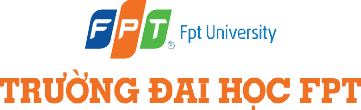
# 



BAKERY MANAGEMENT SYSTEM

The system supports the customers ordering cake and more!

|  |  |
| --- | --- |
| Project Code |  |
| Document Code |  |
| Group Member | Nguyen Tang Tai Phat – SE184119 (Leader)  Luu The Vinh - SE181740  Le Duc Loc - SE181673  Nguyen Nhu Tai - 173015  Nguyen Trung Kien - 181674  Thai Binh Duong - SE182174  Tran Anh Toan – SE173384 |
| Supervisor | ThS.Trinh Huy Hiep |

Ho Chi Minh City, Summer 2024

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# 1. INTRODUCTION

Bakery businesses often face significant challenges in managing their day-to-day operations. These include inefficient inventory management, time-consuming order processing, and inadequate customer relationship management. Currently, many bakeries rely on manual processes or disparate systems to handle tasks such as tracking inventory levels, processing customer orders, and managing financial transactions. These inefficiencies not only reduce operational effectiveness but also affect the bakery’s ability to compete in a market where customer satisfaction and efficient service are crucial. A comprehensive Bakery Management System (BMS) is needed to address these issues by integrating and automating key aspects of bakery operations. The BMS will streamline inventory management, order processing, customer relationship management, and financial tracking. This system aims to enhance operational efficiency, reduce waste, improve customer satisfaction, and ultimately increase profitability. By addressing these operational challenges, the bakery can focus on delivering high-quality products and exceptional customer experiences.

## 1.1. Purpose

The purpose of a bakery system management is to streamline and optimize the various processes involved in the operation of a bakery. This system aims to enhance efficiency, improve customer service, and ensure effective resource utilization.

## 1.2. Scope

|  |  |  |  |
| --- | --- | --- | --- |
| Feature | Release 1 | Release 2 | Release 3 |
| FE-1, Order and Payment Processing | Users can order and pay for bakery items from the cafeteria menu for pickup or delivery. Payment by cash or credit card. | Integration with payment gateways for online payments. | Loyalty program integration for customer rewards. |
| FE-2, Menu Management | Admins can create, view, modify, and delete cafeteria menus. | Addition of daily specials and customizable meal options. | Integration with third-party recipe databases. |
| FE-3, Customer Accounts | Users can create and manage accounts to store preferences and order history. | Loyalty program integration for customer rewards. | Enhanced account features and personalized recommendations. |
| FE-4, Basic Reporting | Basic reporting capabilities provide insights into sales trends and popular menu items. | Advanced reporting and analytics for detailed insights. | Predictive analytics for inventory management. |
| FE-5, Multi-Platform Access | Access through corporate intranet, smartphones, tablets, and external internet access for authorized employees. | Development and launch of mobile applications for iOS and Android devices. | Enhancements and updates to mobile apps, including support for additional features. |

## 1.3. Stakeholder Profile

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Stakeholder | Major Value | Attitudes | Major Interests | Constraints |
| Bakery Owner/  Manager | Streamlined bakery operations; increased efficiency and profitability | Open to innovation, but cautious about disruptions to existing workflows | Cost-effectiveness; improved inventory management; enhanced customer service | Limited budget for implementation; concerns about staff training and adoption |
| Bakery Staff | Simplified work processes; reduced manual tasks | Open to change, but concerned about job security and workload implications | Job satisfaction; efficient use of time and resources | Training and support needed for transitioning to the new system; potential resistance to technology adoption |
| Customers | Expanded product offerings; convenience | Excited about new offerings, but may have concerns about pricing and quality | Variety of bakery items; ease of ordering and payment | Accessibility issues for customers without internet or mobile devices; concerns about privacy and security of personal information |
| Suppliers | Increased business opportunities; streamlined transactions | Supportive of initiatives that improve efficiency and communication with the bakery | Timely payments; clear order specifications | Integration challenges with existing supplier systems; potential resistance to changes in ordering and invoicing processes |
| IT Department | Enhanced system performance and security | Supportive of technology upgrades, but cautious about system compatibility and maintenance | Scalability; data integration with existing systems | Limited resources for system implementation and maintenance; concerns about data security and compliance with regulations |

