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An Online Order and Pickup Web Based System for Coffee Lalu Kiosk

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KEYWORDS

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Web Based System
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ABSTRACT

This paper presents the development of a web-based Order and Pickup System for Coffee Lalu kiosks, designed to streamline the ordering process and reduce waiting times for customers. The system replaces the previous manual method, which caused traffic jams, wasted time, and limited customer reach. It provides an efficient platform for coffee lovers to place orders easily, while administrators can manage orders and menus more effectively. Developed using tools like Adobe Dreamweaver, PHP and MYSQL. The Agile methodology are used to plan, design and develop the system. This system already tested and has demonstrated its effectiveness in enhancing the efficiency, convenience, and customer satisfaction. Overall, the system improves the overall efficiency of Coffee Lalu operations, reduces customer waiting times, and enhances the overall user experience, making it a valuable tool for both customers and administrators.

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1.0 INTRODUCTION

Coffee Lalu, established in October 2021 by Muhammad Nabil in Binjai, Kemaman, started with three employees and a single kiosk, focusing on a limited menu that has since expanded significantly due to extensive Research and Development (R&D). Originating from Nabil's roadside coffee business, Coffee Lalu has grown into a recognized brand with six kiosks across Terengganu and Kelantan and participation in the Ramadhan bazaar. The name "Coffee Lalu," meaning customers can simply pass by the kiosk for a cup of coffee, reflects its roadside kiosk model. To enhance customer convenience, Coffee Lalu developed a web-based order and pickup system, akin to fast-food services, allowing customers to browse the menu and place orders online, thereby saving time and improving safety for buyers, road users, and sellers.

The current manual order and pickup system at Coffee Lalu faces several significant issues. Firstly, it causes traffic jams and disrupts other road users as buyers queue up on the roadside, posing safety risks and potential accidents. Secondly, the manual process is inefficient and wastes customers' time,

particularly for those who are in a hurry and prefer quick transactions. Thirdly, the customer reach is limited, as the system only caters to those who physically visit the kiosk, missing out on potential distant customers who could place orders in advance to avoid queues. Lastly, there is a lack of valuable customer data and insights, making it difficult for sellers to track orders, understand customer preferences, and optimize marketing strategies. This results in challenges for the financial department in assessing business growth or decline.

This order and pickup system are developed to make it easier for customers to buy coffee. This system works the same as the order and pickup system for fast food, only this system is for roadside kiosks. Apart from ordering and pickup, this system is developed to make it easier for customers to know the menu available at the kiosk. The objective for this system is to save the buyer's time to get coffee. Buyers no longer must stand in long queues, look at the menu displayed in front of the kiosk, then place an order, and finally make a payment. This will waste the buyer's time and expose the buyer to the dangers of the road. With this system in place, it will reduce the risk of danger to buyers and other road users. Apart from the safety of buyers and road users, the safety of sellers is also guaranteed. This system aims to streamline operations, enhance customer convenience, and improve overall service efficiency by allowing customers to place orders and make payments online, thereby reducing wait times and enhancing safety. The scope encompasses two primary user roles: Admin and Customer. The Admin scope includes functionalities such as logging into the system, receiving and managing customer orders, updating the menu and pricing, viewing payments, and logging out after kiosk operations conclude. For Customers, the scope involves registering and logging into the system, viewing the available menu, placing orders with options to set pickup times and locations, making payments online, and logging out once the transaction is complete. This comprehensive system ensures a seamless and efficient order and pickup experience for both administrators and customers of Coffee Lalu.

2.0 LITERATURE REVIEW

Web-based systems, as software programs running on remote servers and accessed through web browsers, offer significant accessibility across platforms without requiring local installation (1). Over 90% of websites utilize client-side scripting languages such as JavaScript, enhancing interactive functionalities and user experience (2). A comprehensive study by (3) delves into the architecture of web-based applications, highlighting key benefits like accessibility, real-time updates, and minimized client-side maintenance. The proliferation of Web-based Information Systems is attributed to the rapid advancements in information technology, facilitating widespread adoption and innovation. Developing web-based systems, however, presents challenges as mention in (4). Security concerns and the necessity for consistent internet connectivity are critical issues addressed by (5). Ensuring robust security measures and reliable connectivity is essential for maintaining system integrity and user trust. The evolution of Software as a Service (SaaS) has significantly influenced the deployment and maintenance of web-based applications, as detailed in (6). SaaS models offer scalable solutions and centralized updates, simplifying management for both providers and users. An in-depth analysis by (7) explores the advantages and disadvantages of web-based systems. Benefits include cross-platform accessibility and centralized updates, while drawbacks encompass data security risks and potential feature limitations. Security risks associated with web-based systems, particularly the vulnerabilities linked to centralized data storage, are a focal point in (8). Addressing these vulnerabilities through enhanced security protocols and robust data protection strategies is crucial for safeguarding user information. In conclusion, while web-based systems provide numerous advantages, they also pose specific challenges that need to be managed effectively. Continuous

