



**UTM**  
UNIVERSITI TEKNOLOGI MALAYSIA

**SCHOOL OF COMPUTING**  
**SESSION 2023/2024, SEMESTER 3**  
**SECD2523 - DATABASE**  
**SECTION 10**

**PHASE 1: PROJECT PROPOSAL AND PLANNING**  
**GROUP: DATA NINJAS**

**LECTURER NAME: DR ROZILAWATI**

<b>NO.</b>	<b>NAME</b>	<b>MATRICS NO</b>
<b>1.</b>	<b>NURIFFAH BINTI PAIZAN</b>	<b>A22EC0252</b>
<b>2.</b>	<b>SHUHD NASHWAN SAEED SHARAF</b>	<b>A22EC4014</b>
<b>3.</b>	<b>NURUL IZZAH BINTI RASHID</b>	<b>A22EC0256</b>
<b>4.</b>	<b>LYDIA AZRA BINTI MUHAMMAD NOR</b>	<b>B23CS0042</b>

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## **1.0 Introduction**

A lot of UTM (Universiti Teknologi Malaysia) students engage in small businesses on campus, primarily for financial gain, project assignments or to occupy their leisure time. However, they encounter a significant challenge in terms of lacking a platform for promoting their businesses. What they already do is promote their businesses on WhatsApp or Telegram groups, requiring them to join multiple groups for broader outreach, which, in turn, consumes a considerable amount of time, effort, and mobile space.

To overcome these challenges, we are going to build a platform for small business owners around UTM. All small business owners can use this platform solely to promote their businesses. This platform will encompass a wide range of features and functionalities, including e-commerce capabilities, marketing and customer engagement, and analytics and insights. People around the UTM will be able to participate in the platform to get to know what businesses are there and buy their products. This will make it easier for those students who do not have any transportation to go outside the university to buy the items needed.

This project is a collaborative effort that involves a dedicated team of developers, system analysts, and small business owners. We are committed to delivering a solution that is not only technologically advanced but also responsive to the real-world challenges faced by small business owners.

Through this platform, we are all about inspiring creativity and giving a helping hand to small business owners in UTM. We're dedicated to bringing a user-friendly platform that perfectly fits the needs of small business owners in the area.

## **2.0 Background study**

Delving further into the operational environment of UTM's small enterprises reveals that the existing difficulties are inextricably linked to the manual nature of their present systems. The reliance on old, paper-based procedures creates a number of hurdles, threatening the efficiency and sustainability of these businesses. Manual order monitoring and recordkeeping appear as major concerns for UTM small business owners. The lack of an automated system makes it difficult for them to keep track of transactions, potentially leading to errors, delays, and inefficiencies in the order fulfillment process. This not only has an influence on the entire customer experience but also creates an excessive strain on business owners who must traverse the difficulties of manually processing orders.

When it comes to processing Internet payments, the problems multiply. In a period where digital transactions are widespread, small company owners must manually monitor and confirm payments received through online transfers. This involves a thorough analysis of bank statements to verify correctness, a time-consuming and error-prone procedure that takes time away from their primary operations of operating and expanding their businesses. Maintaining a consistent internet presence adds to the difficulties that small entrepreneurs encounter. The requirement to have phones on at all times in order to prevent losing orders or client inquiries necessitates a continual commitment, blurring the lines between personal and business life. This constant connectedness not only offers personal issues for business owners but also highlights the critical need for a more efficient and automated system capable of seamlessly managing and streamlining client interactions.

Data management difficulties complicate the operating challenges even further. The susceptibility of manual systems to data loss creates a perilous situation in which crucial information might be misplaced or rendered unavailable in an instant. The difficulty in identifying prior records exacerbates the problem, making it more difficult to analyze past data for insights, patterns, and informed decision-making. Beyond the domain of operations, the lack of a specialized promotional platform is a significant shortcoming. The owners of small businesses do not have a defined channel through which to properly promote their products and services to the lively and varied UTM student and staff community. This lack of a promotional channel not only restricts their market reach but also their ability to develop a strong brand presence and encourage consumer involvement within the local community.

