Report On

Canteen Meal Ordering System

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Overview:

This report details the planning, execution, and management of the Canteen Meal Ordering System project. It focuses on business objectives, functional and non-functional requirements, performance metrics, and expected outcomes, ensuring efficient project delivery and alignment with organizational goals.

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1. INTRODUCTION :

The canteen industry plays a crucial role in providing food services to employees in workplaces, students in educational institutions, and personnel in various other organizational settings. A well-managed canteen ensures timely meal services, cost-effective operations, and enhanced customer satisfaction. It also plays a vital role in promoting workplace productivity by reducing the time spent on food procurement and ensuring access to nutritious meals.

Despite its significance, many canteens still rely on traditional manual processes, leading to inefficiencies such as long queues, inaccurate order handling, and food wastage. The growing demand for seamless and efficient food services has highlighted the need for modern, technology-driven solutions to streamline operations and enhance the overall dining experience.

Purpose of the Report

This report aims to analyze the inefficiencies in the current canteen system and explore the potential of a digitized ordering solution to address these challenges. The primary objectives of this study include:

- Identifying operational bottlenecks that affect service speed, food quality, and customer experience.
- Examining the impact of manual ordering and payment systems on efficiency and waste management.
- Proposing a digital ordering system that integrates features such as online pre-ordering, automated payment processing, real-time inventory tracking, and data analytics.
- Evaluating the benefits of digital transformation in canteen management, including enhanced productivity, reduced food wastage, cost optimization, and improved user satisfaction.

By leveraging technology, canteens can transition from outdated manual workflows to a smarter, more efficient, and customer-centric model, ultimately contributing to a more sustainable and streamlined food service industry.

2. PROBLEM DEFINITION AND SOLUTION :

❖ **Challenges in the Existing Canteen System**

The traditional canteen system faces several operational inefficiencies that impact employee productivity, service quality, and overall satisfaction. The key challenges include:

- Long Waiting Times: Employees spend approximately 30-35 minutes in queues, reducing their break time and affecting workplace efficiency.
- Limited Meal Availability: Preferred meals often run out quickly due to poor inventory and demand forecasting, leaving employees with fewer choices.
- High Food Wastage: A lack of real-time demand tracking leads to excessive food preparation, increasing wastage and unnecessary costs.
- Absence of a Feedback Mechanism: No structured way exists for employees to provide feedback on food quality and service, limiting continuous improvement opportunities.

❖ **Proposed Solution Overview**

To address these challenges, a digitized canteen management system will be introduced with the following key features:

- Pre-Order and Delivery System: Employees can pre-order meals through a mobile or web app, eliminating the need to stand in queues. Additionally, an option for food delivery to workstations will be available.
- Automated Payment Integration: The system will link with the organization's payroll, allowing for seamless cashless transactions and automated deductions, reducing payment processing time.
- Dynamic Menu Updates and Demand Forecasting: A data-driven approach will enable real-time menu adjustments based on demand trends, seasonal preferences, and inventory levels.
- Real-Time Order Tracking: Employees can track their meal status, receive estimated delivery times, and get notified when their order is ready for pickup.
- Feedback and Quality Improvement: A built-in feedback mechanism will allow employees to rate meals and suggest improvements, helping the canteen enhance service quality over time.

By implementing this technology-driven solution, the canteen can significantly improve efficiency, reduce waste, and enhance the overall dining experience for employees.

3. STAKEHOLDERS & THEIR ROLES :

Actor	What they can do on the software created
Employees	1. Order Meal 2. Search Meal 3. Feedback 4. Track Order 5. Cancel order
Menu manager	1. Create, Edit, Delete menu 2. View orders 3. Confirm the order
Canteen Manager	1. Inventory
Meal Deliverer	1. Deliver the meal 2. Update delivery status
Payroll	1. Deduct the amount
Unilever Management	1. Fetch various reports
Chefs	1. Prepare the dishes based on orders received.
Vendors (Ingredient Suppliers)	1. Indirectly impacted by order predictions for better inventory planning

4. ADVANTAGES :

Advantages for the Canteen:

1. **Reduced Food Wastage:** Accurate demand forecasting ensures better inventory planning, reducing wastage of unsold food items.
2. **Cost Efficiency:** Lower operating costs due to improved inventory management and optimized resource allocation.
3. **Streamlined Operations:** Automated order processing and menu management reduce manual effort and errors.
4. **Improved Customer Insights:** Feedback collection and analytics provide valuable insights into employee preferences and satisfaction.
5. **Enhanced Productivity:** Faster service and reduced dependency on staff for food distribution and order tracking.
6. **Revenue Monitoring:** Daily sales and monthly earnings reports help in better financial planning and tracking performance.

