Purpose of a Web-based System: Enhancing Operational Efficiency for Catering Providers

Timothy Lai Jun Hong[1], Dr. Baharudin Osman[2]
[1]*School of Computing, University Utara Malaysia, Sintok, Malaysia*
Contact: timothy_lai_jun@soc.uum.edu.my
bahaosman@.uum.edu.my

Abstract— **The food and beverage industry is the most important cornerstone of the hotel industry. Currently, some food and beverage operators still rely on manual processes, including phone reservations, paper records, and offline payments. These traditional methods significantly reduce efficiency and are prone to human error, leading to data mismatches, layout conflicts, and an inability to effectively scale up operations. While various computerized solutions have been introduced, they frequently suffer from critical limitations. Previous studies have identified that many existing systems function as standalone desktop applications with restricted geographic accessibility, or as web systems that fail to integrate essential features such as secure payment gateways or real-time supply chain management. To address these operational gaps, this project proposes the development of a Web-based Management System for Catering Provider. The Study is employed by using agile methodology, utilizing iterative sprints to allow for continuous feedback and refinement through the development lifecycle. The system is using the Laravel PHP framework for the backend and MySQL for database management to ensuring a robust and secure foundation of system, while the frontend using Vue.js to deliver a responsive user experience across devices. The project results in a dual-interface platform. The Customer Portal empowers clients to browse categorized menus, customize orders, and uniquely, submit formal quotation requests, a feature that is frequently missing in standard e-commerce systems. It also facilitates secure transactions via an integrated online payment gateway. Simultaneously, the Administrative Backend centralizes business operations, providing tools for menu CRUD operations, a visual event calendar to prevent booking conflicts, and a delivery tracking module to manage logistics. Ultimately, this system contributes to the field by automating core business processes, minimizing manual administrative workload, and significantly enhancing customer accessibility through a modern, data-driven digital solution.**

Keywords: Catering Management System, Web-based Application, Hospitality Technology, Agile Methodology, Laravel PHP Framework, Vue.js, Business Process Automation, Online Ordering, Supply Chain Management, Customer Portal.

I. Introduction

Catering is a vital aspect of the hospitality industry, servicing events ranging from corporate functions to social gatherings. Despite the demand for high-quality service, many catering operators struggle with complex needs such as menu customization, procurement, and delivery scheduling. Historically, these operations were managed using manual procedures like phone calls and paper records. While functional, these methods are prone to errors and inefficiencies, particularly as a business grows.

Recent studies have highlighted the need for technological adoption. Dharmarathne [1] developed a standalone system to replace manual records, while Shaikh et al. [2] proposed an internet-based system. However, these solutions have limitations: standalone apps lack remote accessibility, and some web systems rely solely on Cash on Delivery (COD), which is inconvenient for modern consumers.

This project aims to overcome these flaws by developing a holistic **Web-based Management System**. The system is designed to handle the entire ordering process for clients while providing providers with robust backend tools for effective management.

II. Methodology

This project utilizes the **Agile methodology**. Unlike the sequential Waterfall model, Agile is iterative and flexible, making it suitable for projects where requirements may evolve. The development is broken down into manageable cycles called "sprints".

- **Phase 1: Planning (Sprint 0):** Involves establishing the high-level vision and conducting a detailed requirement analysis to prioritize features like the ordering dashboard and payment gateway.
- **Phase 2: Design:** An ongoing process where UI/UX wireframes and database schemas are created at the start of each sprint.
- **Phase 3: Development:** The system is built incrementally. Early sprints focus on foundational features like menu display, while later sprints integrate the shopping cart and event scheduling modules.
- **Phase 4: Testing:** Testing is integrated throughout the process. Unit tests are performed during sprints, followed by user acceptance testing (UAT) to ensure the system is functional and bug-free.

III. SYSTEM DESCRIPTION

The proposed solution comprises three significant functional components: the **Customer Interface**, the **Catering Provider Backend**, and the **System Administration Module**.

