
SECD2613 SYSTEM ANALYSIS AND DESIGN

PROJECT NAME: FUYOO

PHASE 1– PROJECT PROPOSAL AND PLANNING

SEMESTER 2 SESSION 2023/2024

GROUP: ELF GROUP

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**TABLE OF CONTENT**

## 1.0 Introduction

Although nowadays there are various systems that are beneficial for improving business efficiency, many business owners still choose to conduct business using traditional methods, especially in the populations of older individuals or those who are not proficient in various technologies and systems. They operate their businesses traditionally. This approach leads to a lack of marketing and promotion for their businesses, often facing resource constraints with limited opportunities to access capital and resources. This mode of operation is no longer suitable for the modern business environment, as the development of the internet and digital technologies provides companies with new business opportunities and competitive advantages.

Therefore, we have decided to design a user-friendly system .This system will automate inventory management, providing real-time updates on stock levels. Furthermore, the system will assist in calculating profits by tracking sales and expenses, enabling the owners to monitor their financial performance effectively. By creating such a system, the business owners can streamline their operations and enhance overall efficiency in managing its fruit inventory and sales.

## 2.0 Background Study

The ABC fruit store used to sell tropical fruits, but Mr Lim, the seller, now wants to expand his business and start selling imported fruits like apples and strawberries. Since there is not a wide variety of tropical fruits selled before, Mr Lim carried out his business by using traditional methods like using a top-down management structure, fixed working hours, face-to-face sales interactions, and other traditional methods. He and his workers used manual methods to track inventory, such as counting fruits upon arrival and keeping records on paper.

With the introduction of imported fruits,Mr Lim's business is getting better as most of his customers are more likely to purchase the imported fruits. However, at the same time he realises that the management is nearly out of control because of the inconvenience and low efficiency of using traditional methods .

Thus, he feels the need for a more organised system as he now has to categorise fruits, set prices accordingly, track sales and expenses, monitor his business financial performance and deal with other managements in a proper way. To address this, Mr Lim is looking to implement a system that can help them to categorise fruits, differentiate between tropical and imported ones, set prices accordingly, and arrange them by price from cheapest to most expensive and other managements.

**3.0 Problem Statement**

Making the transition from selling all tropical fruits to imported fruits like apples and strawberries in its inventory, Mr. Lim's Fruit Store is facing significant challenges. The traditional methods of doing things include an established work schedule, a top-down management structure, and manual inventory tracking which cannot keep up with the demands of the growing company. Therefore, a number of urgent problems have emerged:

1. Ineffective Management Practices:

- Since imported fruits have been introduced, the use of traditional management techniques, such as manual inventory tracking and personal sales interactions, has grown more laborious and ineffective. The store's capacity to properly classify fruits, establish pricing, track sales and expenses, and maintain focus on overall business success is being affected by this inefficiency.

2. Ineffective inventory management:

- Traditional techniques, such as counting fruit as it arrives and keeping paper records, are capable of mistakes. Due to the lack of structure in the inventory management system, it may be challenging to distinguish between tropical fruits and imported fruits when the selection of fruits increases to include both. This could cause confusion and possibly lead to inventory shortages.

3. A inadequate method for pricing:

- Mr. Lim discovered that it is challenging to establish prices for a variety of fruits in a way that fairly represents the fruit's value and consumer demand in the absence of a systematic pricing approach. It is challenging to rank fruits from least expensive to most expensive in the absence of a uniform pricing structure, which can result in lost sales opportunities and income disparities.

4. Limited Financial Visibility and Profit Calculations:

- The store's financial performance was not clear due to the manual recording of sales and expenses. Mr Lim did not have a system in place to compute sales revenue, total profit, or the cost of fruit that he bought. This made it more difficult for him to decide on price policies, inventory control, and general company planning. It was essential for Mr. Lim to put in place a method to compute sales and profits so he could see his financial performance clearly and adjust his strategic business decisions accordingly.

## 4.0 Proposed Solutions

Fruit sellers such as Mr. Lim can find a reliable method of managing their inventory while monitoring sales and costs on one platform with Fuyoo, a comprehensive system designed to meet their needs. It has an easy-to-use interface and is customisable to suit both small and large-scale fruit businesses.

The main purpose of Fuyoo is to introduce efficient inventory management for fruit sellers by providing a strong system for recording and tracking their stock. The process of entering data is now entirely automated by it, which uses user-friendly forms to enter data into the system's database, replacing the manual counting and using paper to keep track of stocks.