## 1.4. Project Priorities

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dimension | Constraint | Driver | Degree of Freedom | Dimension |
| Features | All features scheduled for release 1.0 must be fully operational | Fulfillment of bakery operational needs and customer requirements | Flexibility in prioritizing features based on criticality and resource availability | Features |
| Quality | 95% of user acceptance tests must pass; all security tests must pass | Ensuring reliability, usability, and security of the BMS | Margin for addressing any issues identified during testing; continuous improvement | Quality |
| Schedule | Release 1 planned to be available by end of Q1 of next year, release 2 by end of Q2; overrun of up to 2 weeks acceptable without sponsor review | Timely delivery to meet bakery's operational needs and market demands | Buffer for unexpected delays or challenges; proactive monitoring and mitigation strategies | Schedule |
| Cost | Budget overrun up to 15% acceptable without sponsor review | Cost-effectiveness and financial viability | Contingency measures to manage unforeseen expenses; optimization of resource allocation | Cost |
| Staff | Team size is half-time project manager, half-time BA, 3 developers, and 1 tester; additional developer and half-time tester available if necessary | Adequate resource allocation and skill set diversity for project execution | Flexibility to scale team based on project requirements and workload fluctuations | Staff |

## 1.5. Overview

Bakery businesses often encounter challenges in managing daily operations, such as inefficient inventory management, time-consuming order processing, and inadequate customer relationship management. Many bakeries still use manual processes or disparate systems for tasks like tracking inventory, processing orders, and managing finances. These inefficiencies hinder operational effectiveness and competitiveness, affecting customer satisfaction and service efficiency. A comprehensive Bakery Management System (BMS) is proposed to address these issues by integrating and automating essential operations. The BMS will streamline inventory management, order processing, customer relationship management, and financial tracking, enhancing operational efficiency, reducing waste, improving customer satisfaction, and increasing profitability. This system will enable bakeries to focus on delivering high-quality products and exceptional customer experiences.

# 2. OVERALL DESCRIPTION

## 2.1. Product Overview

A **Bakery Management System (BMS)** is a software solution designed to streamline and automate all aspects of running your bakery, from ingredient control to customer service. Imagine a system that helps you manage inventory, create baking schedules, process sales, and analyse data.

## 2.2. Business Rules

|  |  |
| --- | --- |
| **ID** | **Rule Definition** |
| |  | | --- | | BR-01 |  |  | | --- | |  | | Some features such as viewing order history and browsing the product catalog should be available even without an internet connection. |
| |  | | --- | | BR-02 |  |  | | --- | |  | | Customers must provide valid payment information at the time of order placement.   |  | | --- | |  | |
| |  | | --- | | BR-03 |  |  | | --- | |  | | Orders cannot be cancelled or modified once they reach the "Baking" status.   |  | | --- | |  | |
| |  | | --- | | BR-04 |  |  | | --- | |  | | Inventory levels must be updated in real-time as orders are placed and processed   |  | | --- | |  | |
| |  | | --- | | BR-05 |  |  | | --- | |  | | Discount codes must be applied at the time of checkout, and only one discount code can be used per order.   |  | | --- | |  | |
| |  | | --- | | BR-06 |  |  | | --- | |  | | Refunds are only available for orders that have not yet been started ("Pending" status).   |  | | --- | |  | |
| |  | | --- | | BR-07 |  |  | | --- | |  | | Delivery options must be chosen at the time of order placement, with delivery times being estimated and not guaranteed.   |  | | --- | |  | |
| |  | | --- | | BR-08 |  |  | | --- | |  | | Customers have the right to request deletion of their personal data from the system in compliance with data protection regulations. |

