FACULTY OF COMPUTING
UTM Johor Bahru

SECD2613 - 03

SYSTEM ANALYSIS AND DESIGN

PROJECT PROPOSAL

KACANI ORDERING SYSTEM

LECTURER: DR. IQBAL TARIQ

SUBMISSION DATE:

TEAM MEMBERS :

Yee Ching Yang	A24CS0214
Rujithraa Nair	A24CS0181
Wan Nur Fathiya	A24CS0311
Quah Zhen Yee	A24CS5062
Liu Yue Hui	A24CS4019
Yoong Kah Quan	A24CS0215

Table of Contents

1.0 Introduction

University cafes play an important role in providing affordable and accessible food and beverages to students and staff. Many university cafes operate by using standard methods that handle orders, payments, and even store food supplies. However, as demand grows and expectations shift towards a more digital and seamless experience, current systems may face limitations in many aspects such as efficiency, usability, or scalability.

The current cafe operating system relies heavily on manual input and lacks features such as real-time store management, pre-ordering options, and many more. These shortcomings are more likely to cause delays, errors, and limited customer satisfaction.

This proposal outlines an improvised cafe operating system that is aimed at addressing challenges by introducing a more automated, user-friendly, and data-driven platform to improve overall operational efficiency and customer experience.

The project seeks to bridge the gap between the traditional approach towards cafeteria operations and the modern digital approach, creating a more satisfying and enjoyable cafe experience for all users.

2.0 Background Study

Cafes at universities are not merely food providers, but are very important centres of student and staff life, providing conveniently available food, snacks, and drinks during the day. These cafes in the vast majority of Malaysian colleges are run traditionally, when food orders are written down on a pad by the personnel at the counter, and cash payments are accepted. Although this system might have been functional in the past, it is becoming gradually overtaken by the contemporary need to be fast, convenient, and personal in service delivery.

The common scenario during lunch times or when students take breaks explains why it is becoming a big menace; students and employees line up in long lines at the counter waiting to either order or to pay. This is not only time-consuming but also needless stress and time-wasting, particularly when one has a tight timetable in school. To cafe employees, time pressure makes it difficult to fulfill large numbers of orders manually, which raises the risk of miscommunication, making a mistake in the order, or getting a negative customer experience.

On the contrary, the off-campus food and beverage (F&B) industry is quickly embracing digital innovations. QR code menus and contactless payments, mobile ordering, artificial intelligence-based recommendations, and many other areas of the restaurant industry are changing the way customers interact with cafes and restaurants. The same level of convenience and functionality is growing on campus and is being expected by students, one of the most tech-savvy population groups.

That is why university cafes have a definite need to modernize their operations. An online cafe ordering system that allows combining the prominent features like pre-ordering, real-time progress on orders, a variety of payment solutions, and automated inventory would not just fulfill the existing needs but also establish the basis of the operation that would be more scalable and future-proof. The need to integrate the digitalization demands of the current end-user with the outmoded manual systems is one of the factors that this project seeks to fill by providing an informative, easy-to-use, and seamless cafe management program.

3.0 Problem Statement

The fundamental issue on the ground today with most of the university cafes has to do with an ordering system that is manual, counter-based. This is a conventional model where consumers will have to be physically queuing to place their orders and waiting to get their food ready. This usually translates to a long queue, waiting time, and congested counters during peak hours, like between classes or lunchtime. This is not only inconvenient but also inefficient, especially for students and staff members who do not have a lot of time between their academic or professional activities.

The queue system brings about several operational problems to the cafe personnel as well. As different customers make verbal orders, one after the other, chances are high, that there will be a misunderstanding or the orders will not be filled correctly. Orders can be served down, the ingredients added and removed wrongly, and the wishes of the customers ignored. Customers might also get the wrong item in some instances and might be subject to complaints, or a refund, or the food might even be wasted. The whole procedure is very much based on memory and attentiveness in people, and they are prone to failure in case they are busy.

Moreover, the manual system restricts the cafe from scaling or being innovative. Pre-ordering is not supported, and customers, therefore, cannot place an order in advance and just take it at any convenient time. This rigidity in the working schedule not only adds to congestion but also minimizes the sales that would have been made by customers who have opted not to have meals because they are too busy. It is also challenging to allow cafes to provide customization of orders or loyalty schemes as well as feedback, all of which is becoming standard in the food industry.

