



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

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SUBJECT NAME : DATABASE

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TASK : Phase 1 (P1) – Project Proposal & Database Requirement

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SECTION : 01

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1.0 Introduction

The internet is a crucial part of everyone's life, especially for those who do online commerce and shopping all over the world. There is a lot of the system that is created to make the client sit in front of the computer and quickly purchase. People like to buy everything online in our fast-growing environment. Because so many people are now utilizing e-commerce technologies, there is a need to develop an online shopping system that is simple to use and secure for client information. This is why online grocery stores exist and have grown popular, and it is intended to analyze and create an online grocery system.

The act of shopping online is the process by which consumers buy products or services directly from a vendor over the internet in real time, without the need of an intermediary provider. This initiative aims to deliver the benefits of an online grocery system to clients of a physical store. It allows you to buy things from the tiny market from anywhere using a computer and the internet. As a result, clients will be able to use the mini market's online grocery system and home delivery service.

This study is expected to contribute to the practical knowledge of vendors by better understanding the buying process of online grocery shopping from the plans consumers elaborate before shopping, to the actual buying process, and finally to the post shopping evaluation, as well as some of the implications on sales of this retail channel versus a more traditional one.

2.0 Background Study

Mini mart KTDI is a convenience store at College Tun Dr Ismail, UTM Johor. Pn Salmi binti Abd Majid and her sister, Pn Fatimah Binti Abd Majid, founded this market in 2013. The goal of this mart was to address the requirements of KTDI students in terms of purchasing basics such as food, dry products, and stationery. Unfortunately, this mini mart does not have a management system. They continue to employ the conventional method, which is manual and paper. Furthermore, the process of administering this mart involves a number of parties, including consumers, administrators, and suppliers.

Mini Mart KTDI is a mini market system that sells daily necessities and snacks. In the case of inventory, the owner has previously estimated how many goods are required and has communicated this to the supplier. However, it is occasionally wrong, but it is frequently missed by a mile, and there are no specific criteria. To assist in determining the quantity of items ordered, the owner might benefit from the estimated number of sales per item. Many different sorts of products, the number of transactions per day, and the items with a specific type of request based on the season or trend of sale at that time to create the difficulty in calculating how estimates of sales of goods every day.

As a result, we will put in place a new system to increase the quality of market management and bring it up to date with today's technical complexity. A novel system is the subject of our suggested case study. Based on the System Analysis and Design (SAD) approach (life cycle, method, tool, and technique), my team will discover and analyze problems, then provide ways to build new or improve existing systems. To complete the project, we shall carry out the activities outlined in detail for each phase.

3.0 Problem Statement

Among the issues that the mart's owner has when operating her shop manually are :

1. The mart can satisfy demand but may not be able to sell in huge volumes.
2. The current system requires the shop owner (manager) to make a report manually and tracing the order.
3. The shop owner needs to take more time to tabulate the product's data.
4. It's difficult to find consistent providers while maintaining the same pricing.
5. After Movement Control Orders (MCO) happened, the shop owner cannot return things and must pay in cash instead of using an online method.
6. It's tough to see what's accessible on the market. Students frequently visit the market, but everything is sold out, so it is a waste of time.
7. Some students are perplexed by the product release date and the product expiration date, therefore there will be uncertainty.

4.0 Proposed Solutions (include feasibility study)

Technical feasibility

In terms of technology there is really no existing system for the Mini Mart KTDI. Where all the process occurs in mini mart are in the form of manual. This makes the process harder because the owner could not keep track of the benefits, losses and also feedback. So here we should build a system from scratch because they do not use any system in past to upgrade. So here we have discussed to implement Point of Sale System for efficient and accurate transaction. This may include barcode scanners, cash registers, and inventory management software.

Other than that Inventory Management System, where it is essential for utilizing an inventory management system where it helps in tracking stock levels, managing reordering processes, and minimizing the risk of stockouts or overstock situations. Besides that Supply Chain management is also required for managing the supply chain, including relationships with suppliers, order processing, and delivery logistics, is important for maintaining a consistent inventory.

