



# UTM

UNIVERSITI TEKNOLOGI MALAYSIA

UNIVERSITI TEKNOLOGI MALAYSIA

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PROJECT 1

Project Proposal & Database Requirements

**SECD2523: Database**

**SECTION 01**

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## TABLE OF CONTENT

<b>1.0 Introduction</b>	<b>3</b>
1.1 Overview of the Project	3
1.2 Problem Statement	4
1.3 Proposed Solution	6
1.4 Objectives	7
1.5 Scopes	8
<b>2.0 System Analysis and Design</b>	<b>9</b>
2.1 Feasibility Study	9
2.2 Cost-Benefit Analysis (CBA)	10
2.3 Methods for Information Gathering	13
2.4 Current Business Process/Workflow	16
2.5 Functional and Non-Functional Requirements	18
2.6 Data Flow Diagram (DFD) (as-is system - Scopes)	20
2.6.1 Context Diagram	20
2.6.2 Level 0 Diagram	21
2.6.3 Child Diagram	22
2.6.3.1 Staff module	22
2.6.3.2 Payroll module	23
2.6.3.3 Inventory module	24
2.6.3.4 Financial Status module	25
2.7 Requirement Analysis (based on Survey/Interview)	27
<b>3.0 Database</b>	<b>28</b>
3.1 System Boundaries	28
3.2 Current Business Rules (Current Business Process/Workflow)	29
3.3 Data Requirement	32
3.4 Transaction Requirement	34
3.5 Planning (Human Resource, Work Breakdown Structure (WBS), Gantt Chart)	35
3.5.1 Human Resource	35
3.5.2 Work Breakdown Structure (WBS)	36
3.5.3 Gantt Chart	36
<b>4.0 Benefit and Summary of Proposed System</b>	<b>37</b>
<b>5.0 Appendix</b>	<b>38</b>

## **1.0 Introduction**

### **1.1 Overview of the Project**

In today's fast-paced retail environment, operational efficiency, accurate inventory management, and customer satisfaction are critical to the success of any business, including small-scale operations like minimarts. BESTARI Mini Mart has relied on manual processes to manage its operations. This includes everything from tracking stock levels and managing sales to handling customer interactions and maintaining supplier relationships. However, such manual methods, while cost-effective in the short term, are prone to inefficiencies and errors. As the business has grown in size and scope, these processes have become increasingly time-consuming, leading to stock mismanagement, delays in reordering supplies, and difficulties in tracking financial performance.

To address these challenges and improve the minimart's overall operational efficiency, the development of a comprehensive BESTARI Minimart Database System has been proposed. The system will digitise and automate key aspects of the business, ensuring real-time data availability and better management of resources. By implementing this database system, BESTARI Minimart aims to transform its operations and enhance its ability to serve its customers effectively. A database system allows businesses to store, manage, and retrieve data efficiently. In the case of BESTARI Minimart, the database system will serve as the backbone of the store's daily operations, automating and integrating several key functions such as inventory management, financial tracking, staff scheduling, and supplier interactions.

In conclusion, by automating key processes such as inventory management, financial tracking, staff scheduling, and customer engagement, the system will drastically reduce the time and effort required to run the store. It will also provide management with the tools and insights they need to make informed decisions, improving the store's overall performance and profitability. As the minimart continues to grow, the database system will play a crucial role in ensuring that it can meet the demands of its customers efficiently and effectively. Ultimately, the BESTARI Minimart Database System will serve as a foundation for the store's long-term success.

## **1.2 Problem Statement**

### **1.2.1 Inefficient Inventory Management**

Without real-time tracking, minimarket may experience overstocking or stockouts, resulting in lost sales and increased waste. Manual inventory updates that are time-consuming and prone to errors will further worsen the problem. Moreover, there is often no system in place to monitor product expiration dates, leading to wastage and revenue loss.

### **1.2.2 Sales and financial discrepancies**

Sales and financial management are also affected by discrepancies between sales records and inventory levels. Without a system that integrates sales data with inventory in real time, minimarkets struggle to maintain accurate stock levels after each sale. Financial reporting becomes cumbersome due to inefficient sales tracking, which complicates analysis of daily revenue, profit margins, and expenses. This lack of reliable financial data makes it difficult for managers to generate accurate financial statements and understand the market trends necessary for strategic decisions.

### **1.2.3 Poor customer relationship management**

Customer relationship management is often underdeveloped in minimarkets using manual systems. Without proper customer data tracking, such as purchase histories and preferences, it becomes difficult to offer personalised services or loyalty programs, both of which are crucial for customer retention. Moreover, the absence of secure customer data management can lead to potential privacy concerns or compliance issues with data protection laws.

### **1.2.4 Supplier management challenges**

Managing supplier relationships is another challenge for minimarkets as they often struggle with inefficient supplier order tracking and delayed restocking of critical products. Manual reordering processes require frequent attention to stock level which lead to delays in placing orders and potential stockouts. This lack of an automated, real-time reordering system prevents minimarkets from maintaining a reliable supply chain and optimal stock levels for high-demand products.

### **1.2.5 Inadequate employee performance tracking**

Employee performance tracking is also inefficient in a manual system, making it difficult to monitor staff productivity, working hours, and contributions to sales. This makes it difficult to manage payroll accurately and assess the contribution of staff to daily operations. The absence of automated tools to track employee activities results in inefficiencies and can impact store performance, as managers have limited visibility into staff performance metrics.

### **1.3 Proposed Solution**

One of the primary features of the database system is its ability to improve operational efficiency. By automating the processes of stock tracking, for instance, the system will help ensure that the minimart always has sufficient stock of popular items, while avoiding overstocking of less popular goods. The inventory module will monitor stock levels in real-time, providing alerts when supplies are running low, thereby allowing management to reorder items promptly. This will prevent stockouts and reduce the need for emergency restocking, which can disrupt the store's operations. Furthermore, with the database system in place, staff will no longer need to spend hours manually counting inventory or filling out order forms, freeing up time for them to focus on more value-added activities like assisting customers.

Another major advantage of the BESTARI Minimart Database System is the integration of a financial status module. This module will track all the financial transactions of the minimart, including sales, expenses, profits, losses, debit, and credit. By automating financial records, the system will provide accurate and up-to-date information on the store's financial performance, allowing management to quickly assess profitability and make adjustments if necessary. The system will also help in generating financial reports, which can be useful for both day-to-day management and long-term strategic planning.

In addition to managing inventory and finances, the database system will also include modules for staff management and supplier interactions. The staff management module will automate employee scheduling, track attendance, and manage payroll, ensuring that shifts are properly planned and that employees are compensated accurately for their work. This will reduce the administrative burden on managers, allowing them to focus on more strategic tasks. The supplier module, on the other hand, will track supplier information, automate order placements, and manage delivery schedules, ensuring that the minimart maintains a smooth supply chain. This module will help reduce delays in restocking and prevent the store from running out of essential products.

The system will not only reduce the manual workload on the staff but will also provide insights that can help management make informed decisions based on real-time data.

## **1.4 Objectives**

The primary objectives of BESTARI Mini Mart database system is to enhance operational efficiency, accuracy and decision making by automating and streamlining key business processes in a minimarket. The enhancements target to accomplish the following objectives:

- Track product stock levels in real-time and provide automated alerts for restocking.
- Maintain accurate records of product details, categories, pricing, and expiration dates.
- Record and process sales transactions efficiently, updating inventory automatically.
- Maintain customer profiles, including contact information, purchase history, and membership status.
- Enable loyalty programs and personalised promotions to increase customer retention and satisfaction.
- Automate the process of placing orders with suppliers based on stock levels.
- Maintain accurate supplier records and track order histories and delivery schedules.
- Centralise staff information, including roles, salaries, work hours, and performance metrics.
- Simplify payroll management and track employee attendance and productivity.
- Generate real-time reports on sales trends, product performance, customer preferences, and financial health.

