Project Proposal

Coffee & Donut Ordering System

(Mobile App, Vendor Dashboard & Power BI Integration)

Submitted To: CodeNection 2025 Final Judging Panel

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<u>**Project Plan**</u>

1.1 Introduction

In today's fast-paced environment, customers demand convenience, speed, and digital-first solutions. Traditional coffee and bakery shops often rely on manual processes that cause long queues, order mistakes, and inefficient inventory management. This project aims to build a complete digital ecosystem for a coffee and donut business through a customer mobile application, a vendor web dashboard, and integration with Power BI for advanced analytics.

1.2 Problem Statement

- Customers face difficulties placing orders as they need to queue.
- Vendors struggle to manage orders manually using receipt printers.
- Owners find it difficult to perform analysis as most records are in hard copy, making forecasting demand and stock challenging.
- A cashless payment solution is needed to meet modern customer preferences.
- There is no integrated ecosystem, causing inefficiency in overall business operations.

1.3 Objectives

1. To develop a customer mobile application that allows purchasing of coffee (fixed/customizable options) and donuts (with topping customization).
2. To design a vendor web dashboard that enables real-time order management and allows vendors to:

   - Edit menu items (mark *in stock/out of stock*).
   - Add or remove menu items.
   - Update ingredient availability.

3. To integrate Power BI for real-time data analytics and sales forecasting to support better decision-making for inventory and supplier planning.

1.4 Scope

1.4.1 System Scope

- Mobile application for customers to order and pay.
- Web dashboard for vendors to manage live orders and menu availability.
- Integration with Power BI for business analysis.

1.4.2 User Scope

- **Customer**: Place orders, customize coffee/donuts, make cashless payments.
- **Vendor**: Monitor orders, update stock and menu in real-time.
- **Owner**: View analytics dashboards in Power BI for sales and inventory planning.

1.5 Project Significance

- Eliminates long queues, improving customer satisfaction.
- Reduces vendor workload with real-time order management.
- Provides owners with valuable insights for stock forecasting and sales strategy.
- Creates a sustainable, data-driven business ecosystem.

1.6   Methodology
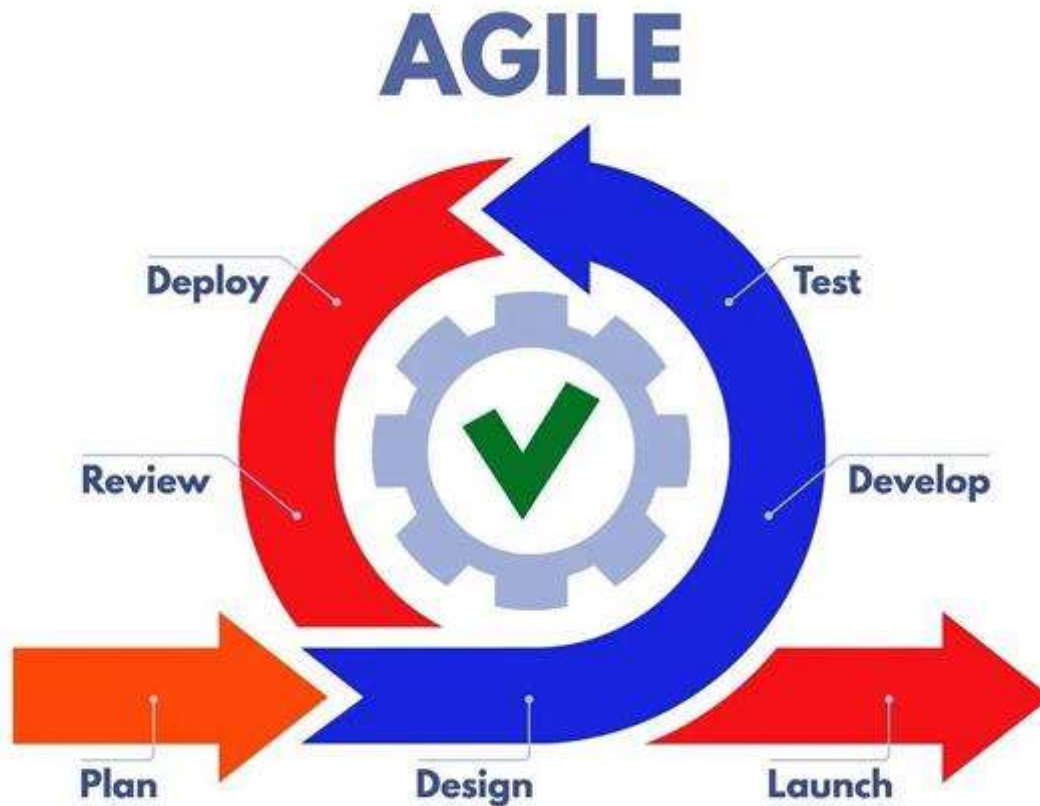
- **Approach**: Agile development with iterative sprints.
- **Tools**:
    1. Flutter (Mobile App)
    2. React.js/Next.js (Vendor Website)
    3. Firebase (Database)
    4. Power BI (Analytics).
- **Phases**:
    I.   Planning
    II.   Design
    III. Development
    IV.   Testing
    V.   Deployment
    VI.   Review
    VII. Launch