4.0 Proposed Solution

To improve operational efficiency and enhance customer experience, we proposed implementing a cafe' operating system tailored to manage orders, inventory, and day-to-day transactions. This system will reduce manual errors, optimize stock control, and provide data-driven insights to support business growth. The solution will include the following features :

First Of all, KACANI ordering system will providing a order management which can accept ,modify and complete the customers easily.This feature allows staff to manage orders efficiently—from accepting new ones to modifying and completing them.For Example,the system will be receiving the orders and sending them to the cafe so that the cafe employees can monitoring the orders.Thus, It can reduces errors by making a wrong order, speeds up operation, and ensures a smoother service experience for both staff and customers.

Other than that, KACANI ordering system also has a Payment Gateway Integration .This allows customers to choose their preferred payment option from various payment options, including online transfers via e-wallets and Bank QR, or physical methods like credit cards, debit cards, and cash. This variety makes the checkout process faster, more convenient, and secure, catering to different customer preferences and ensuring a smooth transaction experience.

Last But Not Least, KACANI ordering system will be offering a Customer Feedback & Rating System. Customer will be asking to give some feedback when they finish their dining experience.This allows customers to rate their experience by giving ratings from the environment, the foods or the employees service or just leaving a feedback,these feedbacks will be valuable insights for the clients cafe and suggesting them the improvements for the cafe.This feature helps businesses identify strengths and areas to improve, leading to better service and stronger trust.

Feasibility Study

A feasibility study is an evaluation of a proposed project to see whether it's practical, affordable, and more likely to succeed. 4 types of feasibility studies were conducted to assess the practicality of implementing the cafe' operating system.

4.1 Technical Feasibility

Technical Factor	Description
Hardware Compatibility	The system requires standard computing equipment such as Point of Service terminals, receipt printers, and barcode scanners. Most hardware required should be compatible and supported by the operating system and device drivers used by the software.
Software Requirements	The cafe system software should include modules for order management, billing, inventory, and reporting. The compatibility of a software system should be able to be integrated with database systems and third-party systems.
Internet and Network Requirements	A reliable and fast internet connection is essential for cloud backup and software updates, and also to support real-time communication between kitchen display systems and payment counters.
Technical Support & Maintenance	The system should include access to vendor support for troubleshooting and updates. Regular maintenance ensures smooth operations and minimizes downtime.

Staff Familiarity & Training	The system should have an intuitive interface, and detailed manuals or tutorials should be available for onboarding new staff.

4.2 Operational Feasibility

Status: Feasible

Since the client has the necessary resources, staff skills, and infrastructure to support this project, the operational feasibility of implementing a cafe ordering system is considered beneficial.The workflow in the client's cafe could be adapting the new system with minimal disruption, and the staff that could adapt with the staff training adjusted by the new system. Standard operating procedure can be adjusted smoothly to incorporate the new system into the daily operation. Overall, the cafe is well-prepared to adopt the system effectively and sustain its use in regular business operations.

5.0 Objectives

We had set objectives to improve our client's experience, which had been mentioned above:

1. To simplify the order-taking process and reduce human error, such as taking the wrong order.
2. To manage and track the ingredients with real-time updates and low-stock alerts so that the client could restock in time.
3. To allow customers to customize their orders based on preferences.
4. To provide multiple payment options (eWallets, cards, cash) for customers.
5. To collect feedback and ratings from the customers so that the client could improve their service.

6.0 Scope of the Project

1) **User Profile Module**

- Develop a module that allows users to register and log in to access personalized features.
- Users are able to change their information (username, email, phone number, password) in this module.
- Registered users can view their order history, including items, date, and amount.
- Users could also track their order here.
- There is a loyalty points and user levels system. User will earn points for every spending (e.g., Spent RM 1 for 1 point). Based on the points, users could have levels(Bronze, Silver, Gold) . Each level has benefits.

2) Customer Ordering System

- The customer can browse the digital menu provided by the system, menu would is categorized (e.g., Meal, Drinks, Appetizers, Dessert).
- Customers are able to customize their orders (e.g., 'less sugar', 'more rice').
- There is a Pre-order feature, which means customers can choose a time for picking up their orders.
- Our system also provides real-time order status tracking (Preparing, Ready, Completed). Customers could track their order status, which brings convenience to them.

3) Order Management Module

- This module is designed for the cafe's staff.
- This module could display the live queue for order processing with real-time updates.
- It also provides a separate view for immediate and scheduled (pre-order) orders, which can help staff to plan their time for complete customer orders wisely.
- Staff can update order status and mark items as completed or canceled in this module to prevent mistakes or errors from happening.

