

## **❖Acknowledgement**

- We would like to express our deepest appreciation to all those who provided us the possibility to complete this report. A special gratitude we give to our project guide, [Amee Ma'am], whose contribution in stimulating suggestions and encouragement helped us to coordinate our project, especially in writing this report.
- Furthermore, we would also like to acknowledge with much appreciation the crucial role of the staff of Om Vindhyaivasini College of I.T. & Management, who gave the permission to use all required equipment and the necessary materials to complete the task.
- Lastly, we would like to thank our families and friends for their support and encouragement throughout this project.

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# **1. Project Profile**

## **1.1 Project Definition**

**Bhumi TVMart** is a desktop-based e-commerce platform developed using Python and Tkinter. It provides a seamless shopping experience for users and efficient management tools for administrators. The system offers functionalities for:

- **Customers:**

- Browsing product categories and viewing detailed product descriptions.
- Checking product availability in real-time and adding items to the cart.
- Managing personal profiles.

- **Admins:**

- Managing product listings, including adding, updating, and removing products.
- Ensuring platform security by managing user accounts, including blocking or unblocking users as necessary.

## 1.2 Process of System

### 1.2.1 User Interaction:

- **Browsing:** Customers use the application to explore product categories and view details.
- **Shopping Cart:** Registered users can add products to their cart, update quantities, and proceed to checkout.
- **Profile Management:** Users can log in to view their profile, and manage personal details.

### 1.2.2 Admin Operations:

- **Login:** Admins access a secure panel for system management.
- **Product Management:** Admins can add, update, or delete products, like set pricing.
- **Order Management:** Admins process and manage customer orders.
- **User Management:** Admins oversee user roles, manage access levels, and ensure account security.

### **1.2.3 Order Workflow:**

- Users add products to their cart, review their selection, and proceed to checkout.
- The system validates order details and processes the transaction.
- Orders are recorded in the database.

## **1.3 System Requirements**

### **1.3.1 Hardware:**

- **Processor:** Intel core i3 or higher.
- **RAM:** 4GB or more.
- **Hard Disk:** 100GB or more we suggest SSD for smoother access.
- **Client:** Desktop or laptop running Windows.

### **1.3.2 Software:**

- **Database Server:** MySQL.
- **Programming Language:** Python.
- **GUI Framework:** Tkinter.
- **Dependencies:** Standard Python libraries (Tkinter, MySQL Connector, etc.)

## **2.Analysis**

### **2.1 Limitation of Existing System**

- **Manual Processing:** Traditional retail stores rely on manual inventory tracking and order management, leading to inefficiencies.
- **User Experience:** Many systems have outdated interfaces, making shopping and order management cumbersome.