Thus, the background study uncovers an assortment of obstacles experienced by UTM small business owners, ranging from the inherent inefficiencies of manual procedures to the complexity of managing online payments, maintaining consistent connectivity, and the lack of a suitable promotional platform.

### **3.0 Problem statement**

Small company owners in UTM have significant issues in efficiently marketing their products and services. There is currently a noteworthy lack of an established platform or centralized system that caters exclusively to these firms' promotional needs. As a result, some businesses revert to using several WhatsApp and Telegram groups as improvised methods for marketing their products. The absence of a specialized and organized platform for company marketing reduces the efficiency and reach of these small firms. Using separate communications groups not only splits promotional activities, but also creates visibility, administration, and monitoring issues. Because there is no systematic method, it is difficult for both company owners and potential consumers to navigate through the abundance of communications and promotions, resulting in a poor experience for all parties concerned.

Furthermore, relying just on messaging applications may not give the essential tools and capabilities for efficient marketing efforts. Small business owners want a comprehensive and user-friendly platform that not only allows them to promote their products and services but also allows them to communicate with potential customers in a smooth manner. Owners who do not have access to such a platform may miss out on great prospects for development and visibility in their local community. Recognizing these limitations highlights the necessity for a formal and specialized promotional platform. A centralized system in UTM developed exclusively for small businesses will streamline promotional operations, increase exposure, and encourage a more organized and effective way of linking enterprises with their target audience. It can empower small business owners, contribute to the growth of the local economy, and provide the UTM community with a more convenient and effective way to discover and engage with the diverse range of products and services offered by these business owners by addressing this gap in the current ecosystem.

### **4.0 Proposed solution**

The UTM Small Business Platform is designed to address the challenges faced by small business owners in UTM by providing them with an official and effective platform for promoting their products and services. This platform aims to facilitate business growth and increase visibility among UTM students and staff.

## Feasibility study

### Technical:

Technical expertise in mobile applications will be needed for the platform's development.

Modern frameworks and technologies can be used to build the platform, guaranteeing scalability, security, and an intuitive user interface.

### Operational:

The platform cannot succeed without the active participation and frequent updates of UTM's small business owners.

Small business owners should be trained and onboarded clearly and concisely to use the platform efficiently.

### Economic:

The financial viability of the project should take development, maintenance, and marketing costs into account.

Partnerships for business advertising or subscription fees from premium business profiles are examples of potential revenue streams.

The project's sustainability and return on investment will need to be determined by a thorough cost-benefit analysis.

## 5.0 Objectives

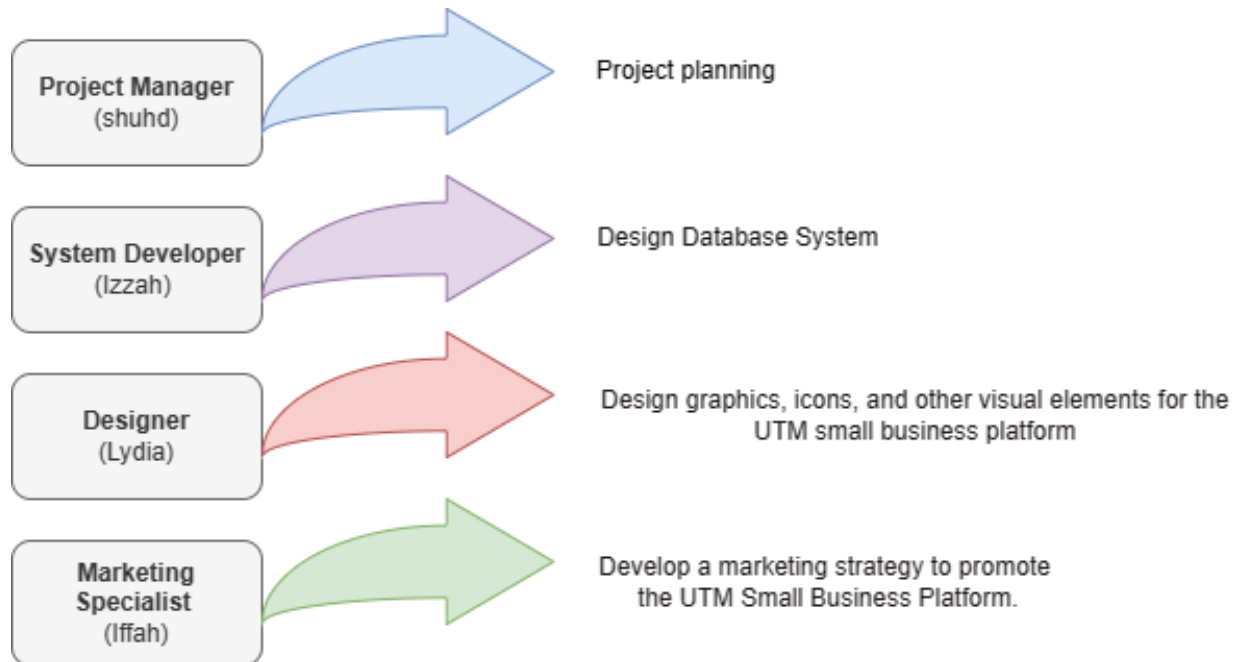
1. To offer a marketplace where small business owners can promote and sell their products or services.
2. To enable sellers to easily list and manage their products or services on the platform.
3. To establish a seamless and hassle-free process using cashless payment methods.

