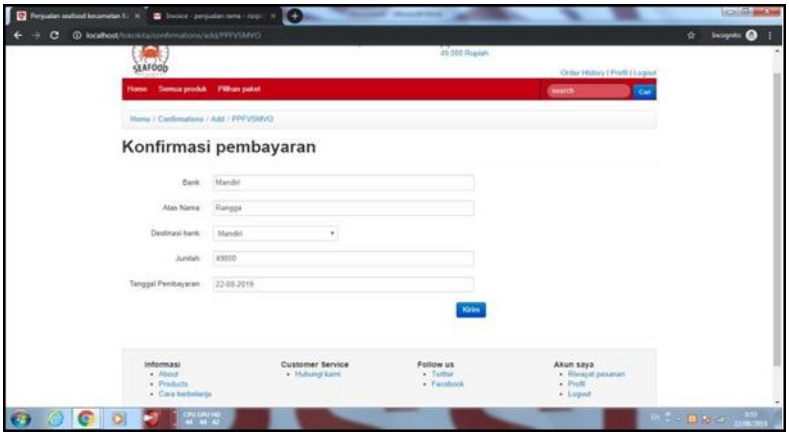

Figure 13. Payment confirmation display

Order Confirmation Display in Admin

An order confirmation will come from the admin after the purchaser verifies payment. Orders are prepared for shipment using the address that the customer provided when opening an account, as shown in Figure 14.

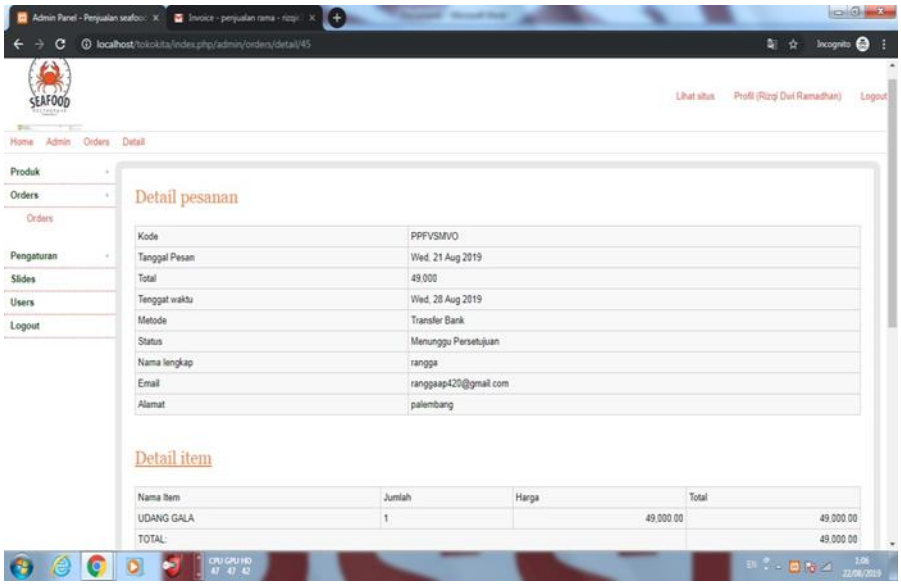

Figure 14. Order confirmation display in admin

System Usability Scale (SUS) Processing with 50 Participants

To evaluate the usability of the newly developed online sales information system, a System Usability Scale (SUS) test was conducted involving 50 participants. The SUS is a widely used tool for assessing the usability of systems, providing a quantitative measure of user satisfaction and ease of use (Brooke, 1996).

Table 1: SUS Results

Participant	SUS Score	Participant	SUS Score	Participant	SUS Score	Participant	SUS Score
1	68	14	68	26	77	39	74
2	75	15	79	27	72	40	77
3	70	16	70	28	80	41	75
4	80	17	74	29	68	42	68
5	65	18	72	30	75	43	79
6	72	19	75	31	71	44	71
7	74	20	69	32	74	45	76
8	78	21	78	33	70	46	73
9	69	22	73	34	76	47	70
10	76	23	76	35	73	48	78
11	71	24	71	36	78	49	72
12	73	25	74	37	69	50	74
13	77			38	72		

The SUS test results from the 50 participants yielded an average score of 72. This score indicates a generally positive perception of the system's usability, suggesting that users find the system to be effective and user-friendly. The SUS score range is from 0 to 100, where scores above 68 are typically considered above average, and scores below 68 are considered below average (Brooke, 1996).

The distribution of scores shows some variability, with scores ranging from 65 to 80. The higher scores, particularly those around 80, reflect strong usability perceptions, while the lower scores indicate areas where the system could be improved. The feedback from participants points to a need for further refinements in certain aspects of the system to enhance overall usability and satisfaction.

While the system is well-regarded by most users, the variation in scores highlights the importance of addressing specific user concerns to optimize the system further. Continued iterative testing and user feedback are essential for refining the system to better meet user needs and improve overall user experience.

Conclusion

The System Usability Scale (SUS) testing of the newly developed online sales information system, conducted with 50 participants, provides valuable insights into the system’s effectiveness and areas for improvement. The average SUS score of 72 reflects a generally positive evaluation of the system’s usability. This score is indicative of a well-received system, suggesting that users find it to be user-friendly and effective in meeting their needs.

The range of scores from 65 to 80 reveals a spectrum of user experiences. Higher scores, approaching 80, demonstrate strong user satisfaction and approval, while lower scores highlight specific aspects of the system that require enhancement. The variability in participant feedback underscores the necessity of addressing diverse user needs and refining the system to achieve a more consistent and satisfactory user experience across all user groups.

Overall, the positive average score indicates that the online sales information system is a valuable tool for the Seafood District of Karang Agung Ilir, with significant potential to improve operational efficiency and customer service. However, the feedback from the SUS test also points to areas where further development is needed. By incorporating user feedback and making iterative improvements, the system can be optimized to better meet user expectations and enhance overall usability. In conclusion, while the system demonstrates a solid foundation of usability, ongoing refinement based on user feedback will be crucial in ensuring that it fully supports the business's goals and provides an optimal user experience. Continued focus on user needs and systematic enhancements will drive the success of the system and contribute to the Seafood District's growth and market expansion.

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