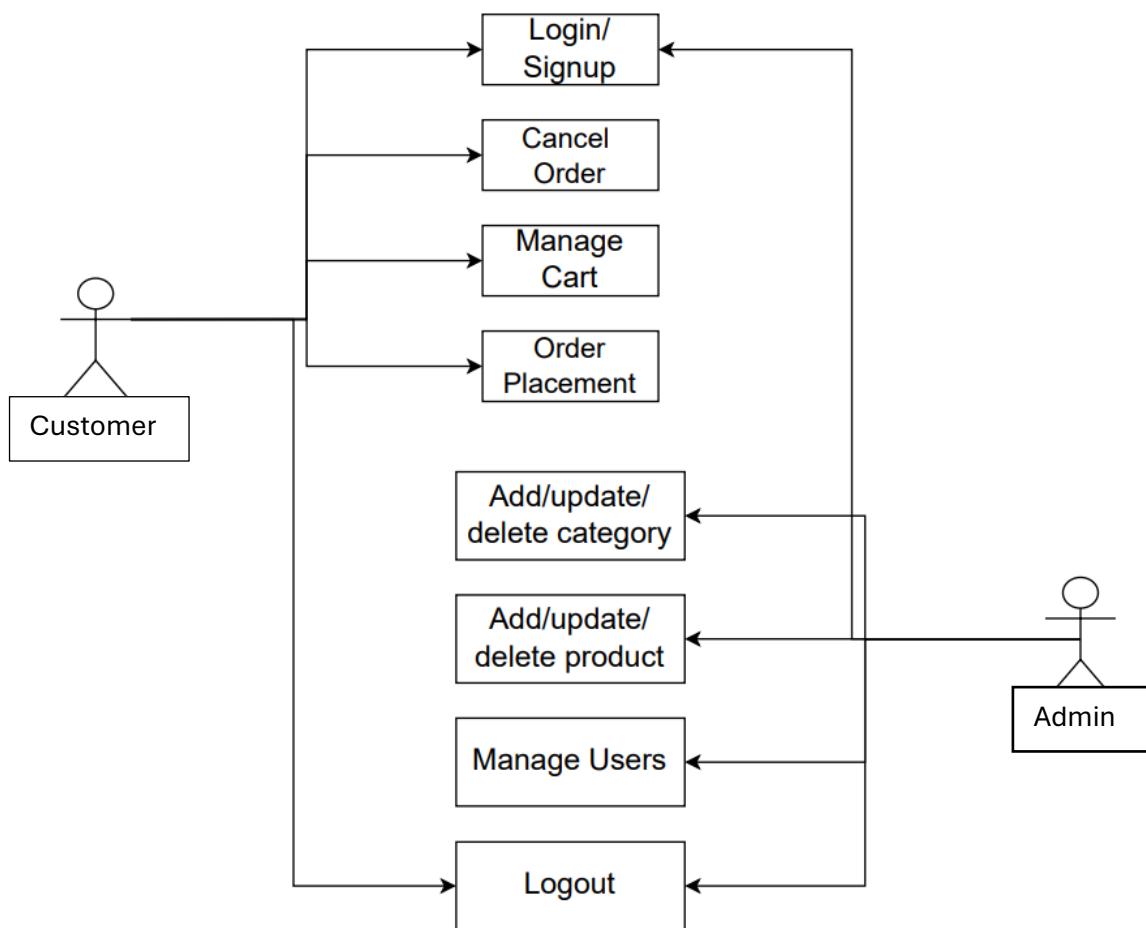
### **2.2 Scope of the Project**

- **Product Management:** Add, update, and delete product details, including pricing.
- **Order Processing:** Handle order placements, payment processing.
- **User Management:** Admin functions for managing user roles, access control, and account security.