## **1.5 Scopes**

The scope of this project are included the below aspects:

### **1. Inventory Management**

- Maintain up-to-date records of stock levels, including automatic updates after each sale or restock.
- Track product details such as name, category, price, supplier and expiration dates.

### **2. Sales and Transaction Processing**

- Automatically update stock levels after each transaction
- Generate daily, weekly, and monthly sales reports to analyse business performance and sales trends.

### **3. Staff Management**

- Storing staff records such as work schedules, job roles, and salary information
- Tracking staff attendance and hour worked, which will be used for payroll calculations

### **4. Supplier Management**

- Store and manage supplier information including contact details, product lists and delivery schedules
- Track supplier order histories, payments and performance evaluations to aid in decision-making

### **5. Financial Management and Reporting**

- Record all sales revenue and expenses, including operational costs, product purchases, and employee wages.

## **2.0 System Analysis and Design**

### **2.1 Feasibility Study**

#### **2.1.1 Technical Feasibility**

The technical feasibility of the BESTARI Minimart Database System involves assessing compatibility with the existing IT infrastructure to ensure seamless integration without disrupting current operations. It is essential that the new system supports real-time tracking of inventory and sales while maintaining data integrity and security. We will evaluate the technology stack required for the proposed features, confirming that it is scalable to accommodate future growth and can effectively handle sensitive customer and financial information.

#### **2.1.2 Economic Feasibility**

The economic feasibility analysis involves a cost-benefit evaluation of implementing the BESTARI Minimart Database System. This includes a detailed cost assessment for technology upgrades, software development, and ongoing maintenance, compared to the expected benefits such as improved inventory management, enhanced customer satisfaction, and accurate financial reporting. The analysis indicates that the potential financial gains from increased efficiency and reduced waste significantly outweigh the initial investment costs, supporting a positive return on investment.

#### **2.1.3 Operational Feasibility**

Operational feasibility examines how effectively the BESTARI Minimart Database System will meet the needs of stakeholders, including minimarket owners, employees, and customers. The proposed system aims to address key challenges such as inefficient inventory tracking and customer relationship management while ensuring ease of use and enhancing overall operational efficiency. By facilitating streamlined processes and providing real-time insights, the system is designed to improve stakeholder satisfaction and support better decision-making, ultimately benefiting the minimarket's performance.

## 2.2 Cost-Benefit Analysis (CBA)

Estimated cost	
Hardware	<b>RM50000</b>
Software	<b>RM7500</b>
Consultant	<b>RM20000</b>
Training	<b>RM20000</b>
Supplies	<b>RM2400 per year</b>
IS Support	<b>RM18000 per year</b>
Maintenance	<b>RM2500 per year</b>

Assumptions	
Discount rate	<b>10%</b>
Sensitivity factor (cost)	<b>1.1</b>
Sensitivity factor (benefits)	<b>0.9</b>
Annual change in production costs	<b>7%</b>
Annual change in benefits	<b>5%</b>

Estimated Benefits	
Inventory savings	<b>RM1500 per week</b>
Employee efficiency	<b>RM500 per week</b>
Increased sales	<b>RM750 per week</b>

Costs	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Development costs						
-Hardware	55000					
-Software	8250					
-Consultant	22000					
-Training	22000					
Total	107250					
Production costs						
-Supplies		2640	2825	3023	3235	3461
-Nwrk Personnel		19800	21186	22669	24256	25954
-Maintenance		2750	2943	3148	3369	3605
Annual Production cost (Present Value)		25190 22900	26954 22276	28840 21668	30860 21078	33020 20503
Accumulated costs		130150	152426	174094	195172	215675

Benefits	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Reduced inventory costs (Present value)		128700 117000	135135 111682	141892 106606	148986 101759	156436 97134
Accumulated benefits (Present value)		117000	228682	335288	437047	534181
Gain or loss		(13150)	76256	161194	241875	318506
Profitability index	2.97					

From the table above, the probability index of the project is 2.97. Therefore, this is a good investment due to the probability index being greater than 1 even though there are some losses in the first year. The expected profits for the fifth year and onwards are more than RM300,000. Consequently, this is a good project with a great return on investment.

## **2.3 Methods for Information Gathering**

There are two methods that have been used in this project for gathering information which are interviewing and surveying methods. These methods have provided a golden opportunity to our team to collect related information which leads to a better understanding and relatively smooth progress in the project conducting.

### **2.3.1 Interviews**

We have conducted an interview section with the minimarket owner. Here are some questions that we had asked during the interviewing session:

1. How do you currently track inventory levels and monitor product expiration dates?

Answer:

The owner told us that she will monitor inventory levels and track product expiration dates manually. For certain products, like ice cream, she will receive stock every two weeks. If stock runs out quickly or appears empty on the shelves, she will immediately contact the supplier to replenish the inventory. For sourcing, she looks for wholesalers outside, comparing prices to ensure they are affordable and suitable for students.

2. Can you describe the process you use for managing sales data and financial reporting?

What difficulties do you encounter?

Answer:

Previously, she used a manual ledger book to record sales data on a daily basis. This process included noting the date, daily sales, deducting cash expenses, bread purchases, and cash or check disbursements.

There are occasional calculation errors, which can cause issues in daily bookkeeping. However, it usually doesn't have a big effect because by the end of the month she will check and focus on overall profit or loss. The challenge lies in determining whether specific products are worth stocking based on sales and profitability.

3. How do you currently manage customer information, and what features would you like to see in a new system to enhance customer engagement?

Answer:

No formal system causes informal information for customers. A system that allows for better customer tracking, including purchase history, customer preferences, and loyalty programs, could help increase engagement and encourage repeat visits.

4. How do you handle supplier orders and what issues do you face in the process?

Answer:

Supplier orders are usually placed via phone when stock is running low or when we notice certain items have sold out. For ice cream, for instance, the owner will keep a consistent schedule with suppliers every two weeks, but sometimes, she has to call them more often if demand increases.

Occasionally, delays occur with certain suppliers, or stock might not arrive as expected. Communication issues and misaligned stock quantities can also cause problems.

5. What is your budget for implementing this new system and what resources do you have available for training staff?

Answer:

The owner has a limited budget for implementing the new system. The resource could include availability of basic computers, willingness to invest time in staff training and the maintenance for the system. The owner has a budget of RM 50000.00.

### **2.3.2 Survey/Questionnaire**

We prepare a questionnaire for the minimarket customer. Here are some questions that we had asked:

1. How would you rate the overall shopping experience at BESTARI Minimarket? (Very satisfied, Satisfied, Neutral, Dissatisfied, Very dissatisfied)

Answer:

The customer said that she is satisfied with the overall experience at BESTARI Minimarket because she can find what she is looking for, however sometimes there are some minor issues with product availability.

2. How frequently do you visit the minimarket? (Daily, Weekly, Monthly, Occasionally, Rarely)

Answer:

The customer visits the minimarket weekly to do her grocery shopping there because it's convenient.

3. How satisfied are you with the availability of products? (Very satisfied, Satisfied, Neutral, Dissatisfied, Very dissatisfied)

Answer:

The customer is satisfied with the availability of products most of the time but sometimes they are out of stock.