## 6.0 Scopes of the Project

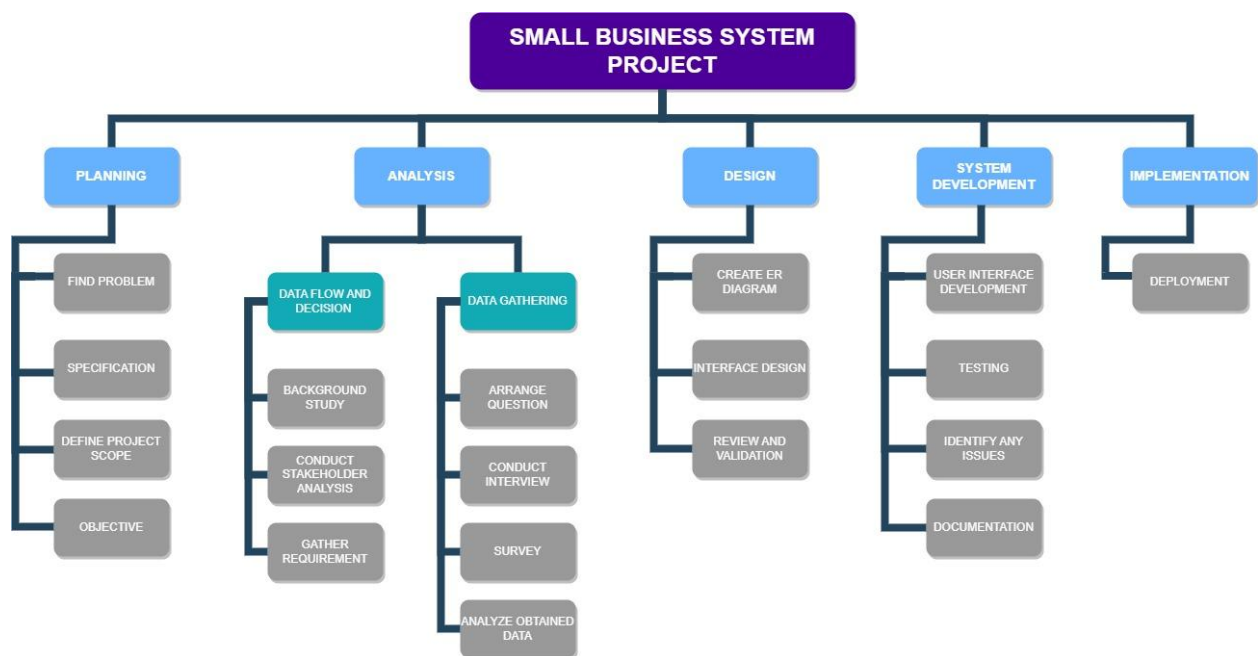
1. The platform should be accessible to all small business owners in and around UTM, allowing them to create profiles and showcase their products or services.
2. It should provide tools for businesses to market their products effectively, engage with customers, and collect feedback.
3. The platform should offer data-driven insights and analytics to help business owners make informed decisions and optimize their operations