1.7   References

Flutter. (2025). Flutter documentation. Google. Retrieved from https://docs.flutter.dev

Firebase. (2025). Cloud Firestore documentation. Google Firebase. Retrieved from https://firebase.google.com/docs/firestore

Microsoft. (2025). Power BI REST API reference. Microsoft Docs. Retrieved from https://learn.microsoft.com/en-us/rest/api/power-bi

1.8   Gantt Chart

Table Grantt Chart

Week	Task
1	Requirement Gathering & Analysis
2	System Design (Logical & Physical)
3-4	Customer App Development (UI/UX, Menu, Customization)
5-6	Vendor Web Dashboard Development (Orders, Menu Editing)
7	Database Integration (Firebase setup & linking)
8	Payment Gateway Integration (Cashless payment feature)
9	Power BI Integration (data pipeline & dashboard)
10	System Testing (mobile app + website + analytics)
11	User Acceptance Testing (trial with vendors/customers)
12	Final Deployment & Documentation

Visual Gantt Chart
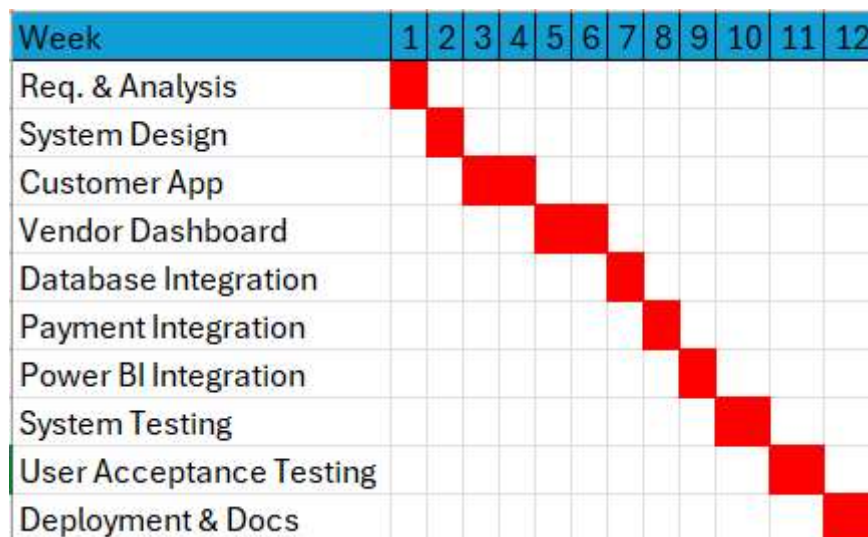
1.9   Cost Planning

Table cost item

| Item	Estimated Cost (RM)
Firebase Hosting & Database	0 – 25
Domain & Web Hosting	50 – 100
Payment Gateway Integration	50
Power BI Pro License	40 per month
Miscellaneous (UI/Testing)	50
Total Estimated Cost	~RM250

1.10   Conclusion

This project proposes a digital coffee and donut ecosystem that connects customers, vendors, and owners in a single platform. With a mobile app, vendor dashboard, and Power BI integration, the solution enhances customer experience, reduces vendor burden, and empowers owners with data-driven decision-making.