Users can also sort and group fruits into different categories by using the data organising features. It provides greater convenience for fruit sellers to track the information of each type of fruit they sell including their source, prices, and expiry dates. With Fuyoo , fruit sellers can easily search and filter through their inventory, making it simple to locate specific items and manage their stock efficiently.

In addition, Fuyoo also has functions for managing sales and tracking expenses. Fruit sellers can better understand their financial situation and allocate resources and budgets by keeping track of costs associated with buying fruits, maintaining their stores, and other operating expenses.

Fuyoo provides fruit sellers with strong reporting capabilities that lets them learn important details about how their business is doing. In order to maximise efficiency and profitability, users can plan their operations and make well-informed decisions by generating comprehensive reports on fruit sales trends, profitability, and expenses. With the help of Fuyoo, fruit sellers like Mr. Lee can drive business growth and success by using the tools offered to analyse sales by fruit type, customer demographics, or time periods.

### 4.1 Feasibility Study

#### 4.1.1 Technical Feasibility

This system uses an online database to store information of stocks and cash flow of the business so that it can be managed seamlessly from various devices. The system should also be integrated with security measures such as encryptions and backups to ensure the integrity of data and transactions stored in the database.

#### 4.1.2 Operational Feasibility

By utilising the profitability reports generated by the system, the business can tailor advertisements on their new products to maximise the effectiveness of marketing campaigns. The database system also requires regular monitoring and updates to maintain its reliability and efficiency, which can be integrated into the workflow of employees with regular training.

#### 4.1.3 Economical Feasibility

**Cost Benefit Analysis**

| Estimated Costs | |
|---|---|
| Hardware | RM25,000 |
| Software | RM20,000 |
| Salary | RM25,000 |
| Maintenance | RM5,000 |
| Training | RM7,000 |

| Expected Benefits | |
|---|---|
| Increase Sales | RM30,000 |
| Savings | RM15,000 |

| Assumptions | |
|---|---|
| Discount Rate | 10% |
| Sensitivity Factor (Cost) | 0.7 |
| Sensitivity Factor (Benefit) | 1.1 |
| Annual Increment (Cost) | 5% |
| Annual Increment (Benefit) | 7% |

| Costs | Year 0 | Year 1 | Year 2 | Year 3 |
|---|---|---|---|---|
| Development Costs | | | | |
| - Hardware | 17500 | | | |
| - Software | 14000 | | | |
| Total | 31500 | | | |
| Production Costs | | | | |
| - Salary | | 17500 | 18375 | 19294 |
| - Maintenance | | 3500 | 3675 | 3859 |
| - Training | | 7700 | 8085 | 8489 |
| Annual Production Costs | | 28700 | 30135 | 31642 |
| (Present Value) | | 26091 | 24905 | 23773 |
| Accumulated Costs | | 57591 | 82496 | 82496 |

| Benefits | Year 0 | Year 1 | Year 2 | Year 3 |
|---|---|---|---|---|
| - Increase Sales | | 33000 | 35310 | 37782 |
| - Savings | | 16500 | 17655 | 18891 |
| Annual Benefits | | 49500 | 52965 | 56673 |
| (Present Value) | | 45000 | 43773 | 42579 |
| Accumulated Benefits | | 45000 | 88773 | 131352 |
| Gain or Loss | | -12591 | 6277 | 48856 |
| Profitability Index | 1.55 | | | |

Profitability index (PI) is 1.55 which is larger than 1. This shows that it is a good investment and that it is feasible economically.

**5.0 Objectives**

- To develop a user-friendly system to automate inventory management system
- To implement real-time update on stock levels
- To calculate profits by tracking sales and expenses
- To streamline operations by centralising inventory and sales data within the system
- To enhance overall efficiency in managing fruit inventory and sales

**6.0 Scope of the Project**

A) System

- Set up an inventory management system that can classify fruits( identify between imported and tropical kinds), and monitor stock levels in real time.
- Enable barcode scanning, automated data entry, and supplier database linkage.
- Provide pricing recommendations, create sales invoices, and monitor sales activities.
- Establish a financial management system to figure out the amount of fruit costs, how much money is made from sales, and how much profit is made all together.
- Provide financial reports and automate processes for calculating profits.