Customer Relationship Management (CRM), implementing CRM tools can help in understanding customer preferences, managing loyalty programs, and improving overall customer satisfaction. Last but not least Training and Support system is to provide training for staff to effectively use the technical systems and ensuring there is ongoing support for technical issues is important for the smooth functioning of the mini mart operation.

Economical

		YEAR 0	YEAR1	YEAR 2	YEAR 3	YEAR4	YEAR 5
Development Cost							
Hardware	60000	60000					
Software	9500	9500					
Consultant	25000	25000					
Training	30000	30000					
	TOTAL	124500					

Production Cost							
Supplies	2400		2400	2616	2851	3108	3388
IS Support	18000		18000	19620	21386	23311	25408
Maintenance	2500		2500	2725	2970	3238	3529
Anual Production Cost			22900	24961	27207	29656	32325
(Present Value)	2503		20818	20629	20441	22281	24286
Accumulated Costs (PV)			145318	165947	186388	208670	232956

Benefit							
Inventory	156000		156000	170040	185344	202025	220207
(Present Value)			141818	140529	139251	151784	165445
Accumulated Benefit (PV)			63818	204347	343598	495382	660827
GAIN OR LOSS			-81500.18182	38400	157210	286713	427871
PROFITABLE INDEX			1.26				

Since the profitable index is 1.26 ,it shows that the project is a really good investment because its index is more than one

Operational

Based on the system that we have proposed to the owner of mini mart and also after an interview with the owner, we have found that this system is very crucial for the business because it could really decrease the burden for the owner in managing her business. This system is going to be used by staff of the mini market where they have not used before, so it's going to take more time for them to get use of the system. So this project will be long-term project as the system is going to be used by them because there is no proper rubric system.

5.0 Objectives

1. To develop an online system that will keep secure record activity of sales and stocks information.
2. To develop and analyze the construction of an online mini market system that will be more convenient for clients.
3. To assure and improve records, and to manage product stockpiles, activities, and sales enquiries facts and information.
4. To make it easier for students to discover the availability of their chosen products and then proceed to checkout.
5. To improve the quality of management in terms of customers, suppliers and managers

