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| **The Proposed Business Case** | **PRJ566NBB – Team 06** |
| **Restaurant Management Application – ChowHub** | **2025-01-21** |

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# Overview & Background

## Overview

In today's highly competitive restaurant industry, simply serving great food is no longer enough to stand out. Operational efficiency and customer satisfaction are essential for success. The proposed Restaurant Management Application, ChowHub, is designed to streamline restaurant operations, enhance the overall customer experience, and provide real-time management insights. ChowHub offers key features such as an intuitive user interface for order placement, a comprehensive dashboard for managing the menu, and an ingredient tracking system to prevent shortages of essential ingredients. By integrating these features into a single platform, ChowHub ensures smooth and efficient operations, from order placement to backend management, providing restaurant owners with the tools they need to optimize performance and exceed customer expectations.

## Background

The restaurant industry faces numerous challenges in maintaining smooth operations while meeting growing customer expectations. As restaurants strive to keep pace with a fast-moving environment, managing daily operations, inventory, and staffing has become increasingly complex. Traditional methods of tracking inventory and handling orders often lead to inefficiencies, waste, and operational bottlenecks. Additionally, the use of disparate systems for POS, inventory management, and supplier coordination creates fragmented workflows, resulting in data inconsistencies that can disrupt service and hinder productivity.

In response to these challenges, the development of ChowHub—a centralized, integrated solution—becomes essential. By addressing key operational pain points, ChowHub is designed to improve both operational efficiency and customer service. With features that provide real-time insights and streamline backend processes, ChowHub offers a forward-thinking approach to restaurant management, creating a foundation for enhanced productivity, reduced waste, and scalability.

ChowHub is specifically designed to meet the needs of small independent restaurants. These businesses often face resource constraints and rely on efficient systems to maintain profitability while delivering exceptional service. By focusing on this segment, ChowHub is uniquely positioned to deliver high-impact solutions that enable small business owners to overcome operational challenges and achieve sustainable growth.

# The Need & Objectives

## Needs

The restaurant industry faces significant challenges in managing inventory, supplier relationships, and menu operations. There is a clear need for a web application that integrates a reliable POS system with real-time ingredient tracking to prevent issues such as ingredient shortages, overstocking, and waste. By addressing these challenges, ChowHub ensures that restaurants can avoid order cancellations or delays, ultimately enhancing customer satisfaction and boosting overall revenue.

ChowHub provides substantial value to restaurant owners and managers by addressing critical operational pain points and delivering measurable benefits. The app automates inventory management and tracks ingredient usage in real time, reducing waste and helping restaurants cut costs caused by overstocking or spoilage. Its seamless integration with existing POS systems eliminates the need for costly replacements while streamlining workflows from order placement to backend processes. Customizable low-inventory alerts and automated menu adjustments further prevent delays or canceled orders, directly improving customer satisfaction and loyalty. Additionally, its advanced analytics offer actionable insights, such as identifying top-performing menu items and peak sales times, enabling data-driven decisions to optimize offerings and increase profitability.

By simplifying tasks like ingredient reordering and payroll management, ChowHub saves valuable time for staff, allowing them to focus on enhancing the customer dining experience. These features collectively boost operational efficiency and contribute to the long-term success and scalability of restaurants.

ChowHub delivers measurable results by reducing waste through effective ingredient tracking, improving operational efficiency with streamlined inventory updates and supplier integration, and enhancing customer satisfaction with timely service and consistent food quality. Restaurants can achieve cost savings from reduced waste, increased productivity from automation, and higher customer retention driven by superior service quality.

## Objective

Our objective is to develop a web application designed to efficiently manage and track inventory, including ingredients and suppliers, tailored specifically for the restaurant industry. The application will track ingredients, monitor inventory levels, and identify ingredients that are running low based on menu offerings and expiry dates. By integrating with the client’s existing POS system, the platform will provide seamless tracking and management of ingredients in real-time. While initially focused on serving restaurant clients, the system will be adaptable to meet the needs of different clients as we expand our customer base. Ultimately, the goal is to ensure smooth inventory management and help restaurants optimize ingredient usage and ordering processes.