4) Inventory Management System

- Staff and Admin have permission to add, remove, and edit inventory items.
- The system will automatically update stock levels within every order, and it will also have real-time low stock alerts. When there is a low stock, it will notify the staff or admin.
- The Inventory management system is also able to generate monthly restock and usage reports. This could help staff manage and analyze their inventory.

5) Payment Integration System

- The system allows the cafe to accept multiple payment methods including:
  -E-wallets (e.g. Touch N Go, Shoppe Pay, Boost)

-Online transfer (FPX)
-Credit and Debit cards
-Cash

- After the payment or transaction is done, a digital receipt will be generated.

6) Customer Feedback System

- The customer feedback system allows customers to rate their experience on the cafe.
- Customers can give feedback, including satisfaction ratings and optional suggestions.
- Admin can view and analyze feedback for improvement.

7) Admin Dashboard

- In this module, the admin can view the sales analytics (daily, weekly, monthly) that are produced by the system.
- The system would display the top-selling and least-selling items that are available in the menu.
- Based on those sales reports, the admin can use the data for analysis and further action.

8) Staff Role & User Access Management

- There are two user roles in the management system:
  1) Admin - has full system access
  2) Staff - view and update orders, manage orders and payments
- They need to log in and verify their identity by entering their ID number and password before they can access the system.

7.0 Project Planning

7.1 Human Resource

Name	Role	Main Responsibilities
Yee Ching Yang	System Developer	● Implements server-side logic and manages database connection and logic. ● Create wireframes and prototypes. ● Collaborate with other developers to ensure system functionality.
Rujithraa Nair	System Analyst	● Collect and gather user requirements. ● Prepares problem statements and use cases. ● Act as a middle between technical teams and the client, and validates functional requirements
Wan Nur Fathiya	UI/UX Designer	● Designs the user interface. ● Creates mockups, wireframes, and interactive prototypes using the tool (Figma). ● Ensures layout consistency, mobile responsiveness, and accessibility.
Quah Zhen Yee	Project Manager	● Leads and oversees the overall project progress, managing timeline and milestone tracking. ● Coordinates communication between the client and team to ensure the system aligns with client expectations.

		• Provides guidance and resolves conflicts within the team.
Liu Yue Hui	System Administrator	• Manage the system installation and maintenance. • Provide technical assistance and support when clients need. • Monitors system stability and performs backup operations.
Yoong Kah Quan	Tester & Documenter	• Works with developers to verify bug fixes and re-test. • Ensures the final product meets quality standards and client requirements • Giving feedback and suggestions on system performance and usability.