B) User- Mr Lim and his workers

- View Fruit Information(each fruit in stock, including name, origin, variety, price, and quantity available).
- Update Fruit Details
- Adjust Inventory Level
- Price Management(to set and modify prices for different fruits based on factors such as market demand, quality, and seasonality, ensuring competitive pricing and maximising revenue).
- Record and track sales, including the fruits sold, quantities, prices, and payment methods used.
- Monitor sales revenue, expenses, profit margins, and other key financial metrics, providing insights into the store's financial performance.
- Notification system of low stock levels, expired fruits, or other inventory-related issues.
- Data Backup and Recovery system for user
- User Authentication and Access Control

C) Feasibility Study

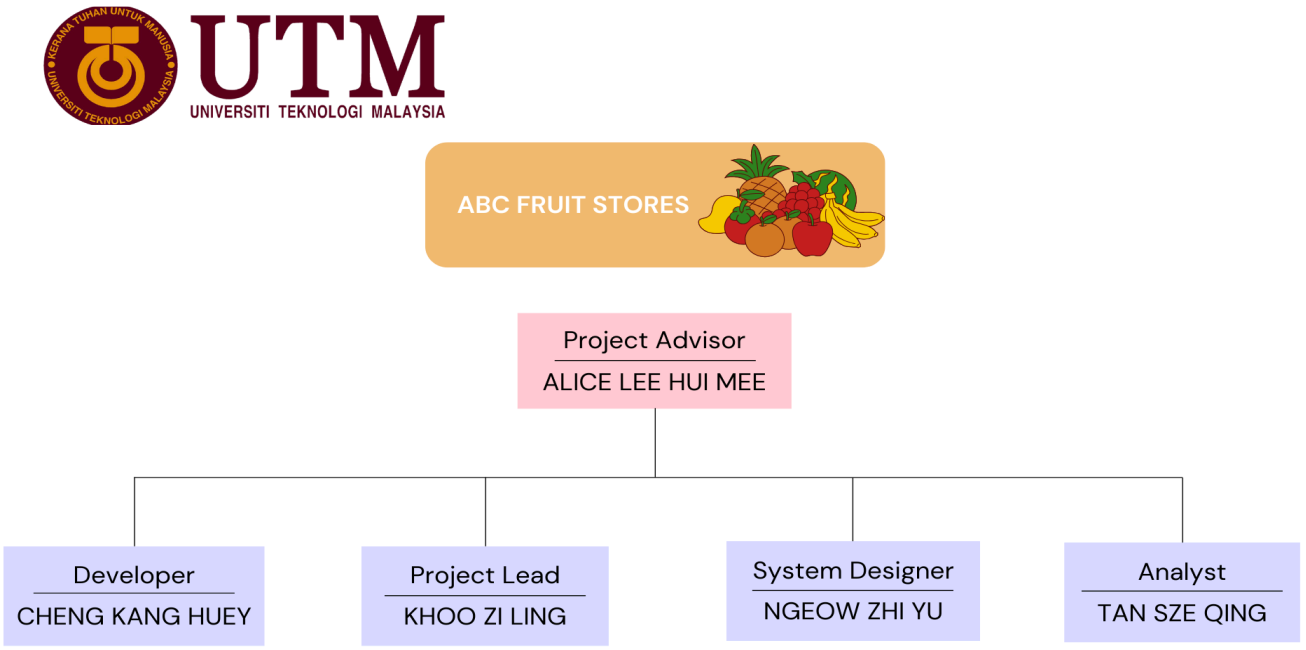
1) Technical
    - Determine whether utilising database technology to construct an inventory management system is feasible.
    - Check to see if online transactions can be conducted with security integrated.

2) Operational
    - Analyse if it would be feasible to publicise and advertise the fruit store's new products.
    - Evaluate how prepared you are to manage human resources, including scheduling and training.
    - Find out the suggested system's efficiency and maintenance needs.