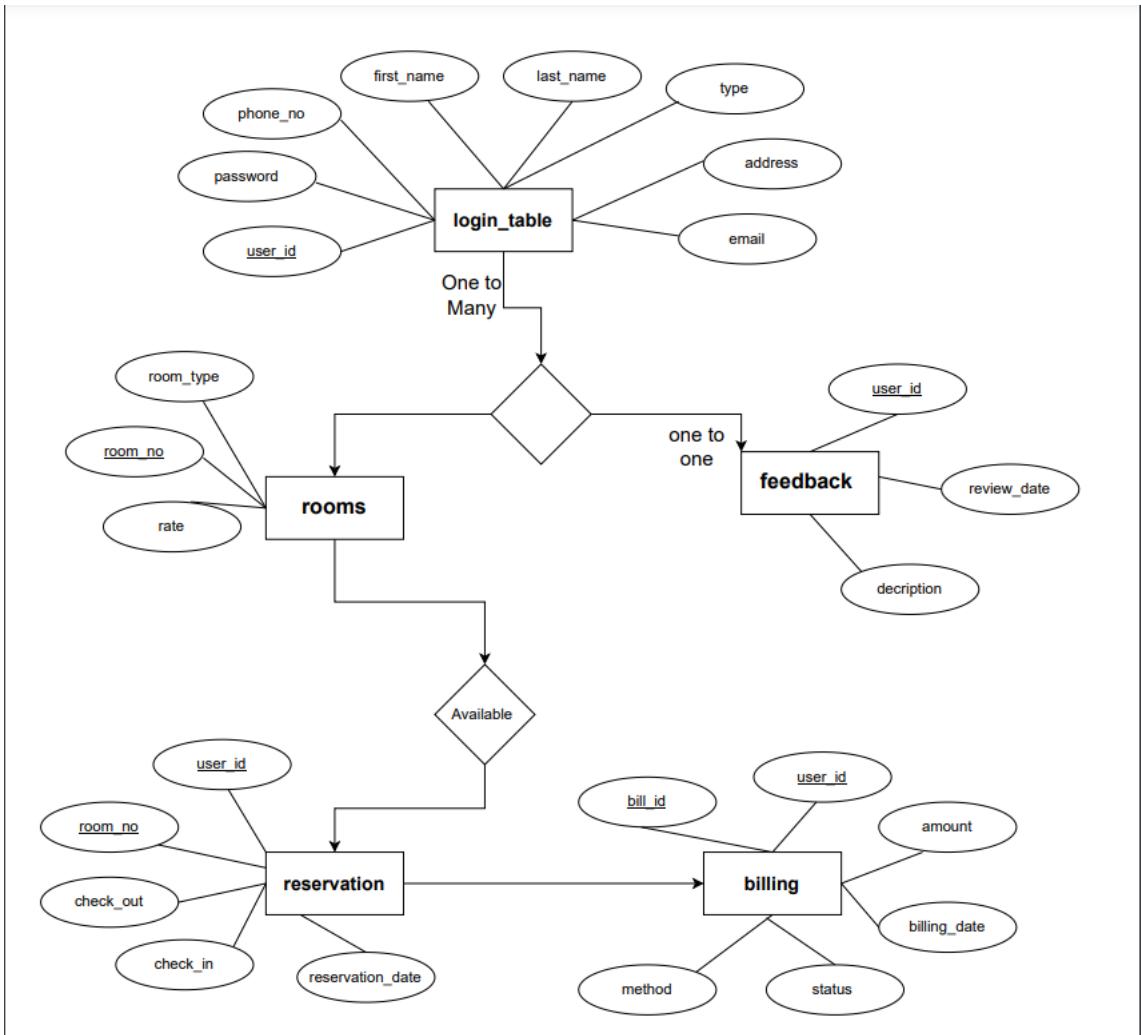
## 2.3 Feasibility Study

- **Technical Feasibility:** The use of Python, MySQL, and Tkinter ensures a reliable and easily maintainable system.
- **Operational Feasibility:** The system will enhance efficiency, reduce manual errors, and provide a user-friendly shopping experience.
- **Economic Feasibility:** The cost of development is justified by automation benefits, reduced overhead, and improved functionality.

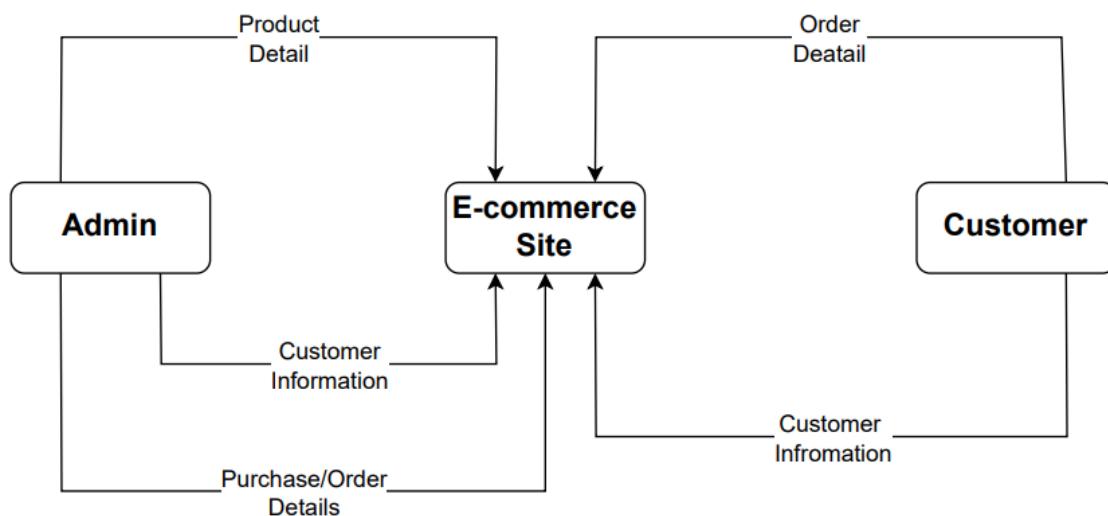
## 2.4 Usecase Diagram



## 2.5 Entity Relationship Diagram



## 2.6 Data Flow Diagram



## 3. Design

### 3.1 Data Dictionary

- Customer Table:

Column	Datatype	Size	Constraint
customer_id	Int	-	Primary key
full_name	varchar	30	-
email	Varchar	30	-
password	varchar	255	-
address	varchar	255	-
city	varchar	50	-
state	varchar	50	-
phone_no	varchar	15	-
zip_code	varchar	6	-

- Category Table:

Column	Datatype	Size	Constraint
category_id	Int	-	Primary key
category_name	Varchar	30	-
category_description	Text	-	-

- Product Table:

Column	Datatype	Size	Constraint
product_id	Int	-	Primary key
product_name	Varchar	30	-
price	Decimal	-	-
information	Text	-	-
category_id	Int	-	Foreign key

- **Order table:**

Column	Datatype	Size	Constraint
order_id	Int	-	Primary key
customer_id	Int	-	Foreign key
order_date	Date	-	-
total_amount	Decimal	-	-
shipping_date	Date	-	-

- **Order\_details Table:**

Column	Datatype	Size	Constraint
order_detail_id	Int	-	Primary key
order_id	Int	-	Foreign key
product_id	Int	-	Foreign key
quantity	Decimal	-	-
price	Decimal	-	-
order_status	Varchar	-	-

- **Reviews table:**

Column	Datatype	Size	Constraint
review_id	Int	-	Primary key
product_id	Int	-	Foreign key
customer_id	Int	-	Foreign key
review_text	Varchar	100	-
rating	varchar	5	-