8.0 WBS

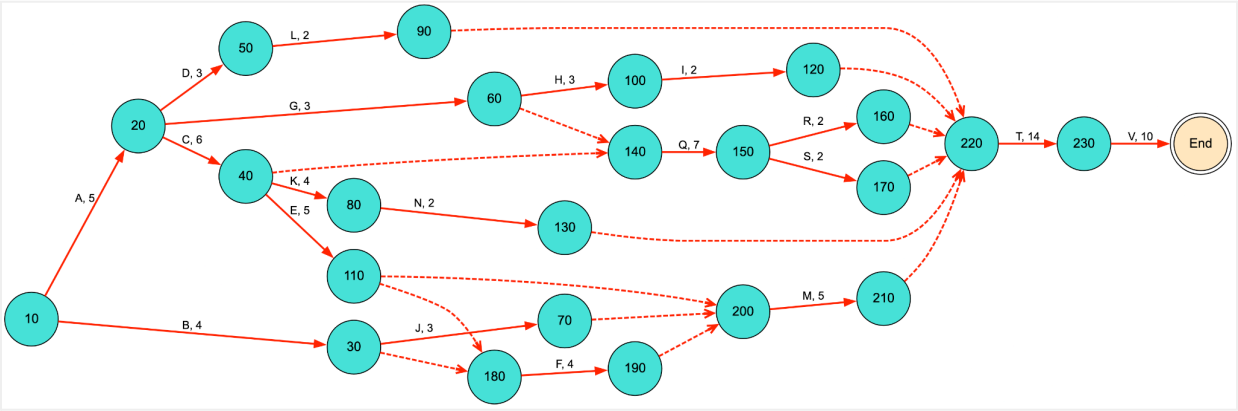
Level 1: Cafe Operating System

- **Level 2: Core System Components**
    1. **User Interface (Frontend)**
        - 1.1 User Registration and Login Interface
        - 1.2 Customer Profile Management (for updating user information)
        - 1.3 Digital Menu and Ordering Interface (with categories)
        - 1.4 Order Customization Interface (e.g., 'less sugar')
        - 1.5 Order History and Real-time Tracking Page
        - 1.6 Staff-facing Order Management Dashboard (Live Queue)
        - 1.7 Admin-Facing Sales Analytics Dashboard
        - 1.8 Inventory Management Interface (for staff/admin)
        - 1.9 Customer Feedback and Rating Form
    2. **Backend System**
        - 2.1 User Profile Module (manages user data, order history, loyalty points)
        - 2.2 Customer Ordering Module (handles browsing, customization, pre-orders)
        - 2.3 Order Management Module (processes live queue, updates status)
        - 2.4 Inventory Management Module (tracks stock, sends low-stock alerts)
        - 2.5 Reporting & Analytics Module (generates sales and inventory reports)
        - 2.6 Customer Feedback Module (collects and stores ratings/suggestions)
    3. **Payment & Security**
        - 3.1 Payment Gateway Integration (E-wallets, FPX, Credit/Debit Cards)
        - 3.2 Cash Payment Processing Logic
        - 3.3 Digital Receipt Generation System
        - 3.4 Staff & Admin Access Control (Role-based login and verification)
    4. **Testing & Quality Assurance**
        - 4.1 Functional and Requirement Validation
        - 4.2 Bug Fix Verification and Retesting
        - 4.3 System Performance and Usability Testing

- 4.4 Final Product Quality Standard Assurance

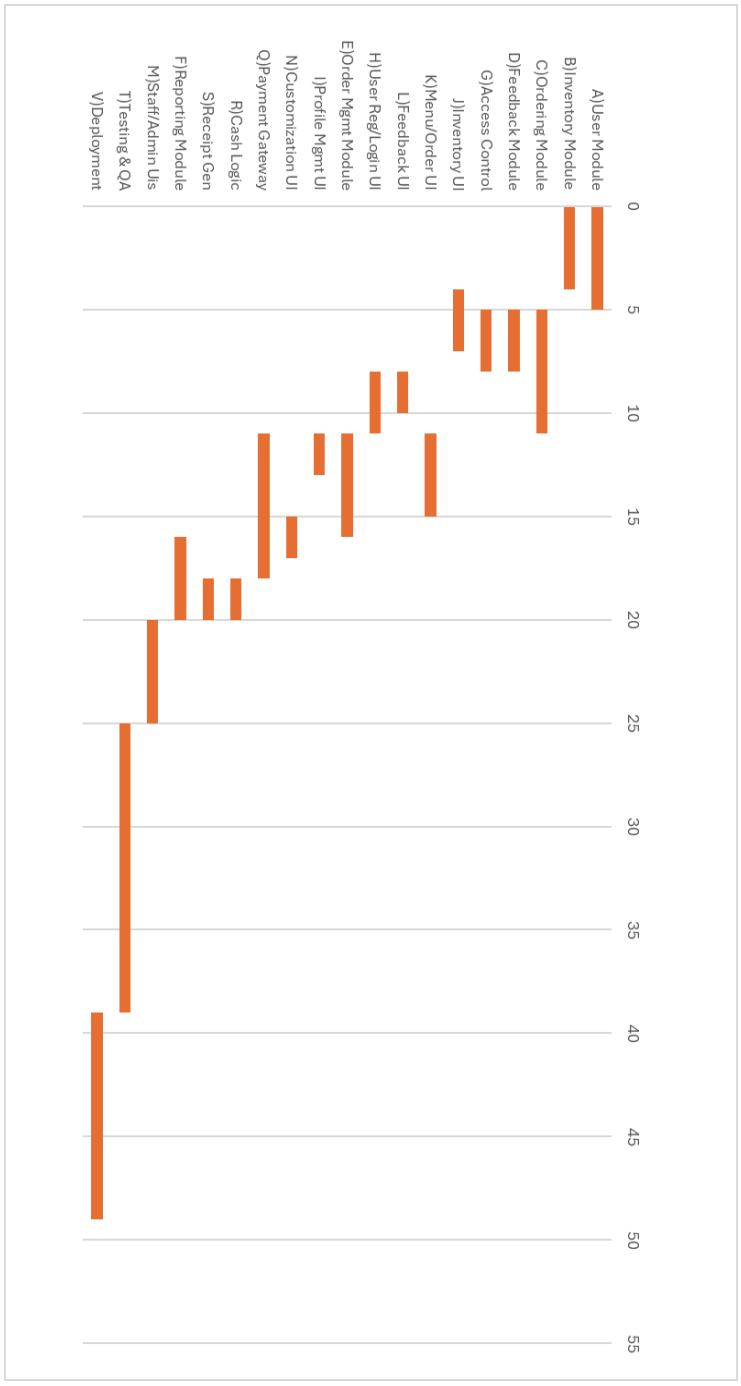
5. **Deployment & Maintenance**
    - 5.1 System Installation and Configuration
    - 5.2 Hardware Compatibility Setup (POS terminals, printers)
    - 5.3 Staff Training and Documentation Creation
    - 5.4 System Stability Monitoring and Backup Operations
    - 5.5 Ongoing Technical Support and Troubleshooting