improvements in security, connectivity, and scalability are vital for the sustained growth and success of these systems.

This paper (9) evaluates the design and usability of various online ordering platforms, offering valuable insights into best practices aimed at enhancing user experience. The importance of these systems is particularly evident in fast-food businesses, where they allow customers to place orders from any location, significantly reducing processing time and improving overall customer service. Customers can also benefit from immediate dining upon arrival, as the system efficiently queues orders directly in the database, streamlining the entire process and minimizing human error (10). Despite the clear advantages, there are notable challenges associated with online ordering systems. One major limitation is their dependence on consistent internet connectivity. Without a stable connection, the system becomes inoperable, and service disruptions can occur during ISP maintenance. Furthermore, these systems may not reach all customer demographics effectively, particularly older individuals who may struggle with navigating online services (10). Additionally, the adoption of web-based ordering systems comes with its own set of disadvantages. These systems often suffer from limitations such as reliance on vendor support, a potentially steep learning curve for new users, and significant upfront development costs. There are also data security risks to consider, with the centralized storage of sensitive customer information raising concerns about potential breaches and cyber-attacks. Furthermore, web-based systems may lack some of the advanced features found in their desktop counterparts, which can affect user satisfaction and system performance over time. In conclusion, while the advantages of online ordering systems, especially in the fast-food industry, are clear, the challenges related to connectivity, security, and user accessibility must be addressed to ensure long-term effectiveness and growth.

The ordering system process begins with the creation of a detailed product catalogue, which includes descriptions, images, pricing, and inventory details. This catalogue can be managed either manually or through automated e-commerce platforms (11). Customers then place orders via various channels, including online shopping carts, mobile apps, email, phone, or in-person, with the order information being recorded in the seller's system. The use of scheduling tools, such as the one proposed in (12), helps manage customer flow and avoid overcrowding at locations like kiosks. By limiting the number of customers each day, the system enables customers to make reservations and place orders effortlessly by inputting their details and selecting an appropriate time to visit the restaurant. This approach optimizes customer experience and ensures smooth operations during peak periods. Once the order is placed, the seller verifies product availability, applies any relevant promotions, and calculates taxes and shipping charges. Payment is processed through multiple methods, including credit cards, debit cards, digital wallets, or bank transfers, with integration to payment gateways and banks ensuring faster transactions. After payment confirmation, the seller proceeds to pick and pack the items, labels them for shipping, and either fulfils the order in-house or outsources the fulfilment. Post-purchase, the system allows customers to contact the seller for inquiries regarding order status, returns, refunds, or support, with all interactions being tracked and stored for future reference. Research on online ordering systems (13) highlights their transformative impact on the fast-food industry, increasing operational efficiency and improving overall customer satisfaction. The integration of emerging technologies, as discussed in (14), is particularly influential in enhancing e-commerce platforms, making the order management process more seamless and responsive. These technological advancements ensure that businesses can meet customer demands while maintaining efficient, scalable operations.

2.1 Related Work: Comparison of Similar Systems

When developing a new system, several challenges must be addressed, including planning, design, features, hardware, and software. Comparing existing systems helps identify potential improvements and innovations. For instance, we can examine Starbucks Coffee, Tealive and Coolblog for insights into their interface, content, and design, all of which relate to order and pickup systems. The study (15) compares various online ordering systems, including those used by Starbucks, Coolblog, and Tealive, highlighting their unique features and user interfaces. Each of these systems has distinct advantages and disadvantages, which are highlighted below.