## Why you should choose us over our competators?

ChowHub offers several key features that distinguish it from competitors. Our integrated ingredient management system provides real-time tracking of ingredient stock levels and sends automated notifications when ingredients reach critical thresholds, prompting reordering before shortages occur. This system is seamlessly linked to the menu management feature, which automatically sets menu items to inactive if required ingredients are unavailable, reducing waste and preventing order delays. Additionally, ChowHub offers comprehensive sales analytics, giving valuable insights into menu item performance, which can help restaurant owners identify top-selling dishes and adjust inventory orders accordingly. With customizable settings, our platform allows users to tailor notifications and other operational features to fit specific business needs, making it adaptable to different restaurant types. These combined functionalities streamline operations, improve decision-making, and enhance overall efficiency, making ChowHub a superior choice for managing restaurant operations.

## Basic Features

* Ingredient Tracking:
  + Track ingredients used in each order, updating inventory automatically.
  + Provide a way to integrate with the client’s existing POS system, avoiding the need to replace it entirely.
* User Authentication:
  + A secure login page for management to access administrative features.
* Ingredient Management:
  + A dashboard displaying current inventory levels of ingredients.
  + Notifications for low inventory, based on thresholds set by management.
  + Ability to reorder ingredients directly from suppliers.
* Menu Management:
  + A page to view, customize, and manage menu items being offered.
  + Automatically set menu items to inactive if their required ingredients are unavailable.
* Employee Management:
  + Features to track employee details and manage payroll generation.
* Strong encryption standards:
* We employe a strong encryption standard so that if there were unauthorized access to sensitive data, they wouldn’t access the actual data.
* Have sensitive data accessible locally rather than off-site
  + This should help with ethical and privacy concerns as data on payroll and sales analytics could be stored on premises, in the restaurant, to minimize data risk.
  + This means that we would not be able to access the data the restaurant uses.
* Customizable Settings:
  + Options to adjust thresholds for low ingredient warnings.
  + Flexibility to configure other operational settings to suit business needs.
* Sales and Analysis:
  + Keep track of daily sales data.
  + Provide reports and analytics to identify best-selling menu items and overall performance.
  + Generate detailed sales reports categorized by date, time, or employee.
  + Include graphical representations (charts and graphs) of sales and inventory trends.
* Shift Management for Employees:
  + Allow managers to assign shifts and track employee attendance.
* Multi-Level User Roles:
  + Differentiate between administrators (full access), managers (limited access), and waitstaff (order tracking only).

# Why is this a substantial project that warrants to be a 2-semester project?

Our main objective is to make this web application intuitive and efficient, ensuring that restaurant administrators and staff can easily use its features to streamline operations.

This project could be challenging as it involves integrating multiple functionalities, such as ingredient tracking with automatic inventory updates, secure login for administrators, customizable low inventory notifications, supplier integration for reordering, employee payroll management, detailed sales analysis, and multi-level user roles.

We must also ensure data security and privacy by implementing secure login mechanisms, protecting sensitive data like employee payroll and inventory information, and following best practices for web application security.

Our work will go through several stages, such as the architecture stage, where the system and its features will be planned and designed; the prototyping stage, where UI/UX designs and initial functionality will be developed; and the implementation stage, where we will build the web application using modern full-stack web development techniques and frameworks.

Creating a reliable, scalable, and user-friendly application that integrates all these features while providing real-time functionality and insightful analytics will be a time-consuming task.

Additionally, we will need to research how to connect the system with existing POS systems to ensure smooth integration, provide up-to-date information on inventory and sales, and create advanced tools for displaying trends and analytics through user-friendly, interactive dashboards.

Therefore, this project presents substantial technical and design challenges, but with proper planning, teamwork, and consistent effort, it justifies being a 2-semester project.