Advantages for Employees:

1. **Time Efficiency :** Significant time savings as meals are pre-ordered and delivered directly to their desks.
2. **Convenience:** Easy access to the daily menu, the ability to customize orders, and hassle-free payment through payroll deductions.
3. **Improved Meal Availability:** Higher chances of getting preferred food items due to pre-ordering.
4. **Better Work Productivity:** Reduced lunchtime waiting improves focus and allows employees to make better use of their work hours.
5. **Feedback Opportunity:** Employees can share feedback on food quality and delivery, leading to better service.
6. **Healthier Choices:** Access to a regularly updated menu with potential options for healthier meals.

5. EXISTING SYSTEM ANALYSIS

Manual Process

The current system is fully manual, requiring employees to physically visit the canteen to order food.

Limitations

1. **No Online Ordering:** Employees cannot pre-order meals; they must queue in person to collect their food.
2. **Lack of Inventory Management:** There is no mechanism to forecast demand, leading to frequent stockouts of popular items and excessive food wastage.
3. **No Delivery Service:** Employees must leave their workstations to collect meals, wasting time and affecting productivity.
4. **No Feedback Mechanism:** Employees have no formal way to provide feedback on food quality or service.
5. **No Integration with Payroll:** Payment is not automated or integrated with salary deductions; employees likely pay manually.
6. **Limited Reporting and Analytics:** The system does not generate data-driven insights such as popular dishes, daily sales, or employee satisfaction.

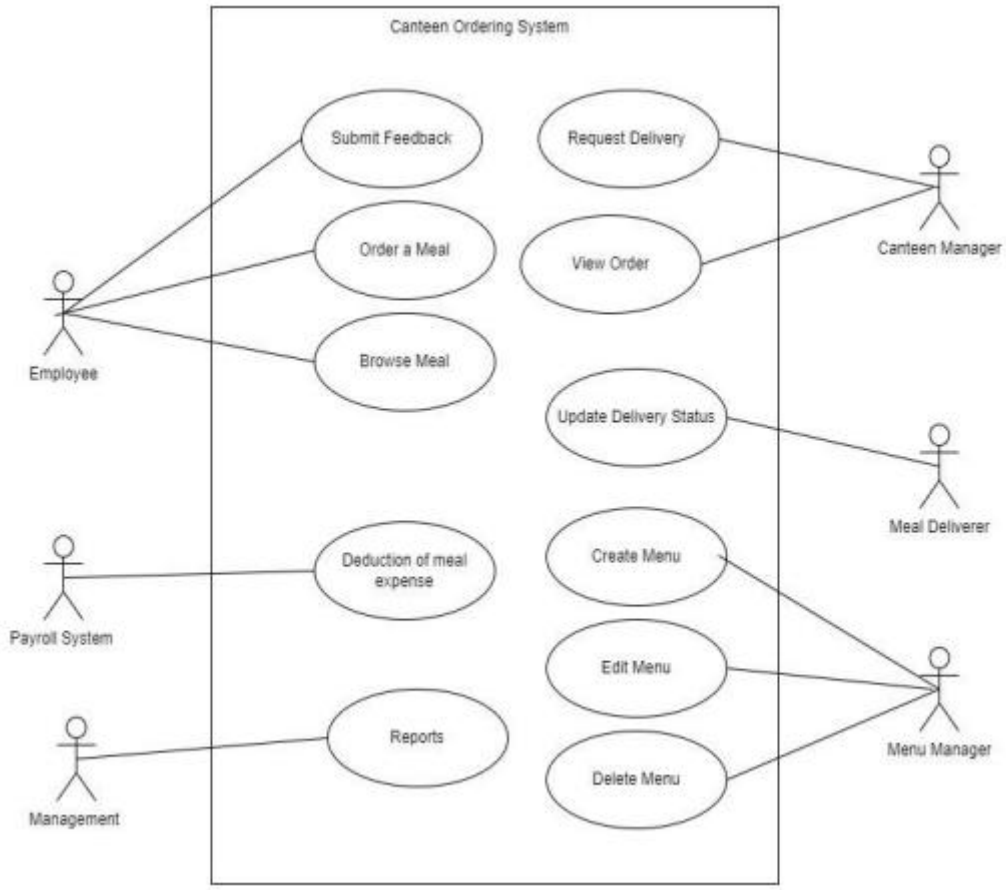
6. PROPOSED SYSTEM :

