|  |  |
| --- | --- |
| **The Proposed Business Case** | **PRJ566NBB - Team06** |
| **Restaurant Management Application - ChowHub** | **01.15.2025** |

**Team Members**

* Mostafa Hasanalipourshahrabadi (Team Leader) - 154581227
* Tingchen Tsao - 107253239
* Lily Huang - 180923211
* Furkan Bas - 121540215
* Saad Ghori - 155972227

# Overview & Background

## Overview

In today's competitive restaurant industry, simply serving delicious food is not enough to stand out. Efficiency in operations and customer satisfaction are vital to success. The proposed Restaurant Management Application, ChowHub, aims to streamline restaurant operations, enhance the customer experience, and provide real-time management insights. ChowHub includes key features such as a user-friendly interface for order placement, a comprehensive dashboard for menu management, and an ingredient tracking system to prevent the kitchen from running out of essential ingredients. By integrating these features into one platform, the application ensures smooth and efficient operations, covering everything from order placement to backend processes.

## Background

The restaurant industry faces numerous challenges in maintaining flawless operations while ensuring customer satisfaction. As restaurants struggle to keep up with the fast-paced environment and changing customer expectations, managing daily operations, inventory and staffing becomes increasingly complex. Traditional methods of tracking inventory and managing orders often lead to inefficiencies, waste and operational bottlenecks. Furthermore, relying on disparate systems for POS, inventory management and supplier coordination can lead to fragmented workflows and data inconsistencies.

Recognizing these challenges, the development of a centralized and integrated solution like ChowHub is crucial. By addressing the operational pain points specific to restaurants, ChowHub aims to bridge the gap between operational efficiency and superior customer service. With features designed to provide real time insights and streamline backend processes, ChowHub offers an innovative approach to restaurant management, setting a foundation for improved productivity and scalability.

# The Need & Objectives

## Needs

The current restaurant industry often faces challenges in managing inventory, supplier relationships, and menu operations. The restaurant industry needs a web application that integrates a proper POS system with real time ingredient tracking to avoid possible ingredient shortage, overstocking, and even waste. By doing this, we can avoid any orders being canceled or delayed, enhancing customer satisfaction and improving overall revenue.

## Objective

Our objective is to build a web application that can manage and track inventory and its suppliers. We are specifically focusing on building this for a restaurant, so it would be tracking ingredients, menu items, and the ingredients suppliers. This can be adjusted to a client's needs as we expand our clientele, but we will specifically focus on our restaurant client. This system should be able to track the ingredients in inventory, what ingredients are running low based on the dishes being offered and expiry and be a POS system or integrated into the client’s POS system to track the ingredients.

## Basic Features

* Ingredient Tracking:
  + Track ingredients used in each order, updating inventory automatically.
  + Provide an API endpoint to allow integration 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 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.
* 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 implement API endpoints for POS system integration, real-time data updates, and advanced reporting tools to display trends and analytics through 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.