## 7.0 Project planning

### 7.1 Human Resource

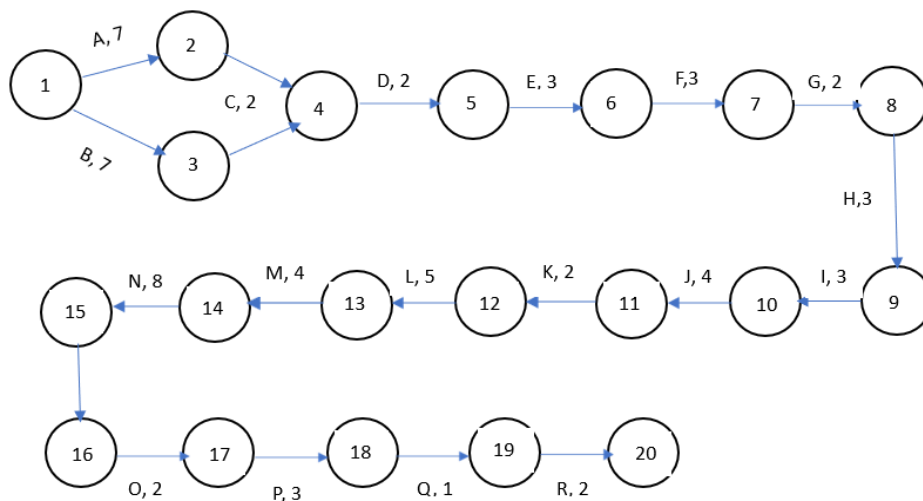


### 7.2 Work Breakdown Structure (WBS)



### 7.3 Pert Chart

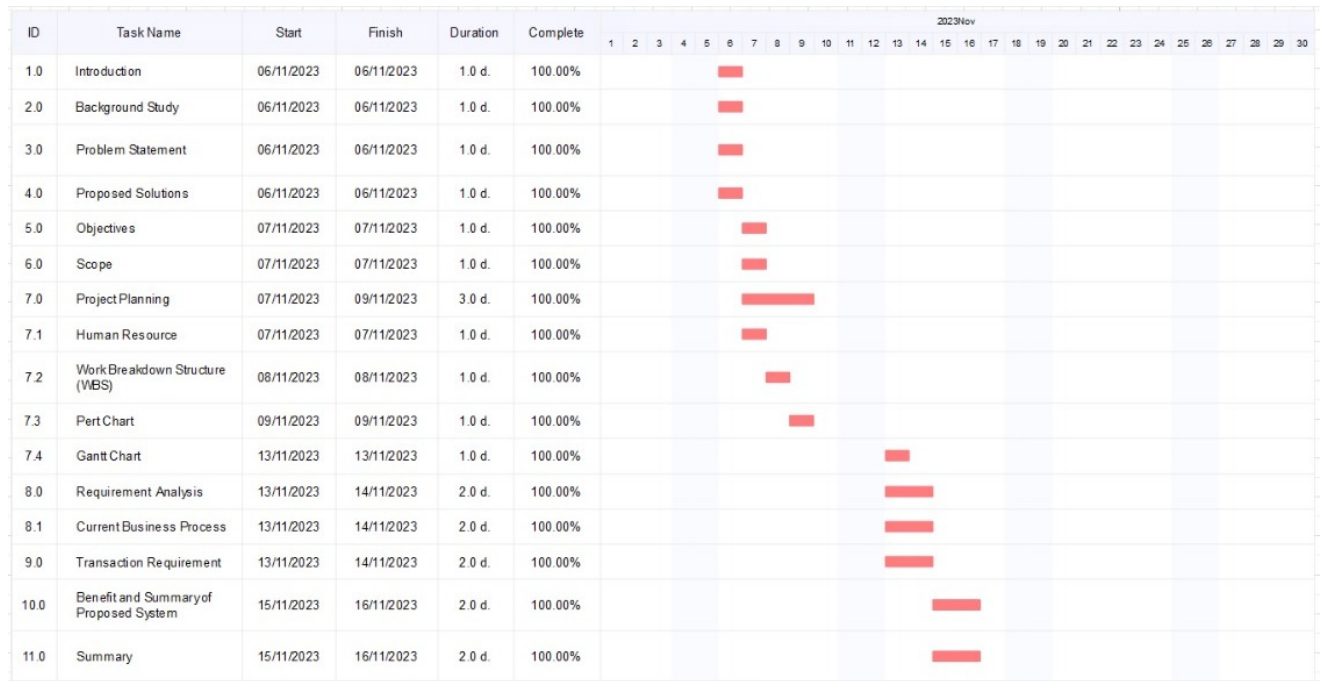
ACTIVITY	PREDECESSOR	DURATION
A Find problem	NONE	7
B Specification	NONE	7
C Define project scope	A, B	3
D Objective	C	2
E Background study	D	2
F Conduct stakeholder analysis	E	3
G Gather requirement	F	3
H Arrange question	G	2
I Conduct interview	H	3
J Survey	I	3
K Analyse obtained data	J	4
L Create ER diagram	K	2
M Interface design	L	5
N Review and validation	M	4
O User interface development	N	8
P Testing	O	2
Q Identify issues	P	3
R Documentation	Q	1
S Deployment	R	2