The proposed Canteen Ordering System is designed to streamline operations, enhance user satisfaction, and improve overall efficiency.

The key features of the system for the user are:

1. **User-Friendly Interface:** Intuitive and easy-to-navigate web interface with a responsive design. o Clear menus, buttons, and instructions to ensure a seamless user experience.
2. **Daily Menu Access:** Employees can view the updated daily menu, including available dishes, prices, and quantities.
3. **Pre-Ordering:** Option to pre-order meals before 11:00 AM to avoid queues and ensure availability of preferred dishes.
4. **Order Customization:** Employees can add or edit items in their order before checkout for flexibility.
5. **Delivery to Workstations:** Meals are delivered directly to employees' desks, saving time and effort.
6. **Feedback Submission:** Users can provide feedback on food quality and delivery service to improve future experiences.
7. **Payment Integration:** Seamless payment process through payroll deduction, eliminating the need for manual transactions.
8. **Timely Notifications:** Notifications for order confirmation, delivery status, and menu updates to keep users informed.
9. **Secure Login:** Role-based access with secure authentication to protect user information and ensure appropriate access levels.
10. **Employee Satisfaction Tracking:** The system collects feedback data to continuously improve service and monitor employee satisfaction.
11. **Mobile Accessibility:** Accessible on mobile devices, allowing employees to place and track orders on the go.

Scope using use case diagram (UML) :



7. IN SCOPE & OUT SCOPE :

IN SCOPE

1. Pre-Ordering

- Purpose: Ensures employees get their preferred meals while reducing peak-hour congestion.
- Usage: Employees can order up to 12 hours in advance, aiding kitchen demand planning.

2. Real-Time Menu Updates

- Purpose: Provides employees with accurate, updated food availability.
- Usage: The menu updates dynamically as items are added, sold out, or modified.

3. Delivery Scheduling

- Purpose: Allows employees to receive meals at convenient times.
- Usage: Employees select from predefined delivery slots for timely service.

4. Payment Integration

- Purpose: Automates payments by deducting meal costs from salaries.
- Usage: Ensures secure transactions via payroll integration, eliminating manual payments.

5. Feedback Mechanism

- Purpose: Improves service quality by gathering employee reviews.
- Usage: Employees rate meals and provide suggestions for enhancements.

6. Consolidated Order Management

- Purpose: Streamlines kitchen operations with a summarized order view.
- Usage: The Canteen Manager receives a daily consolidated order list for efficient meal preparation.

7. Performance Reports

- Purpose: Provides insights for better decision-making.
- Usage: Generates reports on sales, popular items, employee usage, and food wastage.

8. Role-Based Access Control

- Purpose: Ensures security by restricting access based on user roles.
- Usage: Different roles (Employee, Menu Manager, Canteen Manager, Delivery Personnel) have specific feature access.

9. Mobile Compatibility

- Purpose: Enables employees to use the system on-the-go.
- Usage: Employees can order, track meals, and receive notifications via mobile devices.

10. Order Forecasting

- Purpose: Optimizes inventory and reduces food waste.
- Usage: Uses historical data to predict demand for popular meals.

OUT SCOPE

1. Delivery of Meals Outside the Office

- The system will only support meal delivery within office premises; external deliveries are not included in this phase.

2. All Payment Modes Acceptance

- Currently, only salary deductions are supported. Additional payment methods (credit/debit cards, UPI, digital wallets) will be considered in Phase 2.

3. Order Limitations

- No restrictions on the number of orders per employee in this phase; limitations may be introduced later if required.

4. Order Timings Beyond Lunch

- The system is designed exclusively for lunch orders within specified hours. Breakfast, snacks, and dinner orders may be considered in future updates.

