UOP M1885

SOFTWARE ENGINEERING

Main Coursework

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# Contribution Table

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# 

# Problem Specification

### **Introduction**

#### 1.1 Purpose

*(Application name)* is an inventory and stock management application to allow staff to track their inventory timely and to be well-prepared for their stock preparation by monitoring product sales and count. Besides the staff view, the application is used for consumers’ order and loyalty system.

This Systems Requirement Specification report will describe the scope of what *(Application Name)* covers.

#### 1.2 Problem Statement

Bite&Delight is a food and beverage business whose staff and employeesrequire an application to track their inventory count because they have heard feedback from their loyal consumers that they frequently run out of their favorite ingredients for their sandwiches when ordering at the counter.

#### 1.3 Project Scope

With the dynamic realm of the food industry, it is pivotal for food enterprises to adeptly navigate challenges of continuous shift in customer preferences, innovation to carve their niche in the rapid marketplace. Our project aims to develop a comprehensive web application tailored to elevate customer engagement, business efficiency to drive sustainable business growth.

The application will integrate key features such as robust loyalty programme, advanced business analytics, smart inventory control management aimed at amplifying customer loyalty and optimizing business operations through innovation, efficiency and adaptability.

#### 1.4 Intended Audience

For our application, we are mainly targeting 2 groups of users –

1. Business Employees
   1. Benefits from this by being well-informed of stock numbers, allowing prompt replenishment of stock and availability where consumers need them & aiding in maximizing profits and customer satisfaction
   2. Visibility on business performance, trends and opportunities
2. Nutrient-Focused Consumers / Mindful Eaters
   1. Consumers with no prior experience to the application
   2. Enhancing the experiences and personalization of consumers who are keen on eating from the business

**1.5 Process used to elicit user requirements**

To obtain a comprehensive overview of user requirements, the software development team conducted a series of stakeholder interviews, customer feedback sessions and technology assessments. The primary findings of our activities are outlined in this summary:

1. **Technology Assessment**

**Objective:** Evaluate technologies such as RFID, IoT sensors for enhancing process efficiency

**Process:** Assessment of technology reports to analyse feasibility, cost-efficiency and integration plans to track inventory levels.

**User requirements:**

* RFID technology to monitor freshness and automated tracking of inventory availability
* Intuitive interface of web application that shows stock quantities and prompts automated alerts for low levels.

1. **Stakeholder Interviews**

**Objective:**

Understand strategic goals and key challenges faced by the food business

**Process:** Interview and dialogue sessions were conducted to focus on topics such as business growth objectives, current limitations, insights into customer behaviours and desired improvements.

**User requirements:**

* **Statistical & trend analysis :** Analytical dashboards that provide concurrent visibility of sales performance, customer behaviours, identify patterns in popular menu items that can provide actionable insights.
* **Predictive Modeling:** Project future demand and inventory needs based on historical data.

1. **Customer Feedback Sessions**

**Objective:** Improving customer relationship through personalised experience and unique product offerings.

**Process:** Gather insights of customer preferences, expectations and challenges faced through customer feedback sessions.

**User requirements:**

* A web-application for seamless ordering and customisation of menu based on dietary preferences
* Integration of loyalty programs with incentives and personalized offers
* Integration of nutrition calculator for better tracking of personal nutrition and dietary requirements

**1.6 Objectives**

Using the user requirements analyzed from the findings, the objective of developing “*Name of Application*” revolves around the following:

* **Enhance customer loyalty:**

Developing a seamless loyalty programme which rewards customers for frequent purchases encouraging them to return and repeat interaction with the business. Integrating personalized recommendations tailored to individual preferences makes customers feel valued and enhance their overall experience with the brand

* **Solidify business growth:**

Utilising business analytics to create visual dashboards that offer actionable insights into transaction statistics, customer behaviours and business performance. This will aid in uncovering unique selling propositions, helping business to build compelling brand strategies and strengthen their position distinctively from competitors.

* **Smart inventory management:**

Implement a streamlined stock management system where staff can track inventory levels. Automated alerts for low-level stocks and forecasted demand based on historical data will optimise ordering schedules to reduce potential wastage and ensure availability of main ingredients.

### **System Features**

#### 2.1 Functional Requirements

1. **Inventory Tracking**: The system should allow staff to track the amounts of ingredients available, and generate notification alerts when ingredients are running out of stocks.
2. **Order Tracking and Management**: Once the payment process is done by customers, staff should be allowed to view the order details and status of the order in an easily readable, graphical way. Staff should be allowed to mark an order as done and remove it from the active order list.
3. **Business Analysis:** The system should be able to collect and gain valuable insights into business sales and profit, popular menu items, opportunities to enhance customer experience.
4. **User Registration and Authentication**:
   * The Login page should validate the user credentials entered by the users.
   * The Sign Up page should allow non-existing users to register for an user account.
   * The Forget Password page should allow existing users to their login password.
5. **Menu Display**:
   1. System should be easy to navigate and display the menu items that are available, including descriptions and prices. The ordering menu should also highlight special promotion and featured items to attract customers’ attention.
   2. System should also indicate nutritional levels of promoted or recommended healthy meals
6. **Order Placement**: Customers should be allowed to choose the available food from the menu, add them to their order, and make changes to their order until they are ready for payment.
7. **Loyalty Programs**: The system should allow the customers to earn loyalty points for every order and redeem coupons.
8. **Administrative Controls**: The system should allow staff to manage menu items, prices and other parameters.

#### 2.2 Non-Functional Requirements (Constraints)

1. **Response Time**
   * System should be able to process our users’ requests in 3 seconds
   * A completed order should be sent into the database within 3 seconds
     1. After consumer places an order, order should be assigned a serial and saved in database
     2. Print receipts for collection and payment (order, serial no)
2. **Expansion of food menu and customers:** 
   * System should be able to handle the expansion in terms of customer’s volume, increasing data collection.
   * System should be able to capture the multiple selections or multiple orders in a single receipt.
   * For non-member ordering, their orders will also be added to the database for analysts.
3. **System Uptime:**
   * System should have an uptime of 99.5%.
4. **Usability:**
   * User-friendly interface that doesn’t require users to be trained.
   * Allow customers to place an order even without signing up for customer loyalty membership.
   * Minimal cluttering and more visual cues.
   * Error messages to guide users on how to proceed thereafter.
   * System should be able to send out messages to staff when the inventory goes under 50%.
5. **Scalability:** 
   * System must be able to accommodate a larger volumes of users/data, potentially during peak hours such as lunch or dinner time.
   * The system should be able to do simple analytics based on the transaction record.
6. **Security:** 
   * System should have a password hashing and salt method
   * System should have secure login authentication.