Final Design

2.1 Logical Design

HTA Customer Application
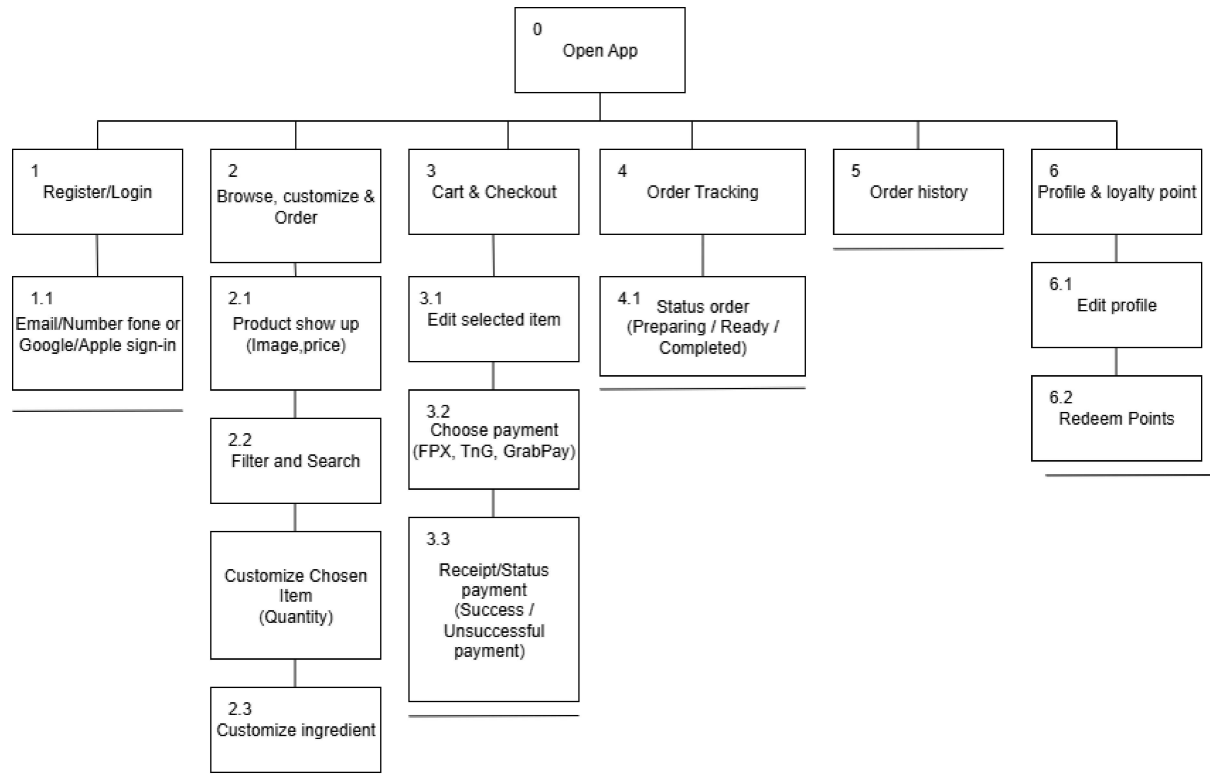
- **Customer App:** Firebase (Orders + Customer Data)
- **Vendor Website:** Reads Orders (Live Updates)
- **Power BI:** Connects to Firebase > Generates Analytics

2.2 Physical Design

- **Frontend**: Flutter (App), React.js (Web).
- **Backend**: Node.js + Firebase Firestore.
- **Database**: Firestore with collections for Users, Orders, Menu, Ingredients.
- **Integration**: Power BI API for dashboard reporting.

Major Findings and Conclusion

3.1   Advantages of the Project

- Faster and more convenient ordering system.
- Real-time vendor order monitoring.
- Improved inventory management through analytics.
- Supports cashless transactions.
- Provides complete ecosystem integration.

3.2   Limitations of the Project

- Requires stable internet connection.
- Power BI Pro has a subscription cost.
- Limited if vendors are not familiar with digital tools.