4. Would you be interested in joining a customer loyalty program?

Answer:

The customer is interested in joining a customer loyalty program as she loves to earn points or receive discounts for being a regular customer.

5. What incentives would motivate you to participate in the loyalty program? (Discounts, Points for purchase, Exclusive offers, other-please specify)

Answer:

The customer prefers discounts as she likes to receive discounts on her favourite products or regular purchases.

## **2.4 Current Business Process/Workflow**

### **1. Inventory Management**

Step 1.1: The owner manually checks stock levels on shelves and in storage.

Step 1.2: If the stock for a product is low, the owner notes it for reordering.

Step 1.3: The owner checks product expiration dates manually.

Step 1.4: If expired products are found, they are removed from the inventory.

### **2. Sales and Financial Management**

Step 2.1: Sales transactions are recorded in a physical ledger.

Step 2.2: At the end of each day, the owner calculates total sales manually, considering expenses and cash transactions.

Step 2.3: Monthly sales data are reviewed for calculating profit or loss.

Step 2.4: Any discrepancies in sales records are corrected based on inventory checks.

### **3. Customer Relationship Management**

Step 3.1: Customer information is not systematically recorded; only basic information may be taken informally.

Step 3.2: There is no tracking of customer purchase history or preferences.

Step 3.3: Customers are not registered for any loyalty program due to the lack of a system.

### **4. Supplier Management**

Step 4.1: When stock is low, the owner contacts suppliers via phone to place an order.

Step 4.2: Orders are made based on observed needs rather than automated tracking.

Step 4.3: The owner waits for the supplier's confirmation and delivery, keeping track of any delays or discrepancies.

Step 4.4: Supplier information and order history are not formally tracked in a system.

### **5. Employee Management**

Step 5.1: Employee attendance and working hours are recorded manually, often on paper.

Step 5.2: The owner calculates payroll manually, based on the recorded working hours or set salary.

Step 5.3: Employee performance is not tracked in detail, making it difficult to assess productivity.

## **Flow of the Current Workflow**

### 1. Start of the Day:

- Staff arrive, and attendance is noted manually.
- The owner checks inventory, prepares for sales, and ensures enough stock is available.

### 2. During the Day:

- Sales transactions are recorded manually in a ledger.
- Inventory is checked periodically, and products that are low in stock are noted.

### 3. End of the Day:

- The owner calculates total sales and deducts expenses.
- Inventory levels are checked again, and any stock discrepancies are noted.
- Payroll is calculated if needed, and employee working hours are recorded for the day.

The current process relies heavily on manual input and tracking, leading to inefficiencies and potential errors in inventory, sales, and financial management. The proposed database system aims to automate these tasks and streamline operations.

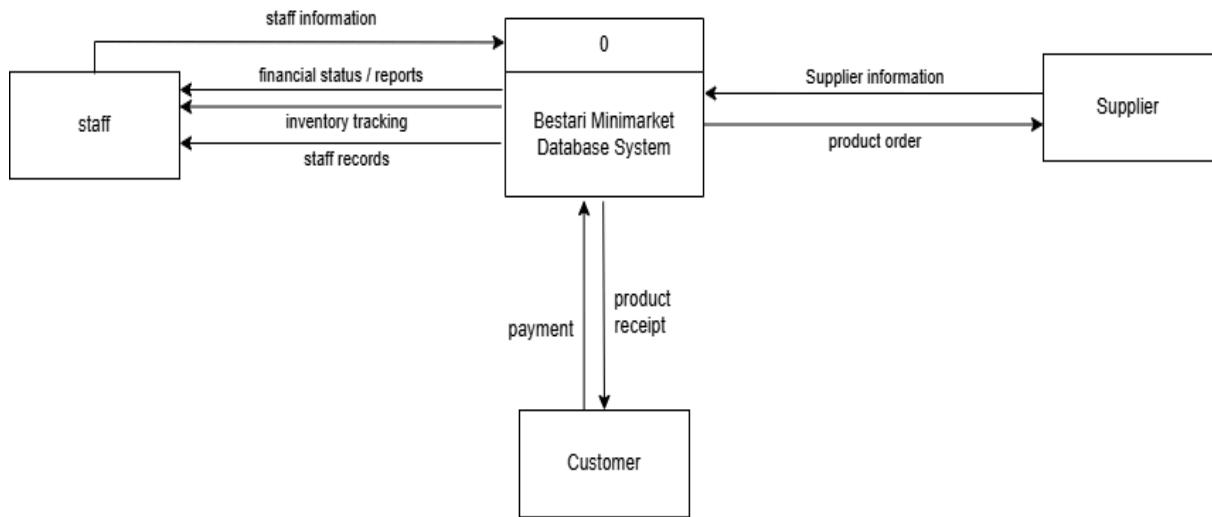
## 2.5 Functional and Non-Functional Requirements

Module	Functional Requirement	Non-Functional Requirement
Inventory Management	The system must allow the addition, updating, and removal of inventory items.	The system must update stock levels in real time without delays after each transaction.
	The system must track stock levels in real time and alert users when stock levels fall below a defined threshold.	Low-stock alerts should be visually and audibly noticeable to ensure immediate attention.
	The system must generate reports for fast-moving and slow-moving products.	The inventory module must be able to handle up to 10,000 unique product entries and support future expansion, such as the addition of new product categories or seasonal items.
	The system must allow staff to input new stock purchases and update quantities after each transaction.	The inventory interface must be intuitive, allowing users to easily search for items, adjust quantities, and check stock status without extensive training.
Sales and Transaction Management	The system must track all financial transactions, including sales, expenses, and profits.	The financial module must generate profit and loss reports within 3 seconds for any specified period.
	The system must process customer transactions, updating inventory and financial data accordingly.	Regular backups of financial records should occur daily to prevent data loss in the event of system failures.
	The system must generate profit and loss statements automatically at the end of each month.	It must have simple forms for inputting daily sales, expenses, and other financial data.
	The system must issue digital and physical receipts for purchases	