2.1.1 Starbucks Coffee (16)

Starbucks, which began as a single store in Seattle's Pike Place Market, has grown into a globally recognized brand. Its website features a subtle, low-contrast colour scheme, combining dark green text with a muted background. A navigation bar at the top displays the company logo alongside links to brewing methods, menu options, rewards, community initiatives, career opportunities, corporate details, and a store locator. Customers can log in to browse menus, explore promotions, place orders, and access curbside pickup at selected outlets. The intuitive layout enhances usability, making navigation simple and improving the overall online ordering experience.

2.1.2 Coolblog (17)

Established in 2005, Coolblog has been serving affordable, high-quality desserts and beverages. Its website adopts a pink and purple colour scheme with white text, producing a soft yet attractive visual style. The navigation bar includes links to company information, menu options, franchising opportunities, store locator, and customer support. The homepage prominently displays promotions and best-selling items. Customers can easily browse the menu and place pickup orders, with the site designed to prioritize convenience and accessibility.

2.1.3 Tealive (18)

Tealive, a well-known bubble tea brand with roots in Taiwan, has grown into an international franchise. Its homepage displays the brand logo along with a navigation bar that links to the menu, brand details, store locator, loyalty app, FAQs, vouchers, and promotions. Featured menu recommendations are showcased at the centre, with clear options for self-pickup or delivery. The high-contrast layout improves navigation, while extensive customization choices accommodate a wide range of customer tastes. Additionally, the website integrates with Tealive's loyalty app, strengthening customer engagement and encouraging long-term retention.

3.0 METHODOLOGY

This part provides an overview of the methodology, detailing the methods and strategies used to collect and analyze data for the research topic. The Agile method is specifically used for the development of the order and pickup system. It is iterative development methodology facilitates frequent feedback and aids in risk mitigation. This model consists of six stages namely plan, design, develop, test, deploy and review.

i. Plan

The planning phase of the Agile model focuses on gathering details about the project, including the problem statement and constraints related to the Coffee Lalu order and pickup system. It involves defining the project objectives, system scope, and identifying the necessary software and hardware. Additionally, this phase includes evaluating the commercial potential, creating a schedule, and

assessing the technical and economic viability, with any errors in this phase potentially impacting the entire project.

ii. Design

In the Design phase of the Order and Pickup at Coffee Lalu system, the focus is on defining the system's objectives and evaluating approaches to meet these goals. The developer will create a Flowchart Diagram to outline the order and pickup process and Figure 3.1 show a Data Flow Diagram (DFD) level 1 to illustrate data movement from customer and admin through the system.

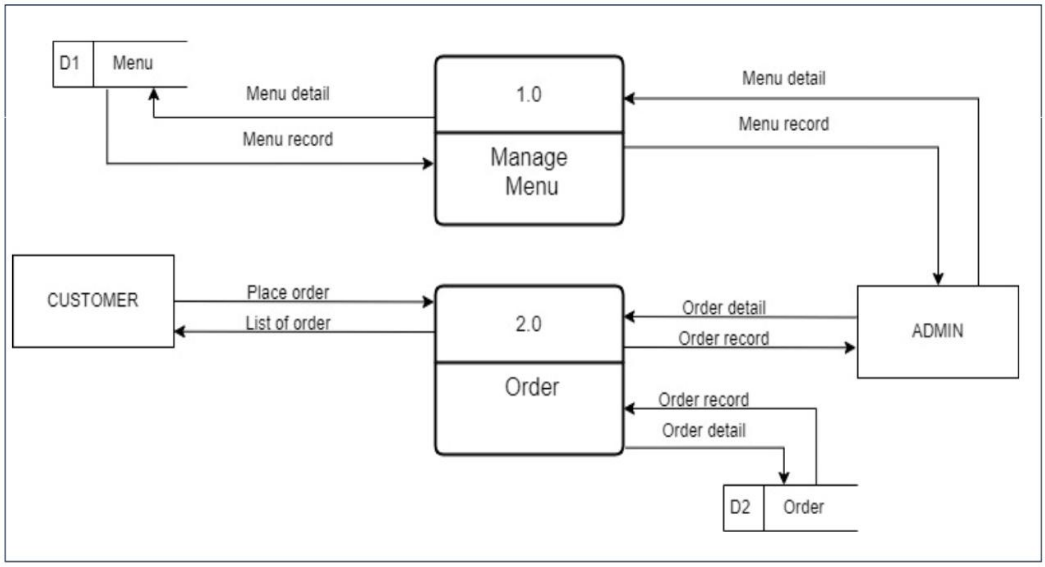

Figure 3.1 : DFD Level 1

Figure 3.2 illustrate an Entity Relationship Diagram (ERD) to show relationships between entities like customers and orders. The Database Design has been properly normalized. It will establish the structure for storing customer, order, and inventory data, while the Data Dictionary will define attributes and constraints for these elements. Additionally, the Interface Design or storyboard will be created to ensure the system is intuitive, user-friendly, and optimized for performance, providing a seamless experience for customers. This phase ensures that all design elements are aligned with the project objectives and ready for development.