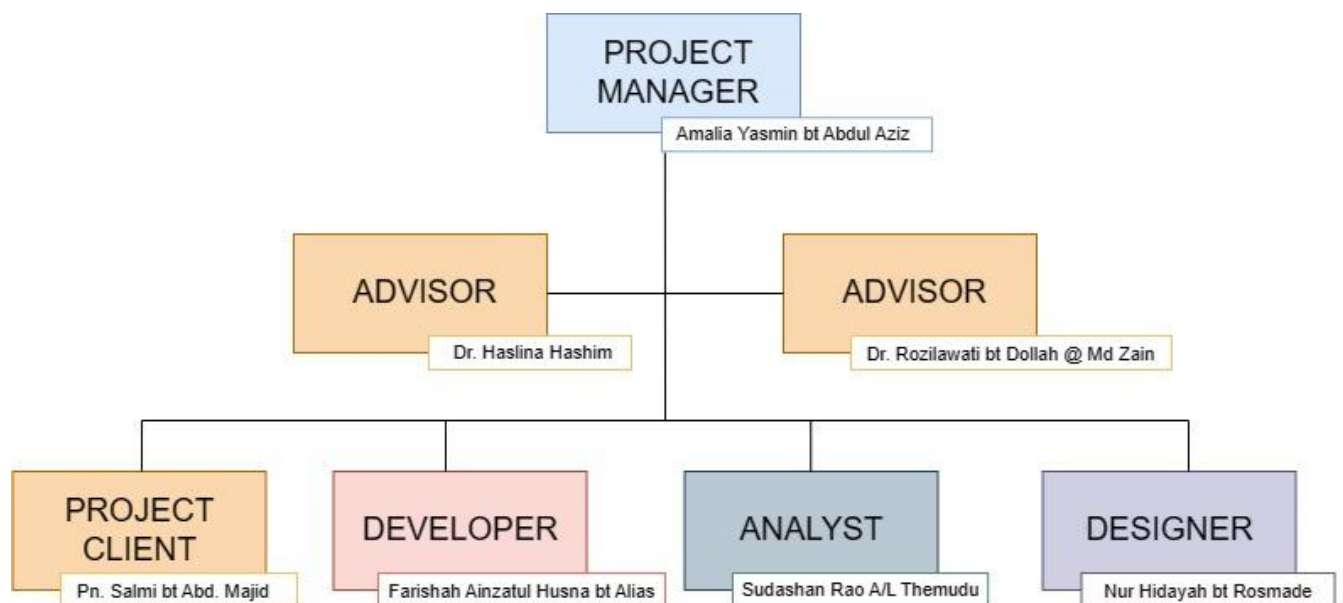
6.0 Scope

The scope of system development is to create a mini market system for customers. The customers can be from UTM Students, UTM Staff and outsiders which are non-UTM Students and Staff. The customer can interact with the admin via the system using this system. The finished system should be capable of inserting, deleting, and updating data in the database, as well as listing and searching the data contained in the database for the administrator. The system must be basic and easy to use since customers may be of varying educational levels and ages. The system also should be well-organized and user-friendly.

The study's importance is to develop an online mini market system that would give clients with the most secure and high-quality services, be simple to use, and provide management with shop (product) characteristics. The system has some unique features such as search, grocery categories, payment area, stock availability, and messaging to admin for delivery or further use.