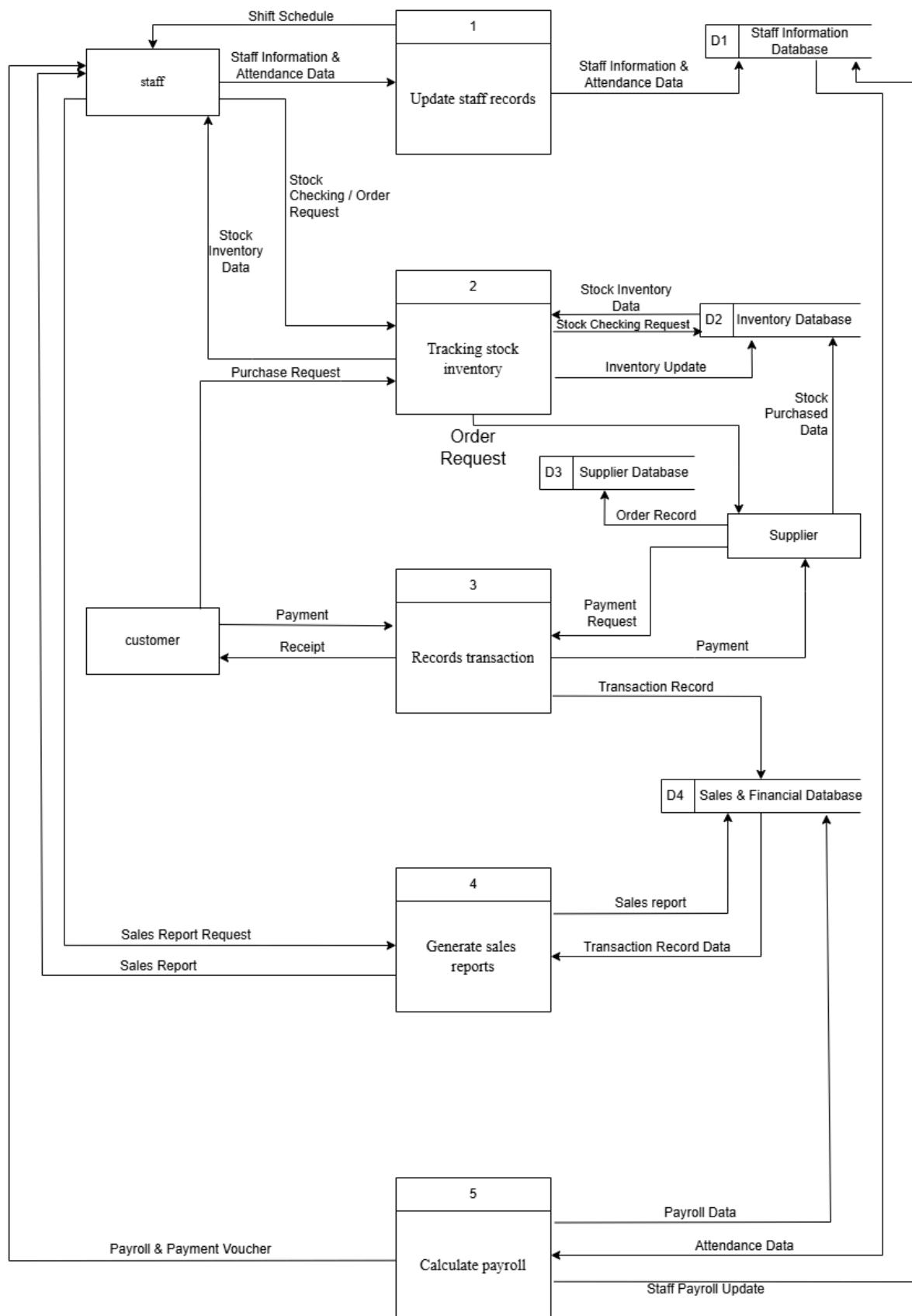
Module	Functional Requirement	Non-Functional Requirement
Staff Management	The system must manage employee profiles, including contact information, job role, and work schedules.	The module must handle data for multiple employees without performance degradation.
	The system must track employee attendance and generate payroll data based on work hours and overtime.	The system should provide an easy-to-use interface for managing employee shifts, with drag-and-drop scheduling functionality.
	The system must allow managers to assign shifts and modify schedules as needed.	Payroll calculations should be automated and clearly displayed for verification by management.
Supplier Management	The system must track orders placed with suppliers and update the inventory once deliveries are received.	The module must be capable of handling data for different suppliers, with the ability to expand as the store's supply chain grows.