# 3. FUNCTIONAL REQUIREMENT

## 3.1. Use Case Diagram

A diagram of a bakery management system

Description automatically generated

Full Resolution: https://drive.google.com/file/d/1oWOwajUPNKhp\_Ss\_NY-93UNa-7qRLXFg/view

## 3.2. Use Case List

|  |  |  |
| --- | --- | --- |
| ID | Usecase | Primary Actor |
| UC-01 | Sign In | Guest |
| UC-02 | Sign Up | Guest |
| UC-03 | View Near-Expired Food list | Guest |
| UC-04 | View Near-expired Food Detail | Guest |
| UC-05 | Search near-Expired Foods | Guest |
| UC-06 | Add Food To Cart | Guest |
| UC-07 | View Cart | Customer |
| UC-08 | Remove Item(s) | Customer |
| UC-09 | Check Out | Customer |
| UC-10 | View Order List | Customer |
| UC-11 | View Order Detail | Customer |
| UC-12 | Cancel Order | Customer |
| UC-13 | Refund | Customer |
| UC-14 | Contact via Built-in Chat System | Customer |
| UC-15 | Calling | Customer |
| UC-16 | View Profile | Customer |
| UC-17 | Edit Profile | Customer |
| UC-18 | View Accounts List | Admin |
| UC-19 | View Accounts Detail | Admin |
| UC-20 | Create Accounts | Admin |
| UC-21 | Modify Accounts | Admin |
| UC-22 | Disable Account | Admin |
| UC-23 | Remove Sale Product | Admin |
| UC-24 | Modify Sale Product | Admin |
| UC-25 | Verify New Sale Request | Admin |
| UC-26 | View own Sale Request | Distributor |
| UC-27 | Create new Sale Product | Distributor |
| UC-28 | Modify own Sale Product | Distributor |
| UC-29 | Delete own Sale Product | Distributor |
| UC-30 | View Related Order List | Distributor |
| UC-31 | View Related Order Detail | Distributor |

## 3.3. Use Case Detail

### UC-01: Sign In

|  |  |  |  |
| --- | --- | --- | --- |
| **ID and Name:** | **UC-01: Sign In** | | |
| Created By: |  | Date Created: |  |
| Primary Actor: |  | Secondary Actors: |  |
| Priority: |  | Frequency of Use: |  |
| Trigger: |  | | |
| Description: |  | | |
| Preconditions: |  | | |
| Post-conditions: |  | | |
| Normal Flow: |  | | |
| Alternative Flow: |  | | |
| Exceptions: |  | | |
| Business Rules: |  | | |
| Assumptions: |  | | |

# 4. Non-Functional Requirement

**4.1. Usability**

- All text, messages should be written in English.

- The mobile app Interface should follow the Figma prototypes’ design.

- Each perspective of the app must load within 2 seconds.

- The user doesn’t need specialized skills to use the app.

- The error rate of users submitting their payment details at the checkout page mustn’t exceed 10 percent

- The app can be downloaded and used as long as there is internet connection.

- The user should be able to understand all the functions within 1hour of self-experiencing.

**4.2. Reliability**

- The availability of the system is over 85%.

- Mean Time Between Failures (MTBF) should be more than 125 hours.

- Mean Time To Repair (MTTR) should be less than 12 hours .

- Precision in the system’s output must be 100%.

- Response time for a transaction must be 5 seconds or less

- Capacity for the number of users the system can accommodate is at least 500 users.

- Resource utilization, such as memory, disk, communications, and so forth must be smoothie and with minimal error.

**4.3. Performance**

- System should return result for each request within 5 seconds

- Processing time is from 03 to 05 seconds for each frame.

# 5. Database

### 5.1. ERD

A diagram of a computer

Description automatically generated

### 5.2. Relational Schema

*A diagram of a product

Description automatically generated*