7.0 Project Planning

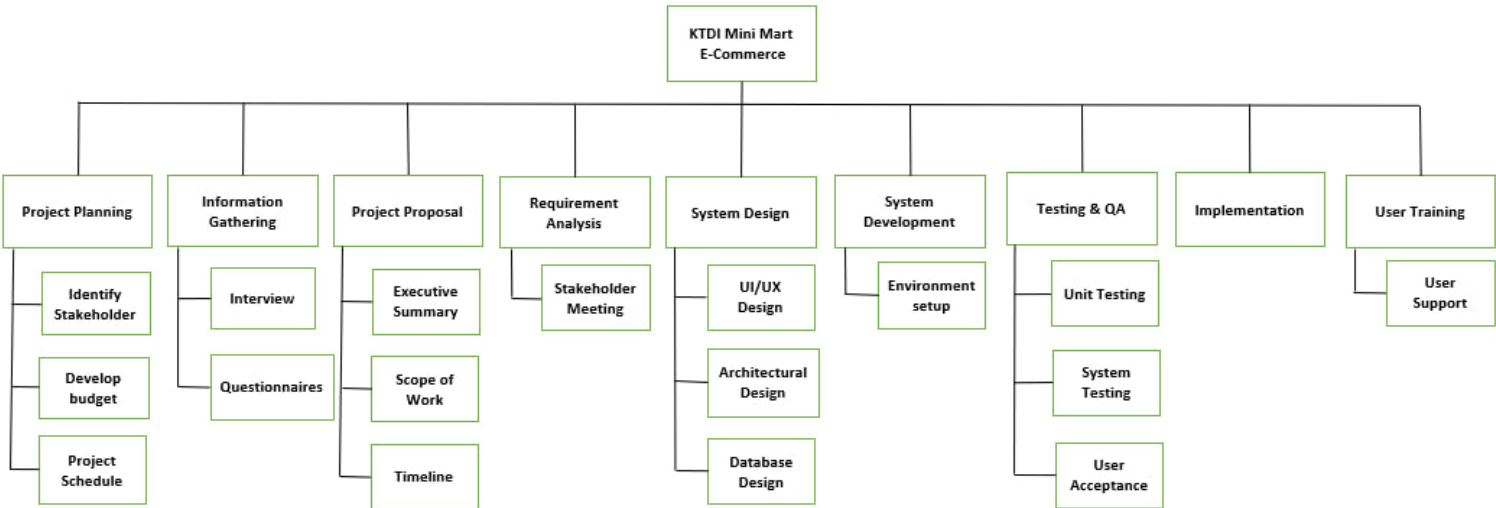
7.1 Human Resource -



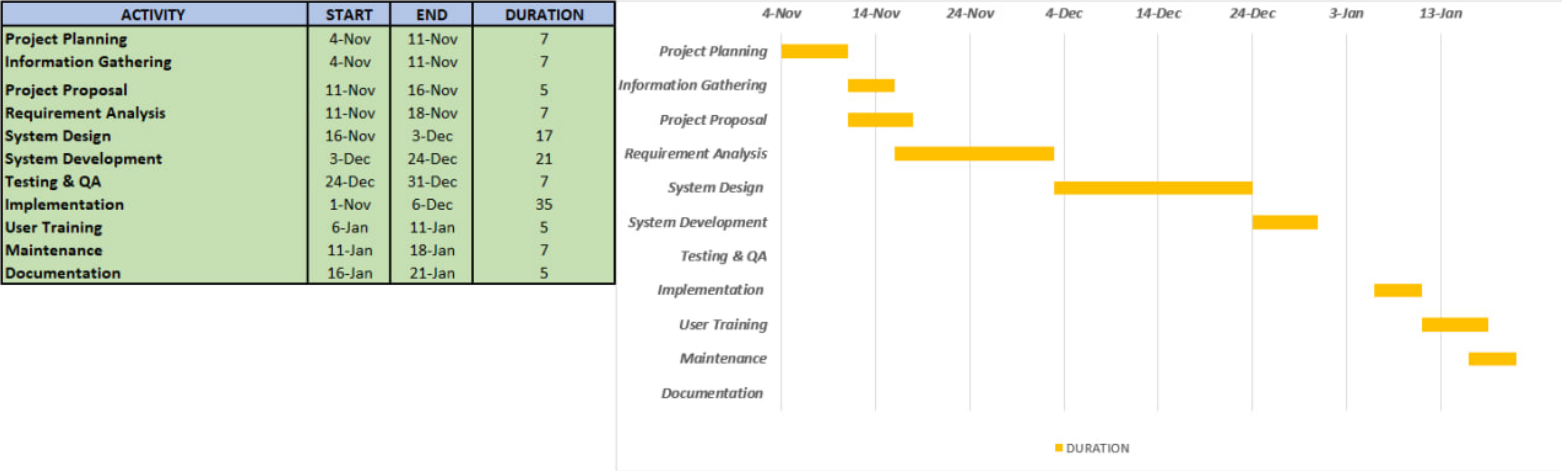
Role	Person In Charge	Responsibility
Project Manager	Amalia Yasmin bt Abdul Aziz	1. Plan Project. 2. Monitor project tasks. 3. Distribute tasks for each member.
Project Advisor	1. Dr. Haslina Hashim 2. Dr. Rozilawati bt Dollah @ Md Zain	1. Review project's progress. 2. Give advice and guidance for project's improvements.

Project Client	Pn. Salmi bt Abd. Majid	<ol style="list-style-type: none"> 1. Provide business information and challenges. 2. Request for changes. 3. Provide project budget.
Analyst	Sudashan Rao A/L Themudu	<ol style="list-style-type: none"> 1. Collect and manage data. 2. Analysis project. 3. Troubleshooting problem.
Developer	Farishah Ainzatul Husna bt Alias	<ol style="list-style-type: none"> 1. Develop data. 2. Test data. 3. Fix the problem.
Designer	Nur Hidayah bt Rosmade	<ol style="list-style-type: none"> 1. Design the system. 2. Structure and organize data. 3. Protect system integrity and data.

7.2 Work Breakdown Structure (WBS)



7.3 Gantt Chart



8.0 Requirement Analysis (based from AS-IS analysis)

AS-IS Analysis

Current State: The e-commerce that we have chose was Mini mart KTDI where it is a convenience store at College Tun Dr Ismail, UTM Johor. The e-commerce business currently uses a manual order processing system where customers physically go to the shop, and the inventory is managed using the spreadsheet, the orders from the suppliers are recorded on a paper. Other than that the communication between suppliers are through phone calls and also communication with customers are done through messaging.