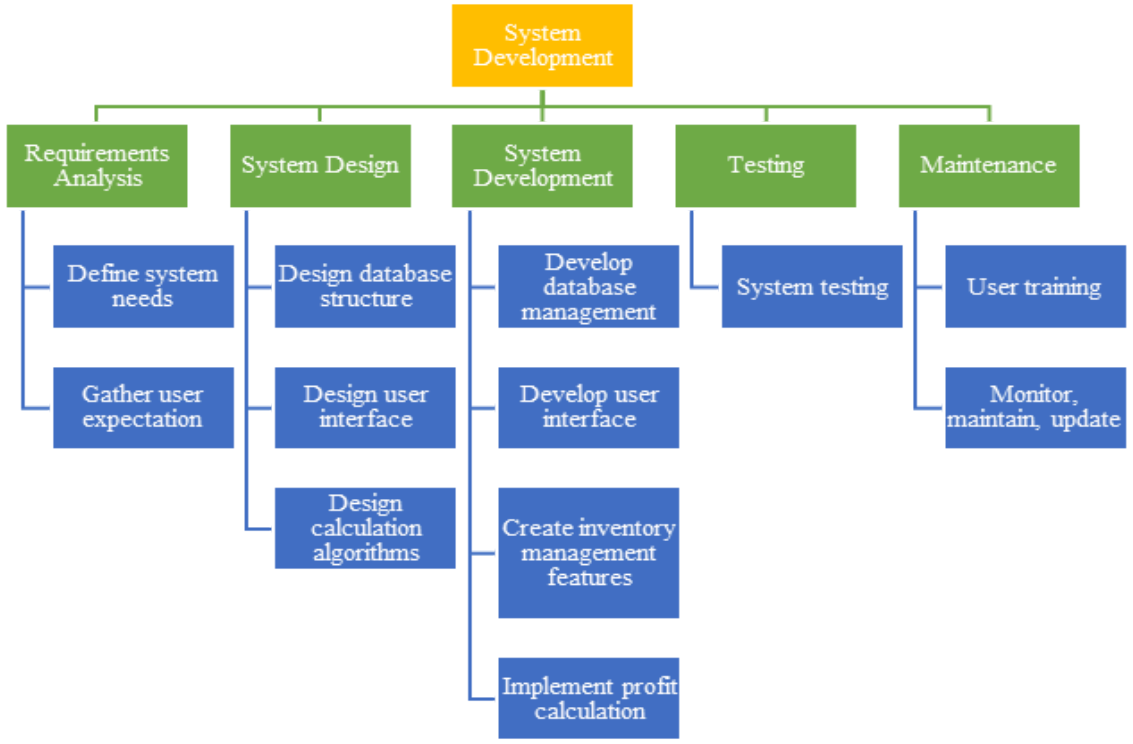
3) Economic
    - Examine the cost related to testing, software, hardware, and application development.
    - Calculate how long it will take to develop and construct the inventory management system.