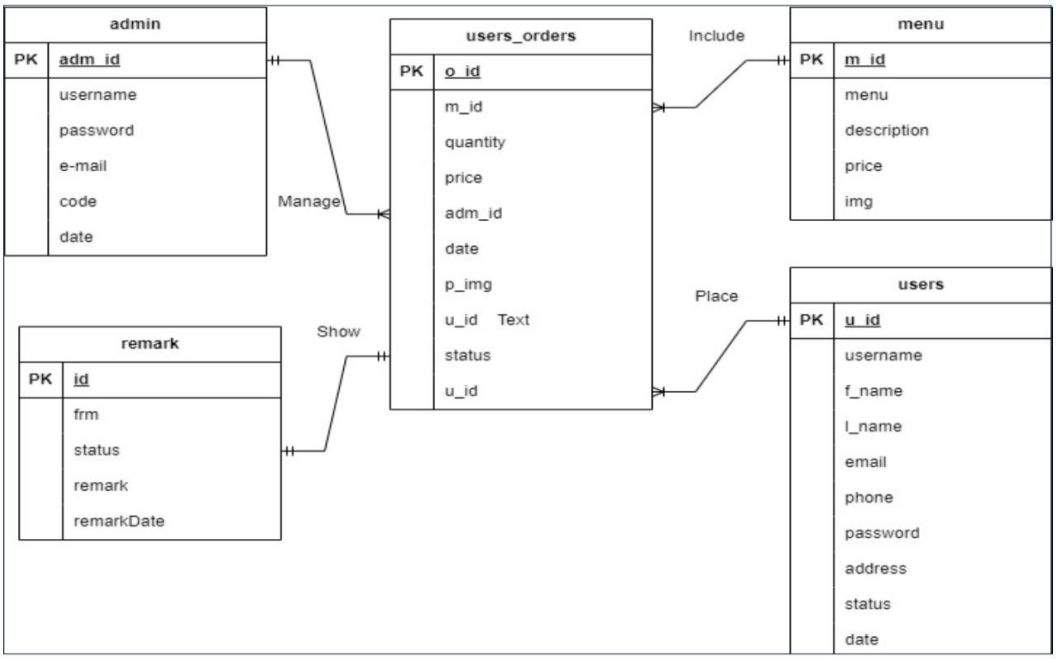

Figure 3.2 : ERD

iii. Develop

At this stage, the developer designs and builds the system according to the specified requirements. The technologies used include CSS, PHP, and Java for the user interface, Adobe Dreamweaver for design, and MySQL for database management. The interface is designed to be user-friendly, ensuring both effectiveness and smooth system performance while defining the system's functionality and appearance. Figure 3.3 illustrates the complete admin menu interface, which displays all menu items available at Coffee Lalu. At the center of the interface is a table containing the drink name, description, price, image, and corresponding actions. In the action column, two buttons are provided 'Edit' and 'Delete' to manage the menu.