## 2.6 Data Flow Diagram (DFD) (as-is system - Scopes)

### 2.6.1 Context Diagram

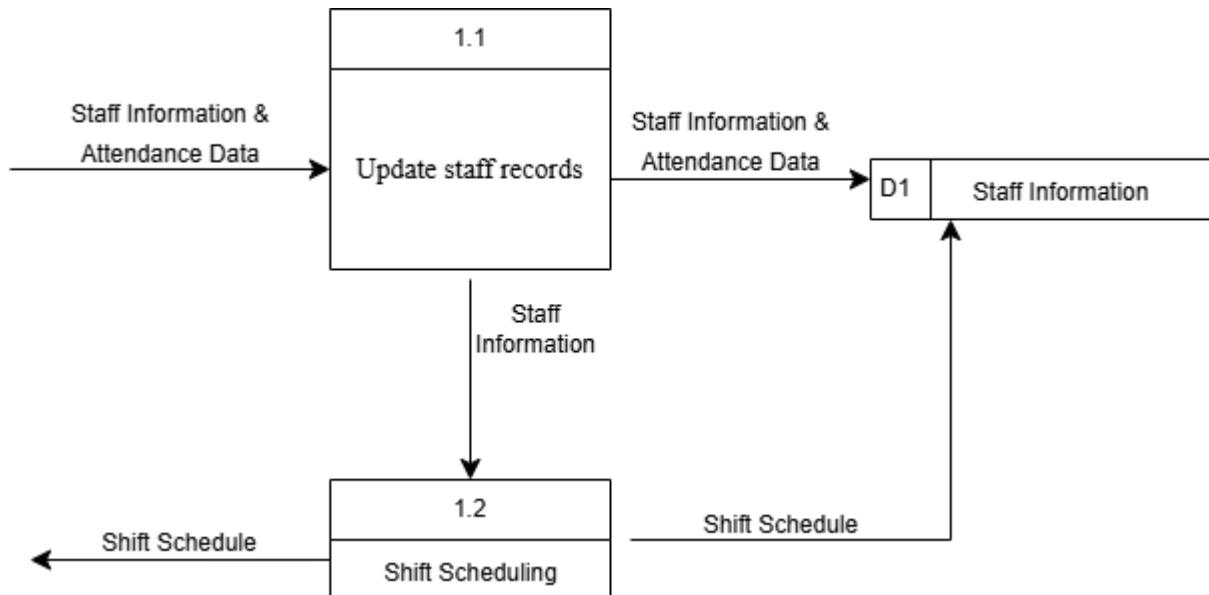


## 2.6.2 Level 0 Diagram

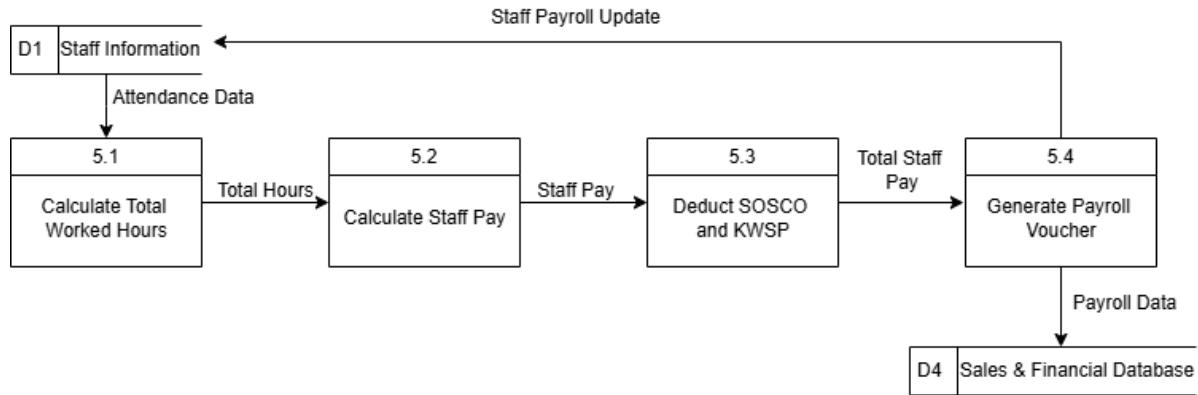


## 2.6.3 Child Diagram

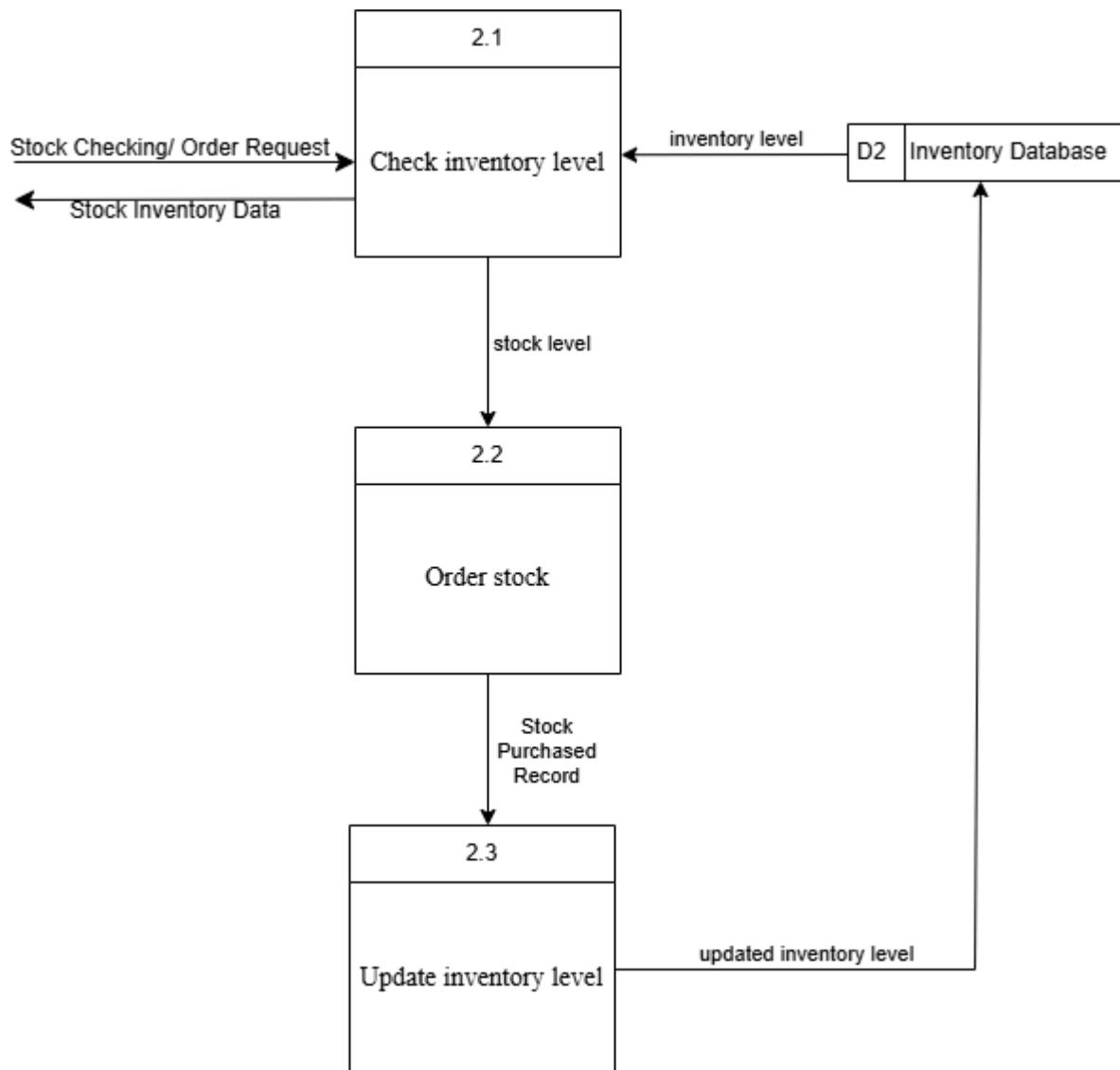
### 2.6.3.1 Staff module



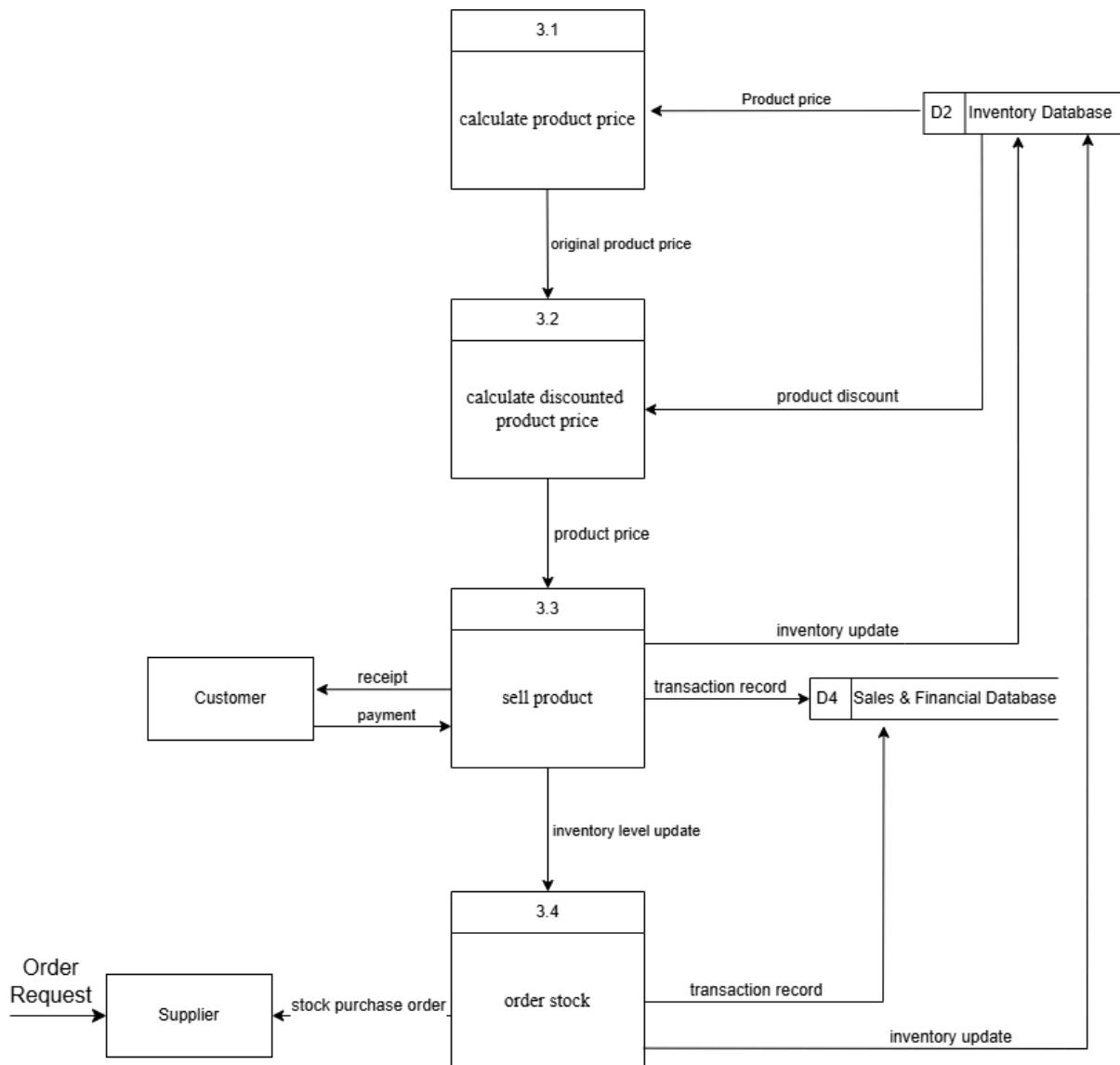
### 2.6.3.2 Payroll module

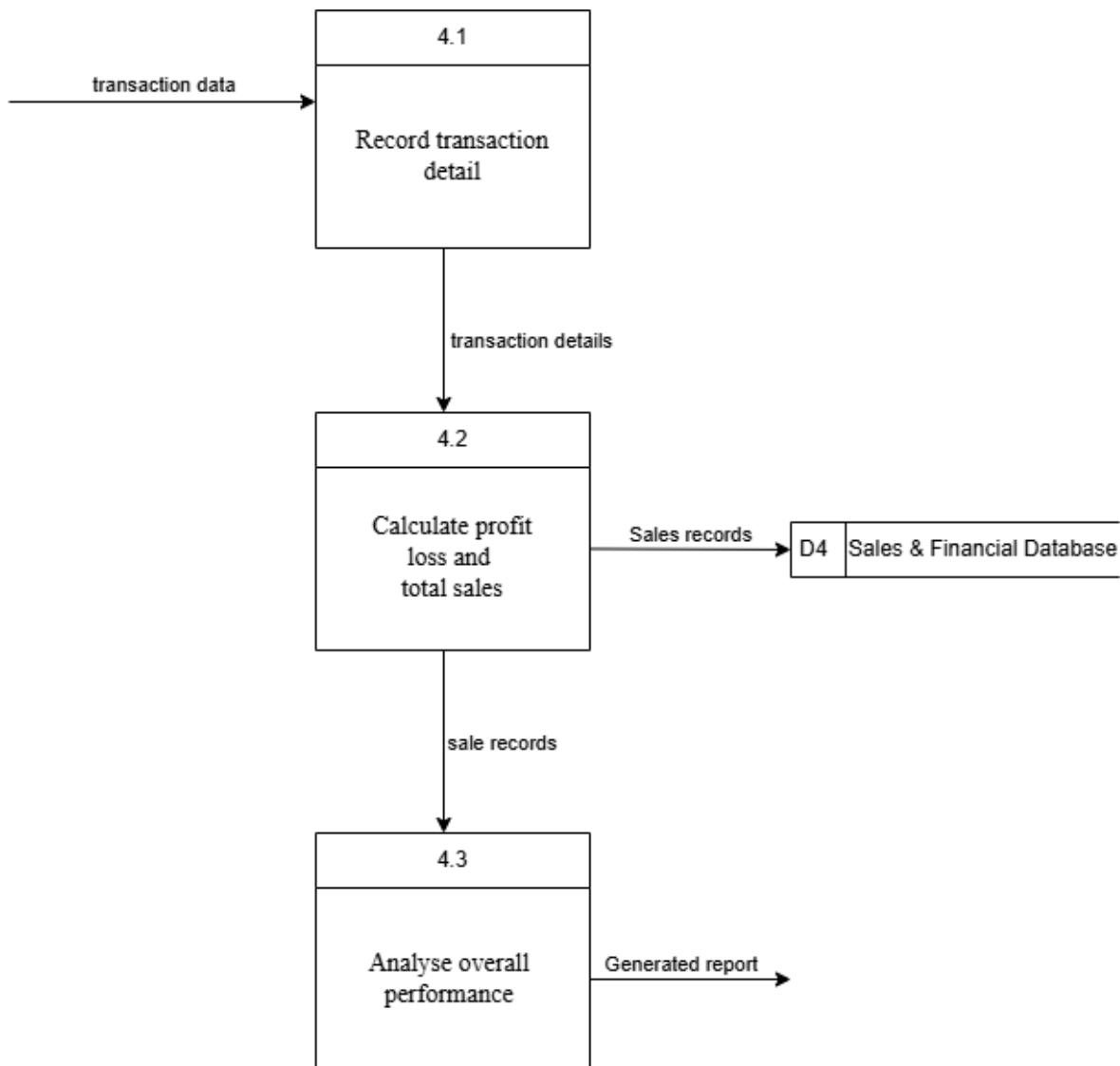


### 2.6.3.3 Inventory module



#### 2.6.3.4 Financial Status module





## **2.7 Requirement Analysis (based on Survey/Interview)**

After gathering required information via interview, the following are the key features that would be added in our system:

1. Update customer database
2. Supplier management system with order automation
3. Digital sales recording and sales reporting
4. Automated Inventory and expiry tracking
5. Payment method integration
6. Product profitability reports
7. Promotion and discount management system
8. User access control and security

## **3.0 Database**

### **3.1 System Boundaries**

The BESTARI Minimart Database System's system boundaries are the internal functionalities and external interactions. The system will handle inventory, sales, customer relationships, employees, suppliers, and financial