## 7.0 Project Planning

### 7.1 Human Resource

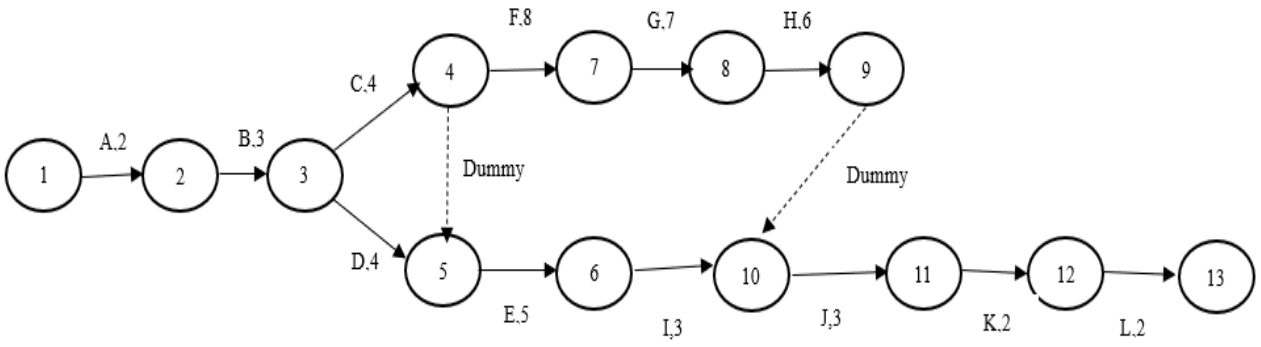



### 7.2 Work Breakdown Structure (WBS)



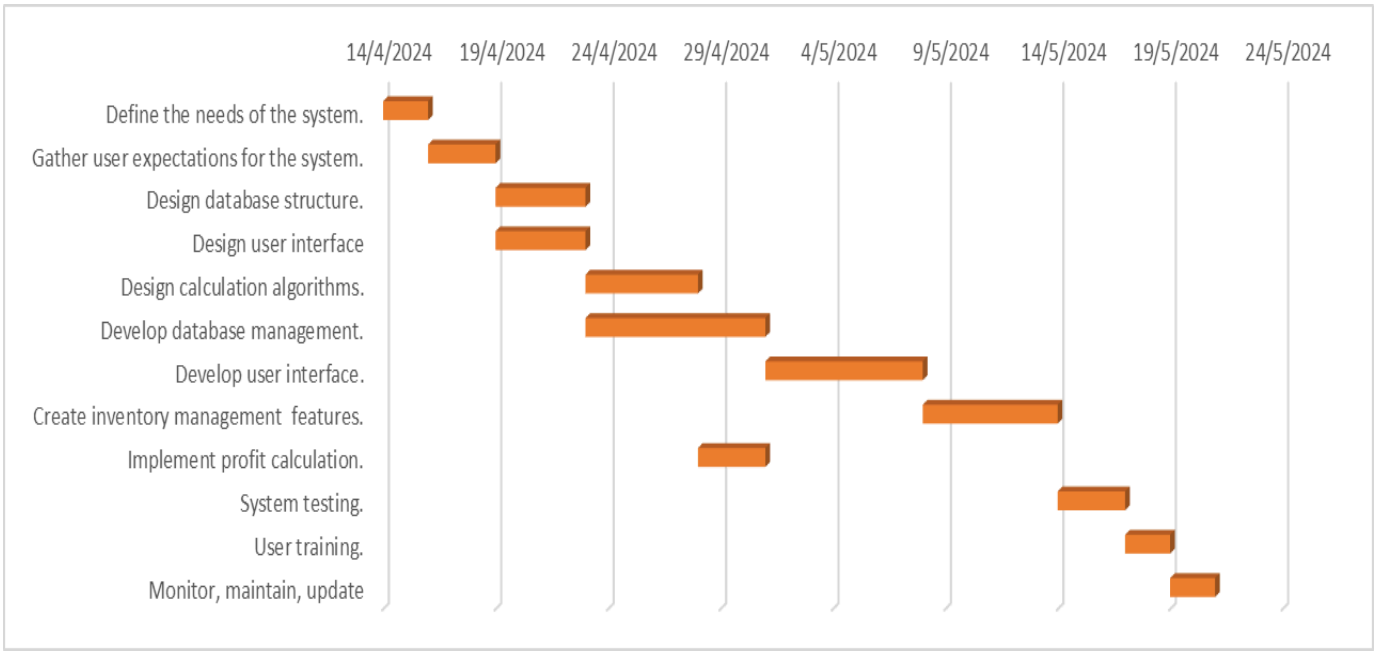
### 7.3 PERT Chart (based on WBS)

| Activity | Predecessor | Duration (days) |
|---|---|---|
| A Define the needs of the system. | None | 2 |
| B Gather user expectations for the system. | A | 3 |
| C Design database structure. (Fruit information and inventory management) | B | 4 |
| D Design user interface. (Inputting orders, checking inventory) | B | 4 |
| E Design calculation algorithms. (Purchase prices, sales revenue, and profits). | C,D | 5 |
| F Develop database management. | C | 8 |
| G Develop user interface. | F | 7 |
| H Create inventory management features. | G | 6 |
| I Implement profit calculation. | E | 3 |
| J System testing. | H,I | 3 |
| K User training. | J | 2 |
| L Monitor system performance, conduct maintenance, and updates as needed. | K | 2 |



## 7.4 Gantt Chart

| | Activity | Predessor | Duration | Start Date | End Date |
|---|---|---|---|---|---|
| A | Define the needs of the system. | None | 2 | 14/4/2024 | 15/4/2024 |
| B | Gather user expectations for the system. | A | 3 | 16/4/2024 | 18/4/2024 |
| C | Design database structure. | B | 4 | 19/4/2024 | 22/4/2024 |
| D | Design user interface | B | 4 | 19/4/2024 | 22/4/2024 |
| E | Design calculation algorithms. | C,D | 5 | 23/4/2024 | 27/4/2024 |
| F | Develop database management. | C,D | 8 | 23/4/2024 | 30/4/2024 |
| G | Develop user interface. | F | 7 | 1/5/2024 | 7/5/2024 |
| H | Create inventory management features. | G | 6 | 8/5/2024 | 14/5/2024 |
| I | Implement profit calculation. | E | 3 | 28/4/2024 | 30/4/2024 |
| J | System testing. | H,I | 3 | 14/5/2024 | 16/5/2024 |
| K | User training. | J | 2 | 17/5/2024 | 18/5/2024 |
| L | Monitor, maintain, update. | K | 2 | 19/5/2024 | 20/5/2024 |



## 8.0 Benefit and Overall Summary of Proposed System

This system that we proposed will ensure the ease of use for the ABC fruit store's staff. The system will automate inventory management processes which will reduce the manual tasks and avoid human error. With real-time update on stock levels ensuring accurate and up to date data of the fruits inventory, enabling better decision-making and inventory control. Besides, the system will help to calculate the earnings by tracking the sales and expenses in order to show important information about the financial health of ABC fruit stores.

Furthermore, this system streamlines operations by centralising inventory and sales data which can minimise an abundance of errors such as human errors. This is because it can provide accurate and precise data. Meanwhile, this user friendly system provides a simplicity of use of the system enhancing the overall user experience.

All in all, the implementation of this system will undoubtedly save time and enhance the operational efficiency of ABC fruit stores.