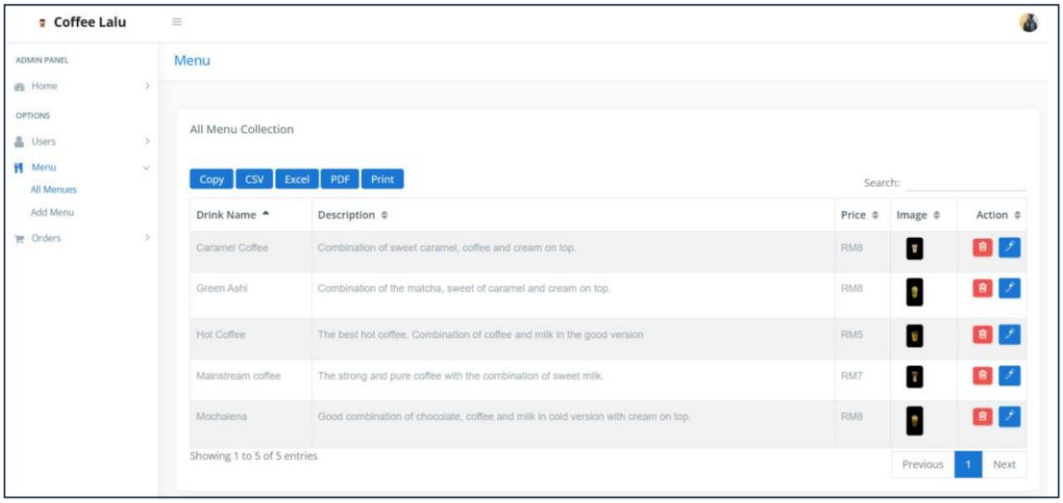

Figure 3.3 All Menu Interface

Figure 3.4 illustrates the homepage for both admin and user. At the top of the screen, a navigation bar is provided, featuring links to Home, Menu, Login (for both users and admins), and Sign Up (for customers). The center of the page displays a banner showcasing Coffee Lalu's tagline.

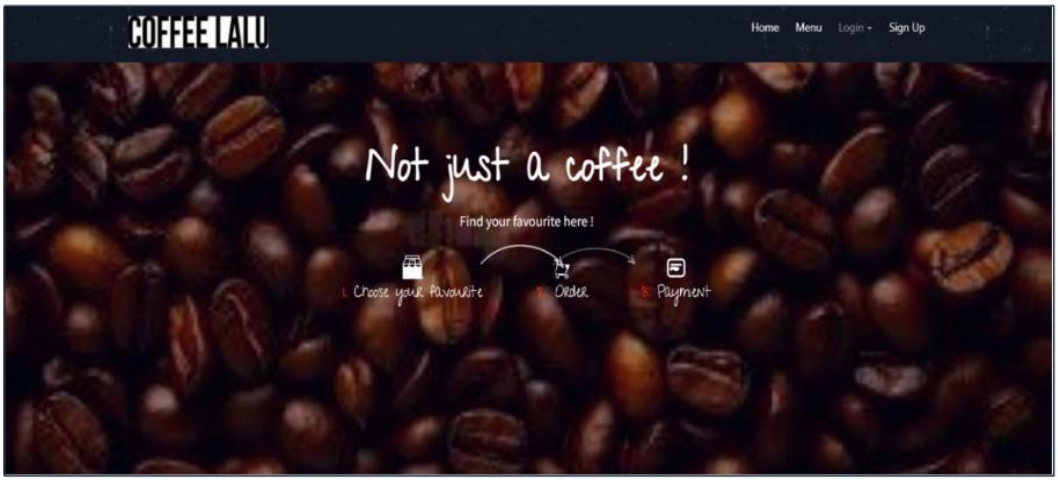

Figure 3.4 All Menu Interface

Figure 3.5 presents the menu view, where users can browse all the available items at Coffee Lalu. The top of the page includes navigation options such as Home, Menu, Your Order, and Logout. Each menu item is displayed with its name, price, and description, along with an 'Add to Cart' button. On the left side of the page, a box labeled 'Your Shopping Cart' displays the selected drinks, their quantities, the total amount, and a checkout button.