Functional Requirements:

1. Inventory Management:

- The system should track and manage inventory levels for various products.
- It should support the addition, removal, and updating of product information.

2. Point of Sale (POS) System:

- The system should facilitate sales transactions, including scanning barcodes and processing payments.
- It should generate receipts and update inventory in real-time.

3. Employee Management:

- The system should have features for employee login, tracking working hours, and managing access level.
- It should support the addition and removal of employees.

5. Supplier Management:

- The system should manage information about suppliers, including contact details and product catalogs.
- It should support order placement and tracking.

6. Reporting and Analytics:

- The system should generate reports on sales, inventory levels, and employee performance.
- It should provide analytics to help in decision-making.

8. Security and Access Control:

- The system should ensure secure transactions and data storage.
- It should implement access controls to restrict unauthorized access to sensitive information.

Non-Functional Requirements:

1. Performance:

- The system should handle a high volume of transactions efficiently, especially during peak hours.
- Response times for POS transactions should be minimal.

2. Reliability:

- The system should be reliable, ensuring minimal downtime.
- It should have backup and recovery mechanisms in case of system failures.

3. Usability:

- The user interface should be intuitive and easy to use for both employees and customers.
- Training requirements for new users should be minimal.

4. Scalability:

- The system should be scalable to accommodate a growing number of products, customers, and transactions.
- It should adapt to the changing needs of the convenience store.

5. Interoperability:

- The system should integrate with other systems such as accounting software and supplier databases.
- It should support industry standards for data exchange.

6. Compliance:

- The system should comply with relevant regulations and standards for data protection and financial transactions.
- It should adhere to local laws and industry guidelines.

7. Security:

- The system should employ encryption for sensitive data.
- It should have authentication mechanisms to ensure only authorized users access the system.

8. Maintainability:

- The system should be easily maintainable, allowing for updates and patches.
- It should have documentation for troubleshooting and system administration.

8.1 Current business process (scenarios, workflow)

Scenarios

Customer

1. User Registration/Login:

- Users may need to register for an account or log in to the app.
- Registration ensures the app can identify and associate the user with their orders.

2. Browsing Products:

- Users can browse a list of available grocery products.
- Product details include information such as name, category, price, and maybe customer reviews.

3. Viewing Product Details:

- Users can click on a specific product to view additional details.
- Details may include a description, nutritional information, and product images.

4. Adding to Cart:

- Users can add desired products to their shopping cart.
- The cart displays a summary of selected items and their quantities.
- Act as checklist form items also

5. Store Pickup:

- For store pickup, users should walk in to the store and pick up the items and proceed to payment over the counter.

6. Payment and Checkout:

- Users proceed to checkout, review their selected items, and does the payment.

7. Enjoying Groceries:

- Users receive their groceries either at their doorstep or at the chosen pickup location.
- They can enjoy the products they ordered.

8. Feedback and Loyalty Points:

- Users may have the option to provide feedback or rate products.
- Loyalty points or rewards may be awarded for future discounts.

Supplier

1. User Registration/Login:

- Users may need to register for an account or log in to the app.
- Registration ensures the app can identify and associate the user with their orders.

2. Browsing Products:

- Supplier can check the availability of his/her products in the grocery store to make sure they are not out of stock

3. Viewing Product Details:

- Supplier can click on a specific product to view additional details.
- Details may include a description, nutritional information, and product images.

5.Add to Supply list

- Supplier add the product details that he wants to deliver to the grocery store

6.Deliver to the store

- Deliver the products to the store and give his receipt and the staff checks the product and if there are any damages return the product to the supplier.

7.Payment

- Pay the supplier for his products with cash.

Staff

1. User Registration/Login:

- Users may need to register for an account or log in to the app.
- Registration ensures the app can identify and associate the user with their orders.

2. Browsing Products:

- Staff can browse a list of available grocery products.
- Product details include information such as name, category, price, and maybe customer reviews.