9.0 PERT Chart



Letter	Activity	Predecessors	Duration (Days)
A	2.1 User Module	-	5
B	2.4 Inventory Module	-	4
C	2.2 Ordering Module	A	6
D	2.6 Feedback Module	A	3
G	3.4 Access Control	A	3
J	1.8 Inventory UI	B	3
K	1.3 Menu/Order UI	C	4
L	1.9 Feedback UI	D	2
H	1.1 User Reg/Login UI	G	3
E	2.3 Order Mgmt Module	C	5
I	1.2 Profile Mgmt UI	H	2
N	1.4 Customization UI	K	2
Q	3.1 Payment Gateway	C, G	7
R	3.2 Cash Logic	Q	2
S	3.3 Receipt Gen	Q	2
F	2.5 Reporting Module	B, E	4
M	1.6/1.7 Staff/Admin UIs	E, F, J	5
T	4.0 Testing & QA	I, L, M, N, R, S	14
V	5.0 Deployment	T	10

10.0 Gantt Chart



11.0 Benefits of the System

The Kacani Ordering System brings a wide range of practical benefits to both café staff and customers, making the entire experience smoother and more satisfying for everyone:

1. It enhanced efficiency by automating the handling of orders, inventory management, and payment processing, reducing the amount of manual labor required and the number of errors caused by miscommunication or sloppy handwriting.

2. Shorter wait times with real-time order tracking and the option to pre-order, customers spend less time in line. Meanwhile, staff can handle on-the-spot and scheduled orders with greater ease.

3. Better customer experience. Guests can tweak their meals just the way they like—less sugar, extra rice, and more. Plus, a built-in feedback system ensures their opinions are heard and acted upon.

4. Smarter inventory control. Stock levels update in real time, and alerts help prevent both shortages and overstocking. Additionally, monthly summaries aid more accurate purchasing decisions.

5. More ways to drive sales. Thus busy students and staff can place orders ahead of time, increasing the likelihood of repeat purchases. Loyalty programs with Bronze, Silver, and Gold tiers keep them coming back for more.

6. Data That drives improvement with detailed sales reports and customer feedback, the system helps identify what's working, what needs fixing, and which products are customer favorites—so promotions and restocking are always on point.

7. Convenient and secure payments such that our system supports multiple payment options—from e-wallets to cards to transfers—while reducing the need for cash handling, creating a safer and more flexible payment experience.

Ready for the future, built to scale, the system's modular design allows new features like delivery options or seasonal promotions to be added without starting from scratch.

12.0 Summary

In order to improve operational efficiency, reduce human errors and increase customer satisfaction, Kacani's ordering system is user-centric and has created a digital platform that aims to completely revolutionize the current workflow of university cafeterias that relies on manual processing. Through in-depth system analysis, background research and feasibility assessment, it has been fully verified that this solution is not only feasible, but also can bring significant benefits to operators and end users.

The system integrates core modules such as real-time order management, inventory tracking, custom ordering and multiple payments, accurately addressing the key difficulties in traditional catering operations. At the same time, the introduction of customer feedback mechanism, sales data analysis and member points system not only strengthens customer stickiness, but also prepares for future functional expansion and changes in customer needs.

The project is also not sloppy in execution: with the help of project management tools such as WBS, PERT and Gantt charts, strict planning is carried out, and responsibilities are clearly divided to ensure that the online process is as smooth as possible and does not interfere with daily operations. In the end, this system will not only improve the overall operational efficiency of the cafeteria, but also make the campus ordering experience more in line with the expectations of the use of modern technology.