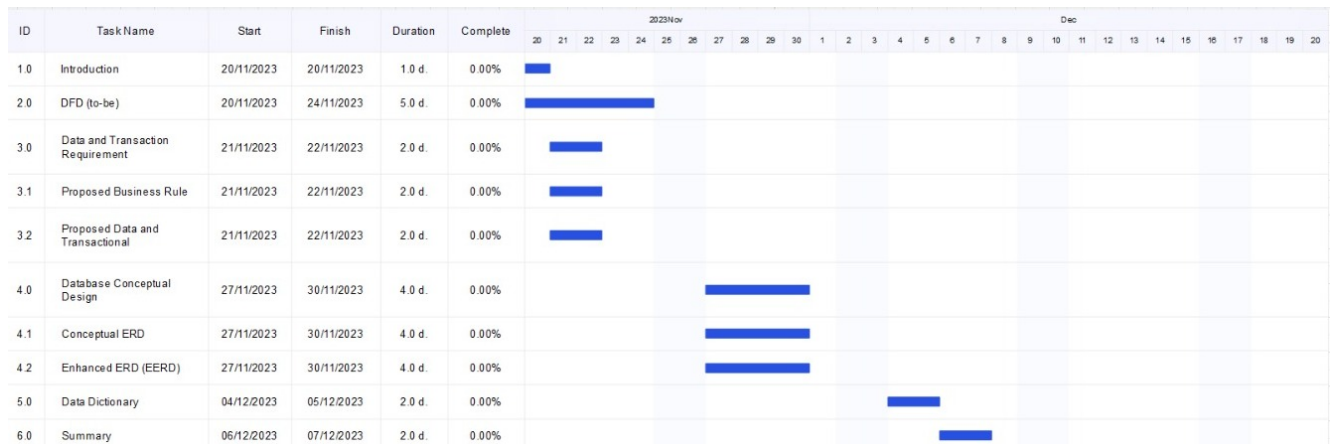


## 7.4 Gantt Chart

### PHASE 1



### PHASE 2



## PHASE 3

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## **8.0 Requirement Analysis**

### **8.1 Current Business Process**

Scenario 1: User Registration and Onboarding User Registration: Small business owners register on the platform by providing necessary information such as business details, contact information, and a brief description of their offerings then a verification process ensures the legitimacy of registered businesses, maintaining the integrity of the platform.

Scenario 2: Profile Management and Business Promotion

Business owners can create and manage their profiles, including details such as business logo, description, and product listings.

Scenario 3: Customer Interaction and Engagement

Customers can leave reviews and ratings, fostering trust and credibility within the community, Business owners and customers can communicate seamlessly through in-app messaging, ensuring quick responses to inquiries.

Scenario 4: Analytics and Insights, Business owners access analytics tools to track the performance of their promotions, sales, and customer engagement.

User Feedback and Suggestions:

The platform gathers feedback and suggestions from users, providing insights for continuous improvement.