transactions internally. It will monitor stock levels in real-time, automatically update inventory after each sale, streamline reorder procedures, and produce reports on stock usage, sales, and financial performance.

The system is designed to save customer profiles, control loyalty programs, monitor employee attendance and productivity, and streamline payroll calculations. Management of suppliers, which includes order histories and delivery schedules, will be managed within the system as well.

On the outside, the system will communicate with suppliers to reorder items and with external point-of-sale (POS) systems to handle customer payments, but the actual connection with suppliers and customers is not part of the system.

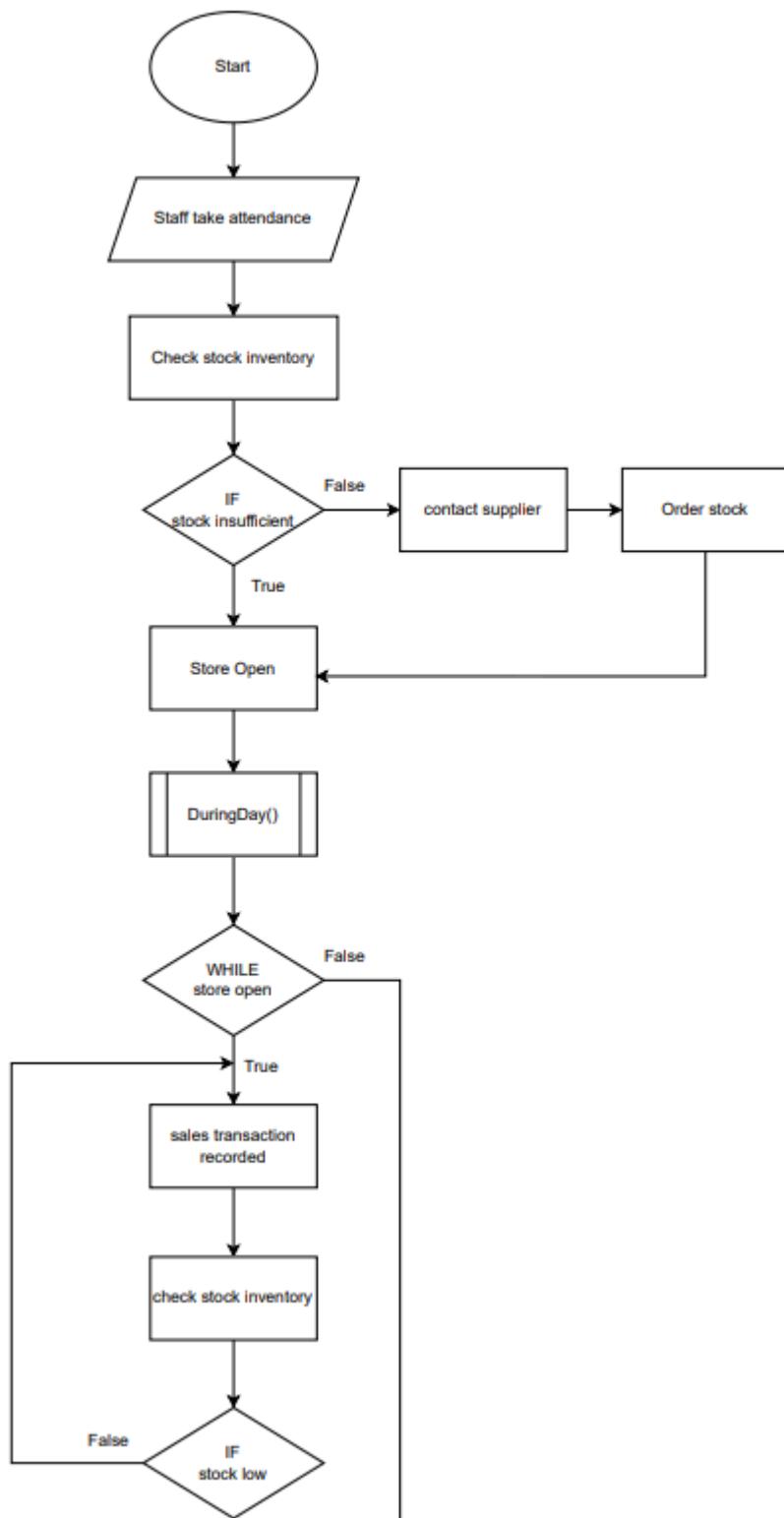
Furthermore, despite tracking work hours and computing payment amounts, external agencies may handle the actual distribution of payroll. Government compliance reporting and specific customer engagement tasks, like marketing or loyalty program apps, will also function beyond the system's boundaries. These interfaces establish boundaries for the database system, guaranteeing that important operational duties are automated while external procedures stay distinct.