5. Nutritional or Dietary Customization

- Features such as dietary preferences, calorie tracking, and allergen alerts are not included in the initial release.

6. Mobile Application Development

- The system will be web-based; dedicated mobile applications for iOS and Android will be explored in future phases.

7. Advanced Order Forecasting

- AI-driven food trend predictions and personalized recommendations will be introduced in later updates.

8. Canteen Staff Management

- Managing staff shifts, schedules, or task assignments is not part of this phase.

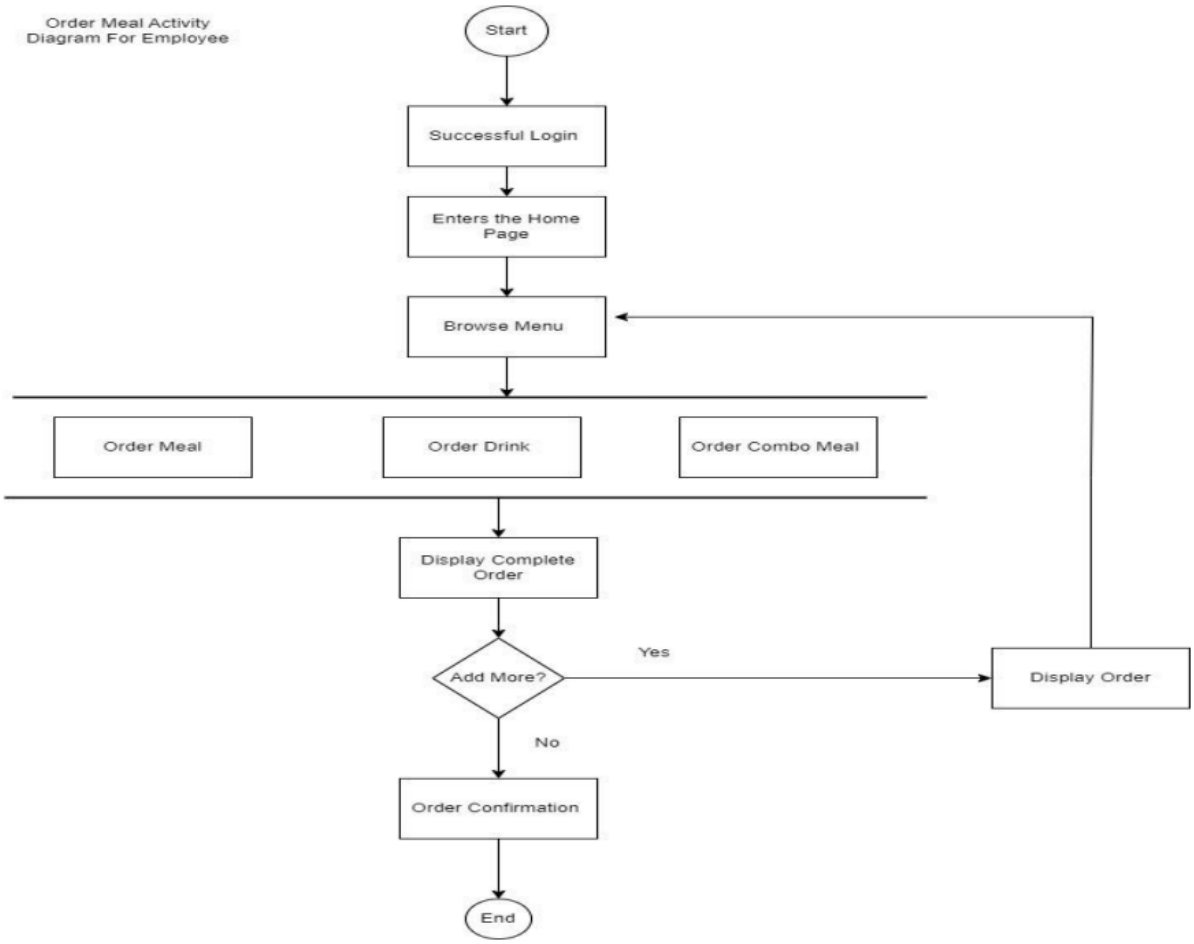
9. Real-time Delivery Tracking

- While delivery updates will be available, live tracking of delivery personnel is not included.

10. Integration with External Food Services

- The system will not integrate with external food vendors or third-party delivery services in this phase.