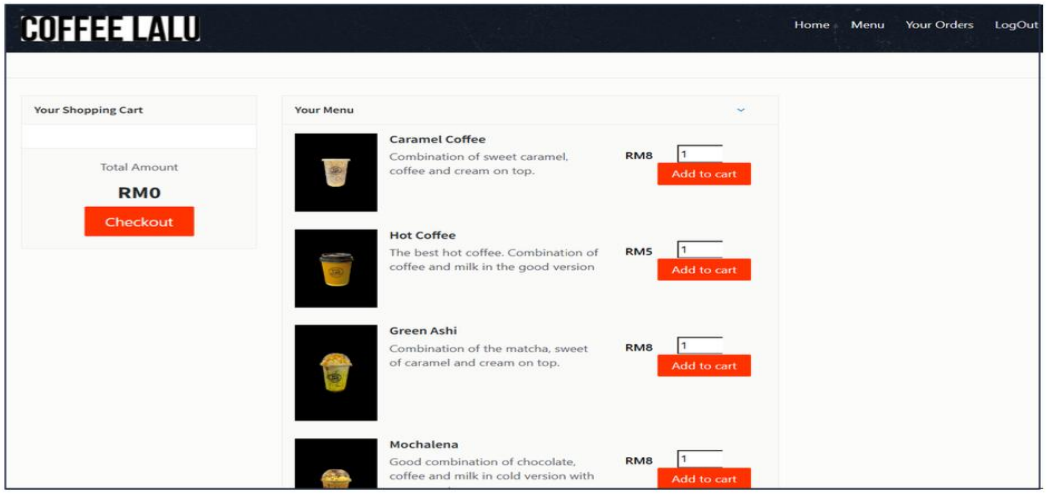

Figure 3.5 View Menu Interface

Figure 3.6 illustrates the order page, where users can track their current orders and view their order history. The page contains a table displaying the item, quantity, price, status, date, and action. In the action column, a 'Delete' button is provided.

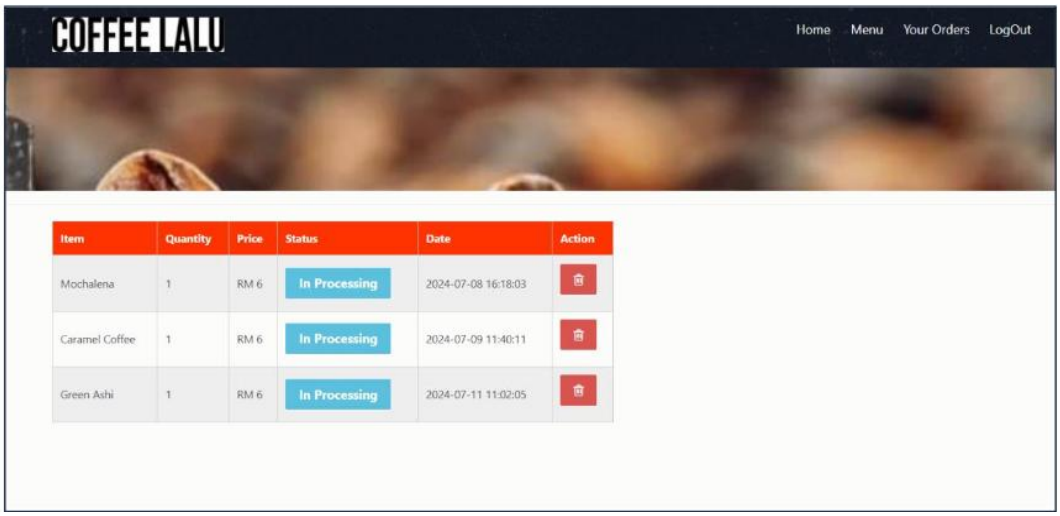

Figure 3.6 Order Menu Interface

Figure 3.7 displays the 'All Orders' interface for the admin, where all customer orders are listed. The page contains a table with details such as username, drink, quantity, price, payment, order status, date, and action. In the payment column, a 'View Payment' button allows the admin to check the proof of payment submitted by customers. The status column indicates whether an order is being processed, ready for pickup, or rejected. Finally, the action column provides 'Edit' and 'Delete' buttons for order management."