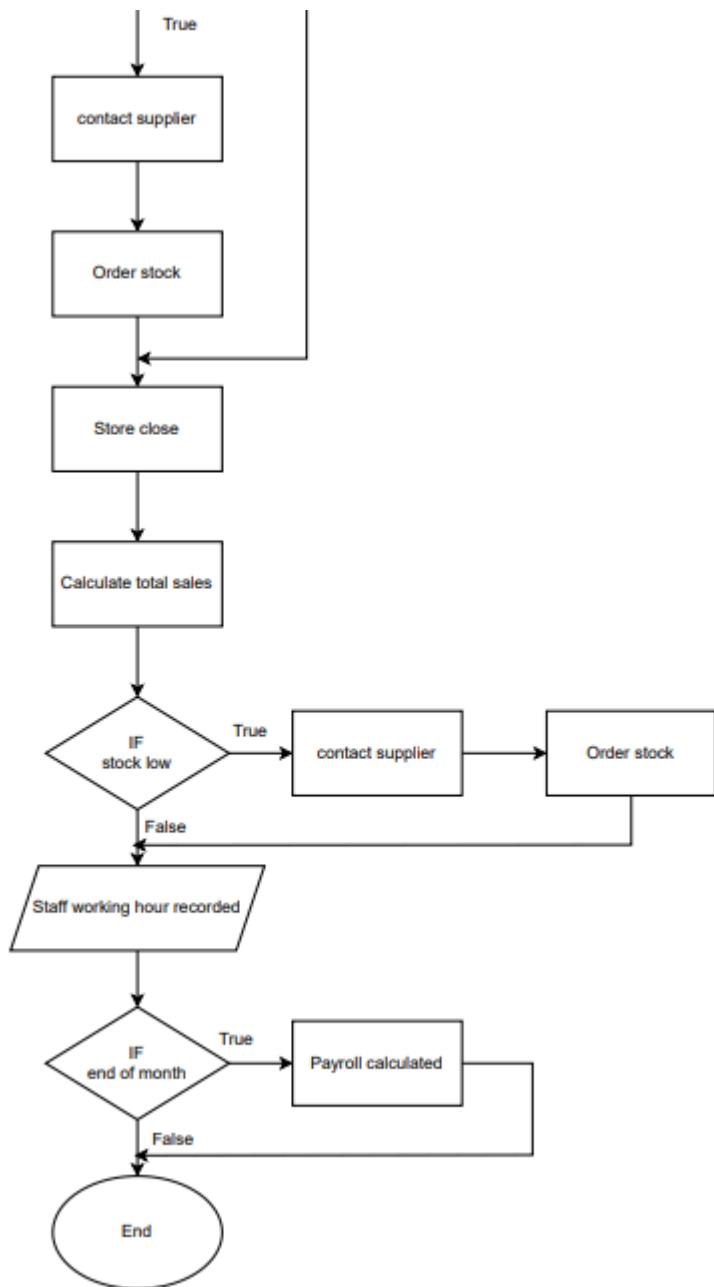
### **3.2 Current Business Rules (Current Business Process/Workflow)**

#### **Scenario**

1. The staff will take attendance manually
2. The staff will manually check stock inventory
  - 1.1 IF inventory stock insufficient
    - 1.1.1 Staff will contact supplier
    - 1.1.2 Stock is order
  - 1.2 Store open
3. Function DuringDay():
  - 3.1 WHILE store open
    - 3.1.1 The sales transaction is manually recorded
    - 3.1.2 The stock inventory is manually checked periodically
    - 3.1.3 IF the item is low in stock
      - 3.1.3.1 The staff will contact supplier
      - 3.1.3.2 Stock is order
    - 3.1.4 END IF
  - 3.2 END WHILE
  - 3.3 Store close
4. Calculate the total sales
  - 4.1 Calculate total sales deduct expenses
5. Inventory are checked
  - 5.1 IF the item is low in stock
    - 5.1..1 The staff will contact supplier
    - 5.1.2 Stock is order
  - 5.2 END IF
6. Staff working hours are recorded for the day
7. IF end of month
  - 7.1 Payroll is calculated

## Flowchart





### **3.3 Data Requirement**

#### **Inventory and product**

The inventory and product data requirements are crucial for tracking all items in the BESTARI mini mart's stock. Each of the products must have a unique identifier, a name and a category. The system will store the unit price, cost piece and the current stock quantity. It must also track suppliers linked to each product, reorder levels to trigger restocking alerts and expiration dates for perishable goods. Moreover, it will keep a history of stock movements including purchases, restocking and sales to ensure the accurate stock management.

#### **Sales**

To track every transaction, the system must capture comprehensive sales data. Each sale must be recorded with a unique transaction ID along with the product details like product ID and quantity sold as well as the total sale amount. The system should also capture the date and time of the sale, payment methods used and any applied discounts or promotions. It will track the cashier who processed the sales to ensure accountability and monitor performance. This data enables the real-time updates of inventory levels and supports sales reporting and trend analysis.

#### **Customer**

For managing customers and loyalty programs, the system must store the details of customer information. Each customer will have a unique membership ID with the records of their name, contact information and address. The system will track their purchase history and for loyalty program members, it will manage loyalty points and monitor their status in the program. This allows the business to offer personalised promotions and build stronger customer relationships.

#### **Supplier**

The system's supplier data requirements are focused on managing supplier relationships and orders. Each supplier will have a unique ID along with their company name, name of person in-charge, contact information and also physical address. The system will also store a list of the products supplied by each vendor and keep track of order histories including dates, quantities and also payment made. The supplier performance data such as

delivery times and product quality will also be recorded to support decision-making about future orders and supplier evaluations.

## **Staff**

Managing staff requires comprehensive employee data. The system must assign each employee a unique ID with their full name, role and hire date. It will track their salary for full-timer or hourly rate for part-timer, work schedules and attendance including overtime. Access levels based on the employee's role must be monitored to maintain system security and ensure that employees can only access functions relevant to their job responsibilities.