### **Workflow**

- The proprietor of a small business registers and fills out their profile.
- A small business owner updates their listing with new goods or services.
- Consumers peruse offerings and put goods in their shopping carts.
- When placing an order, customers supply information about shipment and payment.
- Order alerts are sent to small business owners, who then get orders ready for shipping.
- Owners of small businesses ship orders and give clients access to tracking details.
- Small business owners can get orders from their customers and receive feedback from them.

## **9.0 Transaction Requirements**

### **Module 1: Shopping Cart**

In the shopping cart module, the shopping cart serves as a crucial component in our system, defining clear roles for users, such as administrators, sellers, and customers. Each role is associated with specific privileges governing shopping cart operations.

#### **Data Entry**

- 1) Enter the name of the item
- 2) Enter the quantity of an item
- 3) Enter customer details
- 4) Enter shipping address

#### **Data Update/Deletion**

- 1) Update/delete the name of the item
- 2) Update/delete of item
- 3) Update/delete customer details
- 4) Update/delete the shipping address

#### **Data Queries**

- 1) Identify the name of the item
- 2) List all the item's quantity
- 3) List customer details
- 4) List shipping address

- product ID, name, description, price, quantity in stock, category, images, and ratings.
- Customer information, involving customer ID, name, email address, shipping and billing addresses, contact number, and encrypted payment information, is essential for order processing.
- The order information itself, with order ID, customer ID, date and time, shipping method, order status, total price, and individual items in the order, is pivotal for tracking and managing transactions.
- Shopping cart specifics, like cart ID, customer ID for registered users, product ID, quantity, and date added to the cart, aid in the shopping process.

## **Module 2: User Management**

User management plays a pivotal role in our system by establishing distinct roles, including admin, sales, and customers. Each role is associated with specific rights related to order management operations through meticulously defined user roles and permissions. To ensure the security of our system, robust authentication procedures are implemented, guaranteeing that only authorized users have access to and can modify order data

### **Data Entry**

- 1) Enter the user role (Customer, Admins, or Sellers)
- 2) Enter create a user account
- 3) Enter the user details (username, password)
- 4) Enter the send email verification link
- 5) Enter Activate user account

### **Data update/deletion**

- 1) Update/delete user role
- 2) Update/delete user account
- 3) Update/delete user information

### **Data queries**

- 1) List the details of users in a given role.
- 2) Identify the total number of users in each role.
- 3) List the username, email, and role of users, ordered by username.
- 4) Identify the total number of active users and the sum of their roles.
- 5) Identify the total number of sellers with active accounts.
- 6) List the usernames and emails of users with inactive accounts.
- 7) Encrypt critical data, including payment information and user passwords.
- 8) Develop a solid backup and recovery strategy to avoid data loss in the event of an unintentional deletion or a system failure.
- 9) Keep user profiles with important details such as name, contact information, and address.

### **Module 3: Order Management**

Order management is the process of managing and controlling all parts of a business's orders from customers. It is an essential component of the supply chain and includes a variety of actions ranging from order placing to order fulfillment. The basic purpose of order management is to process requests from customers efficiently and accurately in order to ensure customer pleasure while optimizing operational efficiency.

#### **Data Entry**

- 1) Collect and save important details of each order
- 2) Track the status of each order
- 3) Store payment information
- 4) Record timestamps of each order

#### **Data Update/Deletion**

- 1) Update/delete order details
- 2) Update/delete status order
- 3) Update/delete payment details
- 4) Update/delete changes made to the order

#### **Data Queries**

- 1) Identify customer information
  - 2) List the order details
  - 3) Identify payment details
  - 4) Identify shipping information
- Customer name, address, phone number, email, account preferences and order history
  - Timestamps, order ID, the status of the order, and product details such as name, quantity, and price of each product
  - The method used when the customer paid for the order such as online transaction and cash on delivery
  - The location where the order should be delivered

## **Module 4: Product Management**

In the product management module of 'UTM small business', sellers and admin should be able to add, edit and delete product listings. For example, if a product is already sold out, the seller can remove it from the product listing. Given that this platform is designed for small businesses, numerous sellers will be participating. Therefore, sellers are advised to manage their products with important attributes such as name, description, price, category, and images.