8. ACTIVITY DIAGRAM FOR THE SYSTEM:



9. SYSTEM REQUIREMENTS

1. Business Requirements

Objectives

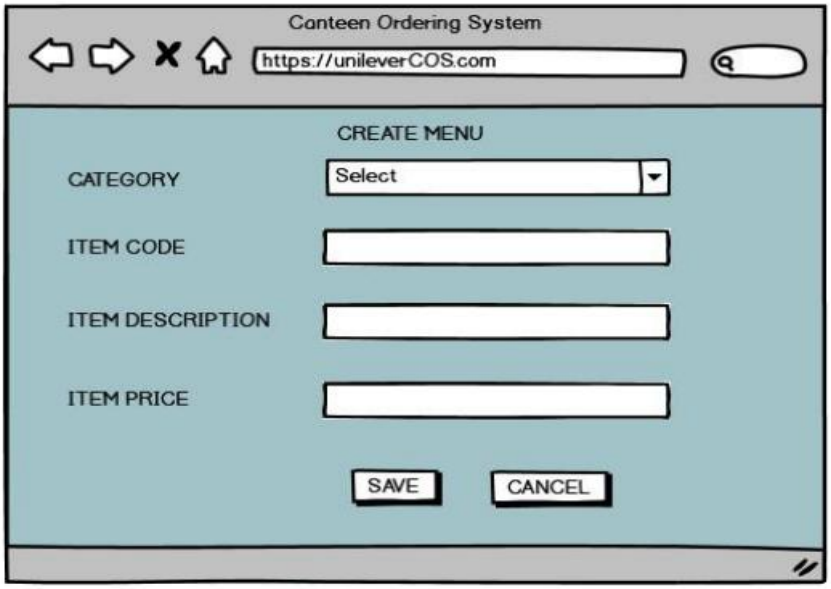
1. Reduce Food Wastage – Cut canteen food wastage by at least 30% within 6 months of launch.
    - Current Waste: 25%
    - Target Waste: Less than 15%
2. Lower Operating Costs – Reduce canteen operating expenses by 15% within 12 months.
3. Improve Employee Productivity – Increase effective work time by 30 minutes per employee per day within 3 months.
4. Optimize Manpower – Automate ordering and delivery to reduce canteen staff dependency.

2. Functional Requirements

1. Order a Meal – Employees can place meal orders.
2. Browse Menu – Employees can view meals categorized by type.
3. Provide Feedback – Employees can rate meals and delivery service.
4. Create Menu – The Canteen Manager can add new dishes to the daily menu.
5. Edit/Delete Menu – The Canteen Manager can update or remove menu items.
6. Request Delivery – Employees can request meal delivery to their workstation.
7. Update Delivery Status – Delivery personnel can mark orders as delivered.
8. Fetch Reports – Management can generate reports on sales, food preferences, employee feedback, and inventory usage.

3. Non-Functional Requirements

1. Scalability & Performance
    - The system should support up to 1,500 employees ordering simultaneously.
    - Web pages should be lightweight and load quickly.
2. Usability
    - The interface should be intuitive and easy to use so employees can place orders without confusion.
3. Technology & Environment
    - The system will be developed and maintained in Java for long-term stability and minimal maintenance.



10. PERFORMANCE METRICS & EXPECTED OUTCOMES :

1. Food Wastage Reduction

- Target: Reduce food wastage to below 15% within six months (from 25%).
- Measurement: Track monthly food disposal and adjust inventory based on demand trends.
- Outcome: Better forecasting and inventory control reduce unnecessary waste.

2. Operational Cost Savings

- Target: Reduce canteen operating costs by 15% within one year.
- Measurement: Compare pre- and post-launch expenses, focusing on food wastage, staffing, and automation benefits.
- Outcome: Lower overhead costs and improved efficiency.

3. Increased Productivity

- Target: Save 30 minutes per employee per day on meal ordering and waiting.
- Measurement: Track time spent on meal selection, payment, and waiting in queues.
- Outcome: Faster meal service improves employee work time.

4. Enhanced Customer Satisfaction

- Target: Continuously improve the meal experience based on feedback.
- Measurement: Analyze real-time feedback, meal ratings, and order trends.
- Outcome: Higher satisfaction through better meals and service quality.