Optimising College Canteen Management System
DT 204 - Social Complexity and Systems Thinking
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HungerBites

Introduction

Our project aimed to optimise the canteen management system by addressing key challenges including **long waiting times**, **payment discrepancies**, and the **lack of real-time information** about item availability.
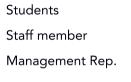
Key Stakeholders:

Students   Staff & Management

Methodology

Conducted interviews with stakeholders and rolled out surveys to gather insights. The insights were analysed to identify recurring themes and patterns. Further, requirements engineering techniques were employed to define system requirements. Utilised both system approaches and soft system methodology to develop conceptual models. Iteratively refined models based on stakeholder feedback. Lastly, translated the conceptual models into a user-friendly interface to facilitate problem-solving.
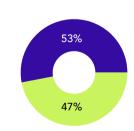
9 Students
1 Staff member
1 Management Rep.
Interviews

Survey
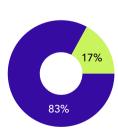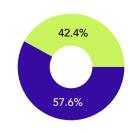**66** Responses from canteen users.

Data Analysis

Survey insights

53% / 47%
47% of respondents agreed that there were instances where they or someone else didn't pay for food and left the canteen.
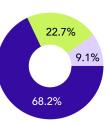
83% agreed to witness situation where randomness of order has led to delays and longer waiting queues.
17% / 83%

42.4% / 57.6%
57.6% of respondents acknowledged witnessing instances where individuals mistakenly took someone else's food.

68.2% of respondents admitted to leaving the canteen without making a purchase due to the unavailability of the desired item.
22.7% / 9.1% / 68.2%

Identified themes

Waiting Time
Long waiting times attributed to repeated staff reminders, customer order delays, and inefficient order processing.

Real-time Availability
Students struggle with accessing real-time item availability, leading to inconvenience. Waiting for staff updates or checking menu boards adds to the challenge.

Randomness of Order
Staff inconsistencies in order fulfilment lead to wrong items received by customers. During peak hours, managing multiple orders causes confusion and errors.

Payment discrepancies
Three identified sub themes were: **Absence of Refund**, **Scanner Accessibility** and **inefficiency and the non-payment issues**.
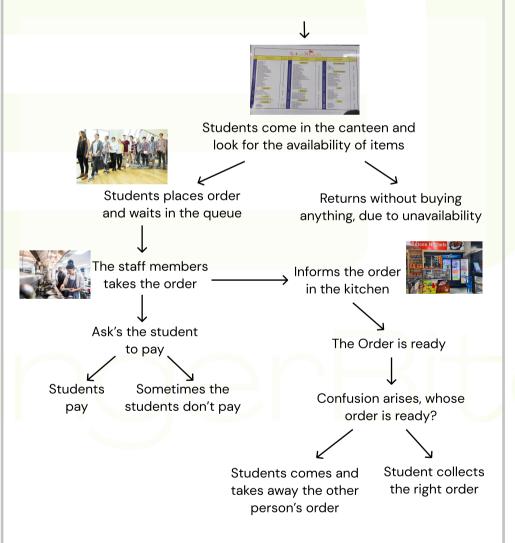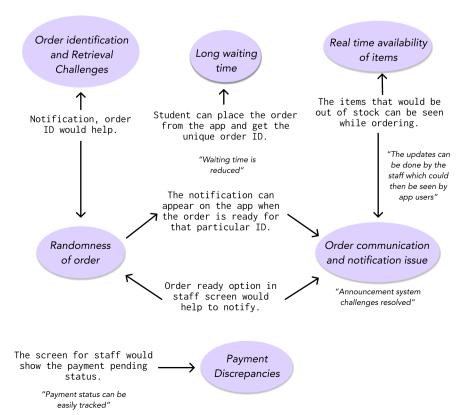
Announcement System Concerns
The problems that came up were around Order Identification and Retrieval Challenges and Order Communication and Notification issues.
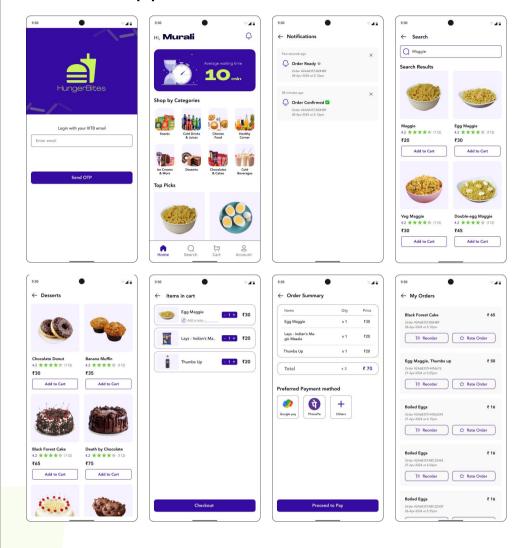
Soft System Methodology

Situation Definition

Students come in the canteen and look for the availability of items

Students places order and waits in the queue

Returns without buying anything, due to unavailability

The staff members takes the order → Informs the order in the kitchen

Ask's the student to pay

The Order is ready

Students pay / Sometimes the students don't pay

Confusion arises, whose order is ready?

Students comes and takes away the other person's order

Student collects the right order

Purposeful Action

Order identification and Retrieval Challenges

Long waiting time

Real time availability of items

Notification, order ID would help.

Student can place the order from the app and get the unique order ID.

The items that would be out of stock can be seen while ordering.

"Waiting time is reduced"

"The updates can be done by the staff which could then be seen by app users"

The notification can appear on the app when the order is ready for that particular ID.

Randomness of order

Order ready option in staff screen would help to notify.

Order communication and notification issue

"Announcement system challenges resolved"

The screen for staff would show the payment pending status.

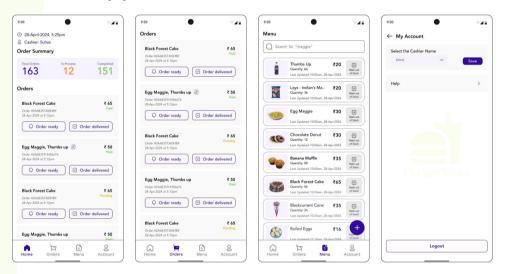Payment Discrepancies

"Payment status can be easily tracked"

User Interface Design

Student App Interface

Admin App Interface

Scan the QR code to experience the app!!
OR Click on the Student App or Admin App text under the QR code to experience the app.

Student App   Admin App

Conclusion

We present an innovative app solution designed by incorporating unique order IDs, real-time notifications, and comprehensive item visibility including availability status alongside staff-managed stock and order status updates to ensure efficient operations. Moreover, features like reorder, rating, and product suggestions enhance user engagement and satisfaction, reflecting the culmination of our interdisciplinary approach.

Team - 6
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