3. Viewing Product Details:

- Staff can click on a specific product to view additional details.
- Details may include a description, nutritional information, and product images.

4.Add to Order List

- Staff add items and products that are needed into order list where the admin can check the order list and send alert to the supplier for the products needed.

5.Review Payment

- Staff can review the payment from the customers who have purchased the products

6.Interact with user

- Staff can interact with the customer to answer the questions and also give details about their business.

Admin

1. User Registration/Login:

- Admin may need to register for an account or log in to the app.
- Registration ensures the app can identify and associate the user with their orders.

2. Browsing Products:

- Admin can browse a list of available grocery products.
- Product details include information such as name, category, price, and maybe customer reviews.

3. Viewing Product Details:

- Admin can click on a specific product to view additional details.
- Details may include a description, nutritional information, and product images

4. Feedback and Loyalty Points:

- Admin may have the option to provide answers to the feedback.
- Loyalty points or rewards may be awarded for the customers.

5. Add to Order List

- Admin add items and products that are needed into order list where the and can check the the order list and send alert to the supplier for the products needed.

6. Contact Supplier

- Admin can contact with the suppliers to order products.

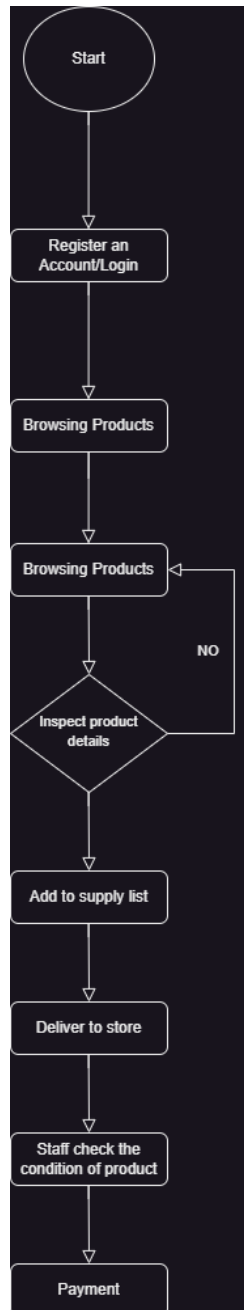
7. Review the payment in the bank

- Admin can check the transaction from the customers and also calculate the profit of their business.

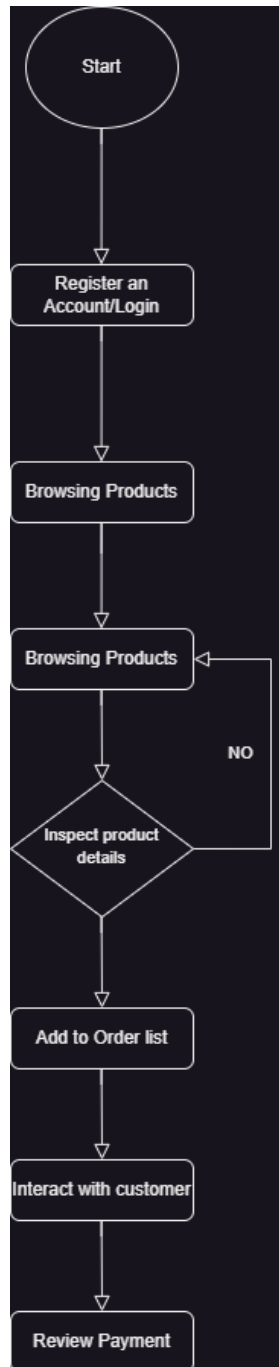
Workflow(Customer)