## **Financial**

The system must manage and process financial data to ensure accurate accounting and reporting. The system must track all revenue generated from sales along with the expenses such as product purchases, employee wages and operational costs. It will also generate the profit and loss statements to assess the business's financial performance. Besides, the system will also capture the tax data for compliance purposes and track payments made to suppliers including the payment amounts, dates and methods. The financial reports will be generated regularly to support management in making informed decisions.

## **Reporting and analytics**

To support business decision-making, the system must gather and organise data for generating detailed reports. Sales reports, categorised by product, employee or customer will be generated to analyse business performance. Inventory reports will help to monitor stock levels, identify trends and manage reorder points. Customer reports will provide insights into purchasing behaviour and loyalty program engagement while supplier reports will assess vendor performance and delivery accuracy.

### **3.4 Transaction Requirement**

#### **Data Entry:**

1. Enter the details of the owner
2. Enter the details of staff
3. Enter the details of the store member
4. Enter the details of customers
5. Enter the details of supplier
6. Enter the details of inventories/products
7. Enter the details of sales transactions
8. Enter the details of payment
9. Enter the details of promotion and discounts

#### **Data Updates/Deletion:**

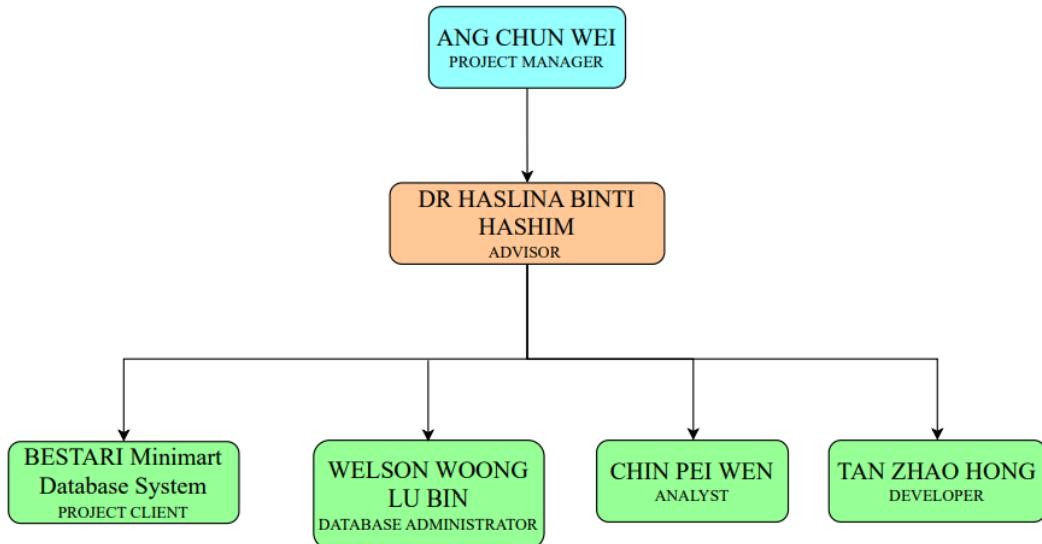
1. Update/delete the details of the owner
2. Update/delete the details of staff ?
3. Update/delete the details of customers
4. Update/delete the details of customer loyalty points
5. Update/delete the details of supplier
6. Update/delete the details of inventory levels
7. Update/delete the details of product price
8. Update/delete the details of product expiry dates
9. Update/delete the details of payment

#### **Data Queries:**

1. List the details of customer
2. List the details of product availability
3. List the details of supplier performance
4. List the details of payment/ purchase history
5. List the details of inventory turnover
6. List the details of expired products
7. List the details of customer segmentation

### 3.5 Planning (Human Resource, Work Breakdown Structure (WBS), Gantt Chart)

#### 3.5.1 Human Resource

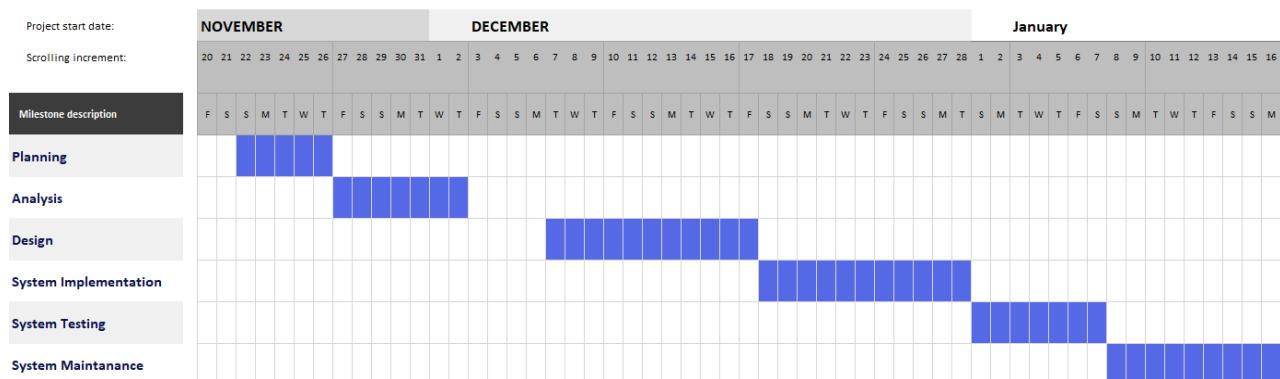


Role	Person in Charge	Responsibility
Project Manager	Ang Chun Wei	<ul style="list-style-type: none"> <li>Develop project plan</li> <li>Lead the project</li> <li>Manage project timeline</li> <li>Allocate the task to every member.</li> </ul>
Advisor	Dr Haslina binti Hashim	<ul style="list-style-type: none"> <li>Track the progression of the project</li> <li>Give advices on what can be improved</li> </ul>
Project Client	BESTARI Minimart Database System	<ul style="list-style-type: none"> <li>Provide information about system</li> <li>Sponsor the project</li> <li>Collaborate with team to modify the product</li> </ul>
Database Administrator	Welson Woong Lu Bin	<ul style="list-style-type: none"> <li>Responsible for designing, implementing, and maintaining the database.</li> <li>Troubleshoot the database issue</li> <li>Optimise the database performance</li> </ul>
Analyst	Chin Pei Wen	<ul style="list-style-type: none"> <li>Analyse the project</li> <li>Provide feedback on the project</li> <li>Data management</li> </ul>
Developer	Tan Zhao Hong	<ul style="list-style-type: none"> <li>Develop data</li> <li>Data Testing</li> <li>Write code to perform create, read, update and delete operation.</li> </ul>

### 3.5.2 Work Breakdown Structure (WBS)



### 3.5.3 Gantt Chart



#### **4.0 Benefit and Summary of Proposed System**

The proposed BESTARI minimart database system will significantly enhance business efficiency and accuracy by automating key processes such as financial management, inventory control, staff oversight, and customer relations. Automation will reduce human errors and provide real-time updates to improve the decision-making and freeing staff to focus on customer service.

Financial management will benefit from real-time reporting, optimising cash flow and reducing operational costs. Inventory tracking will ensure stock levels are maintained efficiently, preventing overstocking or shortage while the supplier coordination will become more streamlined.

Staff management will be simplified with automated payroll and shift tracking while the system will also improve customer loyalty through personalised membership programs. Additionally, the scalable system will support future growth, ensuring it adapts as the business expands. Overall, the solution boosts operational efficiency, enhances customer experience and supports long-term business success.

## 5.0 Appendix



*Figure 1: Interview with Owner*



*Figure 2: Interview with Customer*



*Figure 3.1: Meeting*



*Figure 3.2: Meeting*