- **Customer Interface:** This module allows clients to browse categorized menus, request quotations, place orders, and make payments via a secure online gateway. It specifically addresses the accessibility gap found in previous standalone systems by enabling remote interaction.
- **Catering Provider Backend:** This secure portal provides catering providers with essential operational tools. Features include a dashboard for menu creation and editing, a centralized event calendar for scheduling, and a delivery tracking function. This component centralizes management to minimize human error.
- **System Administration:** This role is responsible for data integrity, system maintenance, and deployment. Unlike the business-focused provider backend, this role is technical, focusing on tasks such as database backups and applying software updates rather than daily business operations.

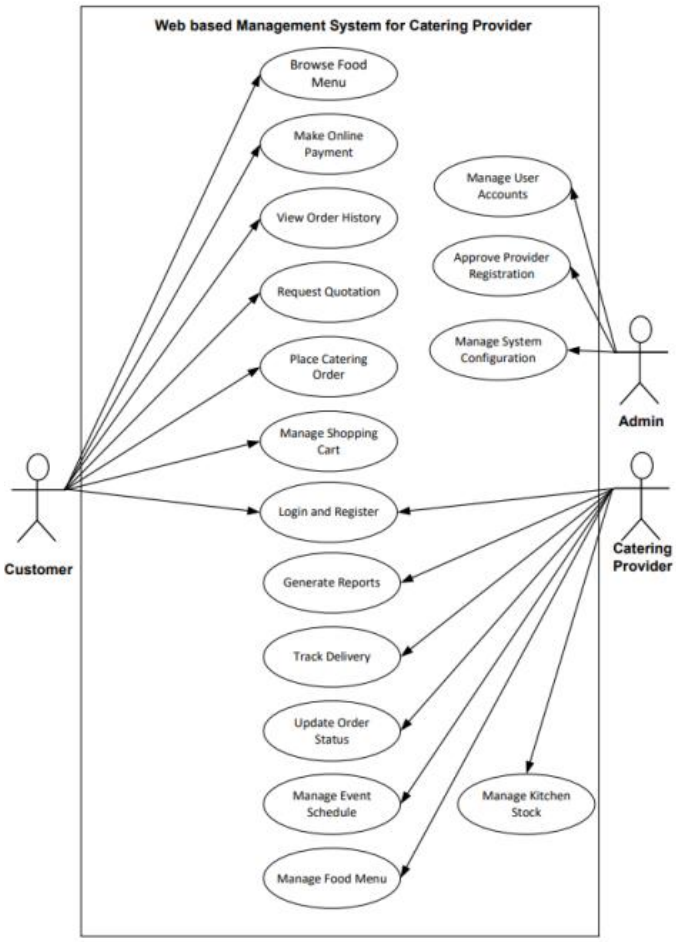


Fig. 1 Use Case Diagram of the proposed Web-based Catering Management System

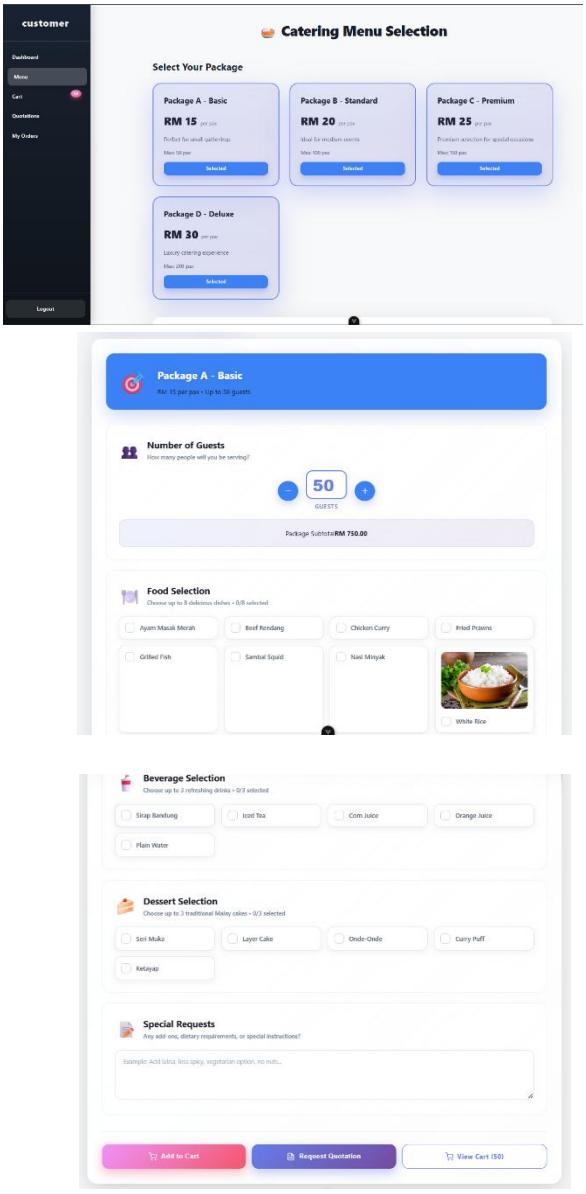


Fig. 2 Customer Ordering Interface

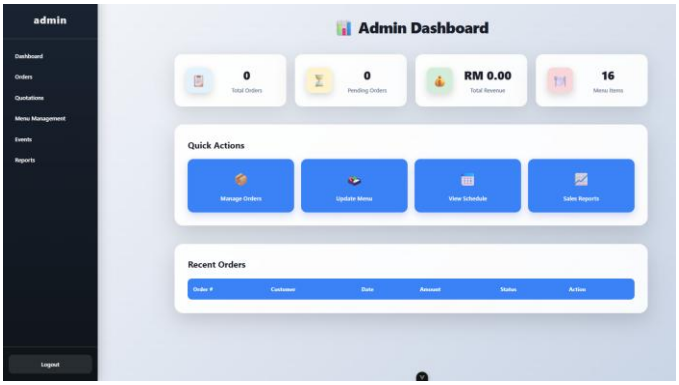


Fig. 3 Catering provider dashboard

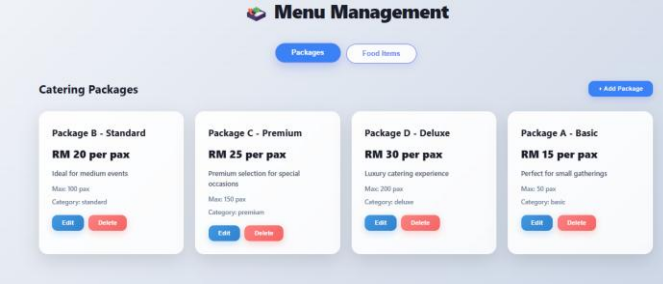


Fig. 4 Catering provider menu management module

IV. Conclusion

The Web-based Management System for Catering Provider offers an end-to-end modern solution that addresses significant operational gaps in the industry. For customers, it offers convenience through easy online ordering and digital payments. For business owners, it streamlines processes by managing event calendars and deliveries in a centralized setting, thereby minimizing human error and improving work efficiency.

References

[1] A. Dharmarathne, "Catering Service & Reception Hall Management System for Mayadunne Catering Service," 2017. [Online]. Available: https://dl.ucsc.cmb.ac.lk/jspui/bitstream/123456789/4055/1/1418361.pdf

[2] A. Shaikh, A. Singh, G. Walawalkar, and F. Kapasi, "Catering management," *International Research Journal of Engineering and Technology (IRJET)*, vol. 6, no. 1, pp. 1504-1506, 2019.

[3] E. Suhayati, W. Novianti, and A. N. Zakiah, "Website-based catering service information system," *Journal of Engineering Science and Technology*, vol. 17, no. 6, pp. 3956-3972, 2023.

[4] X. Li, "Innovation and challenge of catering management in the digital age," *Modern Economics & Management Forum*, vol. 4, no. 4, p. 88, 2023.