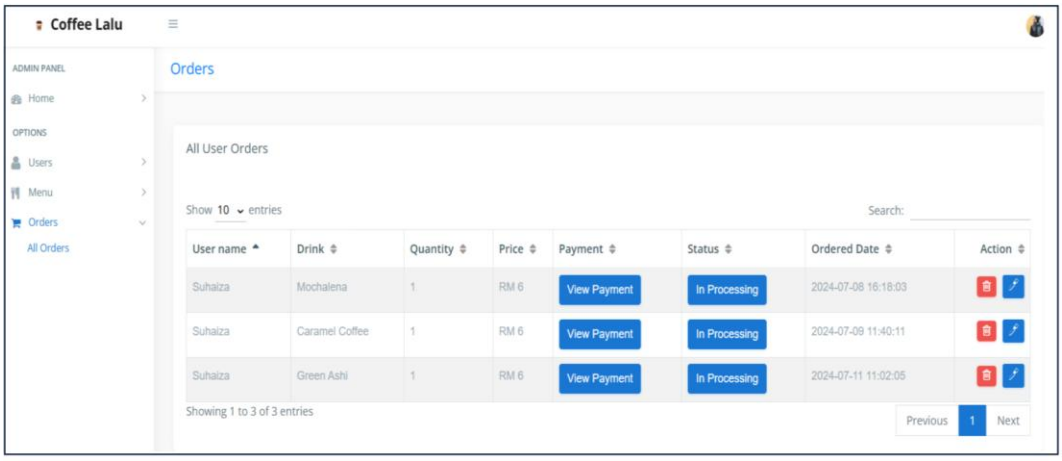

Figure 3.7 All Order Interface

iv. Test

The Testing phase is carried out to ensure the system functions effectively and without errors. This phase includes System Testing, which evaluates overall performance and functionality across different environments, as well as Unit, Integration, and Acceptance Testing. Unit Testing examines individual components, while Integration Testing verifies interactions between combined modules. System Testing assesses the entire system as a whole, and Acceptance Testing confirms that user requirements are met through alpha testing by developers and beta testing by end users. For the Order and Pickup system at Coffee Lalu, multiple test cases for both admin and customer functions are executed to validate functionality, performance, and usability, ensuring the system is fully compliant with requirements prior to deployment.

v. Deploy

The Deployment phase represents the shift from development and testing to making the system available to end users. Within Agile methodology, this phase involves releasing the software into a production environment where it can be accessed and utilized by its intended users. For the Order and Pickup system at Coffee Lalu, the final product will be delivered to the kiosk owner, signifying the completion of the development process. Deployment is generally automated to enhance speed, maintain consistency, and minimize human errors, thereby ensuring a smooth and reliable release."

vi. Review

The Review or Feedback phase takes place after the product has been released, during which developers gather input from end users regarding the Order and Pickup system at Coffee Lalu. This feedback is then evaluated to determine whether the system meets customer expectations and quality standards, and if significant issues are identified, necessary improvements or fixes are implemented.

4.0 RESULTS AND DISCUSSION

The Order and Pickup system at Coffee Lalu has been successfully developed and implemented, fulfilling the objectives and requirements established during the project's initial phase. Its development involved comprehensive requirement analysis, detailed specification design, and implementation using web technologies such as PHP, HTML, CSS, and Java. Designed to replace the traditional manual ordering process, this web-based platform provides a more efficient and user-friendly experience for both customers and administrators. When compared with established beverage brands such as Tealive, Coolblog, and Starbucks, the Coffee Lalu system demonstrates competitive functionality tailored to its specific customer base. Similar to Tealive's mobile ordering feature and Starbucks' app with order tracking and reward integration, the system enables customers to browse the menu, place advance orders, and track their status in real time. Additional features include security measures such as user authentication, session management, and restricted access to prevent unauthorized use. User testing confirmed that the system significantly reduces waiting times and enhances overall service efficiency, demonstrating its effectiveness and alignment with project goals. Ultimately, the platform offers a practical solution to the limitations of the previous manual system, allowing customers to conveniently view the menu and place orders from anywhere."

The successful shift from manual to online ordering highlights the system's ability to improve order management at Coffee Lalu, fulfilling its intended objectives within the defined scope. However, despite these benefits, certain limitations must be addressed to ensure effective implementation and widespread user adoption. Among the key challenges are the need for comprehensive training to assist both employees and customers in adapting to the new system, which may require significant time and resources. Additionally, scalability is vital to manage high volumes of orders during peak periods, while strong security measures are necessary to safeguard against potential cyber threats. Equally important is maintaining a user-friendly interface to minimize frustration and encourage consistent usage, which calls for ongoing feedback collection and continuous system enhancement

5.0 CONCLUSIONS

The overall conclusion of the Order and Pickup system at Coffee Lalu highlights its contributions to convenience, efficiency, and customer satisfaction. The system has demonstrated its effectiveness in enhancing order management and serves as a comprehensive solution to the challenges of the traditional manual process. While the current implementation is highly useful, it still offers room for

future improvements and refinements. With ongoing enhancements, the system could eventually replace all manual processes entirely, offering even greater functionality and reliability. Ultimately, the Order and Pickup system at Coffee Lalu has proven to be a valuable platform that significantly improves operational efficiency while ensuring a better customer experience.

Author Contribution

Suhaiza: Conceptualization, Investigation, Methodology, Visualization, System Writing and editing. Wan Roslina: Investigation, Supervision, Writing and Editing. Nurul Haslinda and Azliza: Writing and Editing.

Conflict of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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