### **Data Entry**

- 1) Enter the product item.
- 2) Enter the description of the product.
- 3) Enter the price.

### **Data Update/Deletion**

- 1) Update/Delete product item.
- 2) Update/Delete the description of the product.
- 3) Update/Delete price.

### **Data Queries**

- 1) List details for all products.
- 2) Show all product categories.
- 3) List available products.
- 4) List details of the price of products.
- 5) List all sold-out products.
- 6) Provide statistics and insight for the product.

## **Module 5: Checkout and Payment**

### **Data Entry:**

- 1) Add a new product to the inventory, specifying details such as product name, description, price, quantity, and category.
- 2) Introduce a new customer to the system, providing information like customer name, email address, shipping address, and contact number.
- 3) Record a new order, including the customer ID, product ID, quantity, and transaction date.
- 4) Input a new discount or promotional code, specifying the code, discount amount or percentage, and validity period.
- 5) Add a new review for a product, including the customer ID, product ID, rating, and review text.

### **Data Update/Deletion:**

- 1) Modify the details of an existing product in the inventory, allowing updates to price, quantity, or other relevant attributes.
- 2) Update customer information, enabling changes to contact details, shipping addresses, or other customer-related data.
- 3) Edit an existing order, allowing modifications to quantities, products, or customer details.
- 4) Remove a discount or promotional code from the system, specifying the code to be deleted.
- 5) Delete a customer review, providing the review ID for identification.

### **Data Queries:**

- 1) Retrieve a list of products in a specific category.
- 2) Identify the total number of products in each category.
- 3) List customer details, including name, email, and total amount spent, sorted by the total amount spent.
- 4) Identify the total number of customers and the sum of their purchase amounts.
- 5) List products with low stock levels or below a specified threshold.
- 6) Display customer reviews for a particular product, sorted by date.
- 7) Retrieve details of orders placed on a specific date or within a date range.
- 8) Identify the top-selling products based on the quantity sold.
- 9) List customers who have not made a purchase within a specified timeframe.
- 10) Retrieve the total revenue for a given period.
- 11) Display the most recent orders, including order ID, customer details, and order date.
- 12) Identify products that are frequently bought together.



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

The proposed platform for small businesses in UTM provides several advantages to both small company owners at Universiti Teknologi Malaysia (UTM) and the university community as a whole. First of all, small business owners would have an official platform dedicated to advertising their products and services, eliminating the need for many WhatsApp or Telegram groups. This centralized platform offers greater reach, making it easier for students and faculty to find and support local companies. Furthermore, owners may save more time and effort that would have been spent joining several promotion groups and manually managing orders. The user-friendly interface of the platform and its automated functions help to a more efficient and productive corporate environment. It can thus have access to a bigger consumer base. This is because the platform allows small business owners to access a larger audience within the UTM community. Students and staff who previously struggled with transportation may now instantly discover and purchase items or services on campus.

The UTM Small Business Platform is a collaborative initiative that aims to provide an in-depth solution to the difficulties that small company entrepreneurs experience at UTM. The initiative aims to revolutionize the way small enterprises operate on campus by providing a centralized, user-friendly platform with e-commerce capabilities, marketing tools, and cashless payment choices. The platform not only addresses the present laborious and time-consuming procedures, but it also focuses on developing a long-term and financially viable solution. The initiative intends to build a marketplace that benefits both vendors and the UTM community through the active engagement of small business owners and new income streams. Overall, the UTM Small Business Platform is designed to increase visibility, streamline processes, and cultivate a vibrant ecosystem of small enterprises within the institution.

## **11.0 Summary**

The UTM Small Business Platform is a collaborative effort at Universiti Teknologi Malaysia (UTM) aimed at addressing the issues that small company entrepreneurs experience on campus. The platform's goal is to revolutionize small business operations by offering a centralized, user-friendly solution with e-commerce capabilities, marketing tools, and cashless payment choices. The platform aims to create a long-term, financially viable solution in addition to reducing present arduous operations. Through the active participation of small business owners and the development of new revenue sources, the program intends to build a marketplace that benefits both vendors and the UTM community. In general, the UTM Small Business Platform is intended to improve visibility, streamline operations, and develop a dynamic ecosystem of small businesses within the university