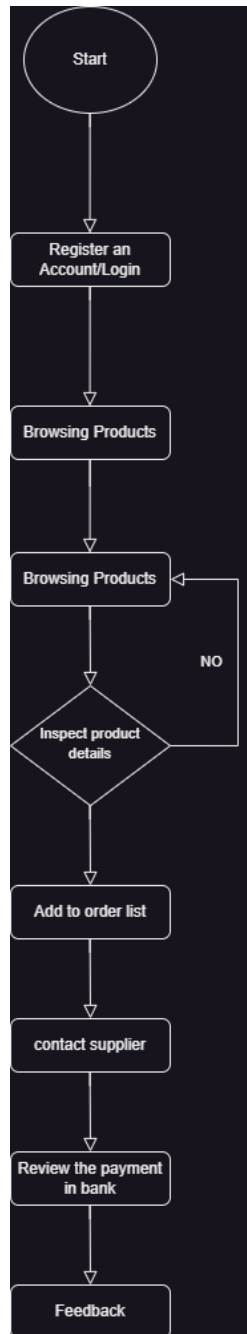
Workflow(Supplier)



Workflow(Staff)



Workflow(Admin)



9.0 Transaction requirement (data entry, data update/delete, data queries)

Data entry :

Enter details of Manager

Enter details of Staff

Enter details of Customer

Enter details of Supplier

Enter details of Order

Enter details of Product

Enter details of Sale transaction

Data Update/Deletion :

Update/ Delete the details of Manager

Update / Delete the details of Customer

Update / Delete the details of Staff

Update / Delete the details of Supplier

Update / Delete the details of Products

Update / Delete the details of Sales transaction

Update / Delete the details of Order

Update / Delete the details of Invoice

Update / Delete the details of Payment

Data Queries :

1. List the availability of stocks
2. List the client name, address, phone number , email
3. List of supplier phone numbers, supplier address, supplier bank account
4. Access a variety of queries related to inventory status, facilitating efficient management.
5. Generate a detailed sales report, encompassing transaction specifics and overall sales performance.

10.0 Benefit and Summary of Proposed System

Based on our discussion for defining the problems and looking for its solution, we highlighted some of the advantages of the new proposed system that will have a big impact on KTDI mini market.

For customer benefits, customers can easily browse and purchase products, reducing instances of sold-out items and enhancing the overall shopping experience. Also, customers can avoid wasted visits since there is a real-time update on product availability in the system. Other than that, display of product release and expiration dates addresses will clear customers' confusion. The system's search and categorization features contribute to an enriched shopping experience.

Meanwhile for KTDI mini market business benefits, the data from the customers are recorded neatly and guaranteed its validation, so Pn. Salmi will be easier to analyze the loyalty of the customers, business marketing and promotion. Also, the system employs data-driven insights to optimize inventory levels based on historical sales data. The prediction ensures that the mart can meet demand and avoid overstock or stockout situations. Pn. Salmi can find the current sales status increasing or decreasing from customer feedback and ratings. The integration of online payment methods facilitates cashless transactions, offering convenience to both the mart and its customers. The system incorporates features for customers to provide feedback on products and services which automatically can improve customer service as well.

11.0 Summary

The deployment of an online grocery system specifically designed for Mini Mart KTDI, a convenience shop located at College Tun Dr Ismail, UTM Johor, is the focal point of the study. The shop now uses manual, paper-based operations, which leads to inefficiencies in order processing, inventory management, and customer relations. A complete system that includes a Point of Sale (POS), Inventory Management, Supply Chain Management, Customer Relationship Management (CRM), and a Training and Support System is what is suggested as a solution.

This initiative's main goals are to improve record-keeping procedures, create a safe online platform for managing stock and sales, and make the small market system more convenient for customers overall. With an emphasis on developing a user-friendly system that includes elements like search capabilities, grocery categories, expedited payment procedures, real-time stock availability updates, and a message system, the scope of the project includes UTM personnel, students, and external clients.

The suggested solution comes with a number of benefits in addition to solving Mini Mart KTDI's problems. These include a decrease in sold-out products, legible product information displays, and real-time updates on product availability that enhance the user experience. The solution offers simplified data administration, data-driven insights that optimize inventory levels, and online payment options integration for cashless transactions. The planned online grocery system essentially aims to modernize and improve Mini Mart KTDI's operating efficiency, giving its customers a smoother and better shopping experience.