- **Admin table:**

<b>Column</b>	<b>Datatype</b>	<b>Size</b>	<b>Constraint</b>
admin_id	Int	-	Primary key
username	Varchar	30	-
password	Varchar	255	-

- **Shipping\_cart Table:**

<b>Column</b>	<b>Datatype</b>	<b>Size</b>	<b>Constraint</b>
Cart_id	Int	-	Primary key
Product_id	Int	-	Foreign key
Customer_id	Int	-	Foreign key
Quantity	Decimal	-	-
Delivery_date	Date	-	-
Order_status	Varchar	10	-

- **Contact\_us Table:**

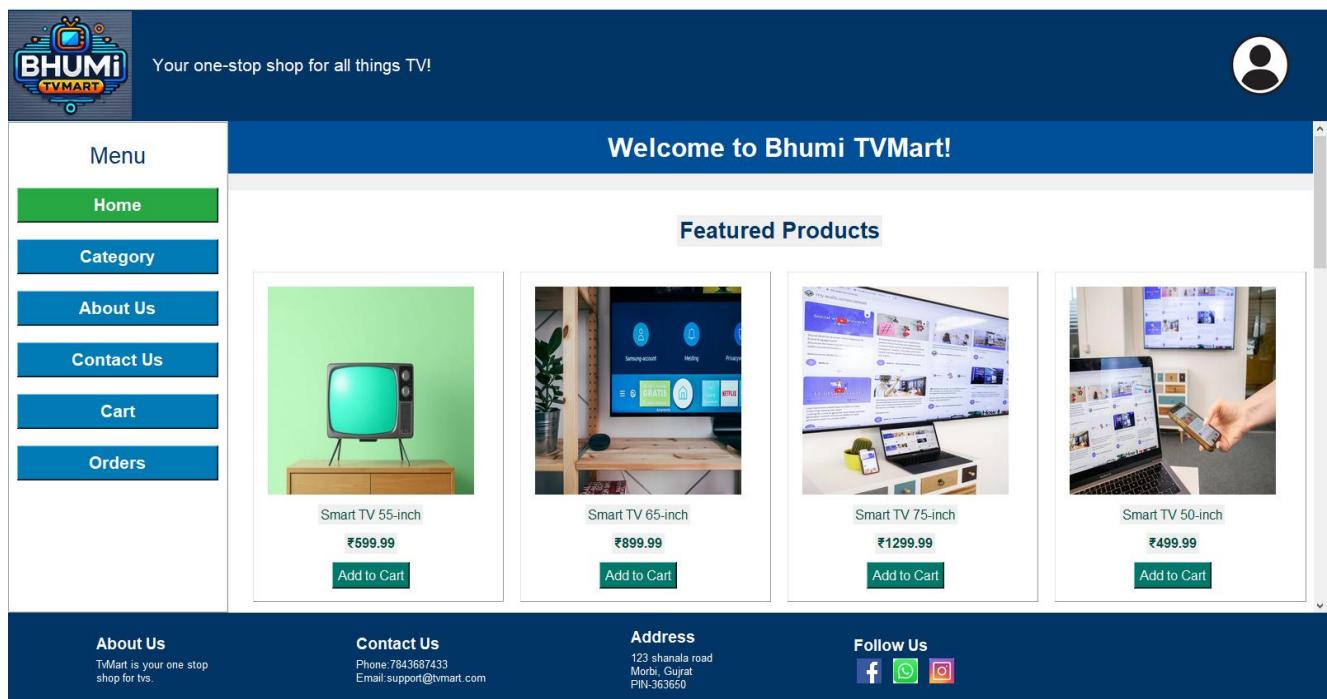
<b>Column</b>	<b>Datatype</b>	<b>Size</b>	<b>Constraint</b>
Customer_name	Varchar	50	-
Customer_email	Varchar	50	-
Phone_no	Varchar	10	-
description	Text	-	-

## 4.Implementation and Testing

### 4.1 Screen Layouts

#### 4.1.1. Homepage

- **Featured Products:** Showcasing featured and best-selling products to engage users.



## 4.1.2. Category Page

- **Category List:** Displays product categories for easy navigation.

The screenshot shows the 'Explore Our TV Categories' section. It features three main categories: 'Smart TVs' (represented by an image of a flat-screen TV displaying 'SMART TV'), '4K Ultra HD TVs' (represented by an image of a TV displaying '4K ULTRA HD'), and 'OLED TVs' (represented by an image of an LG OLED TV). Each category has a 'View Products' button below it. The left sidebar includes a 'Category' button highlighted in green, indicating the current page.

Your one-stop shop for all things TV!

### Explore Our TV Categories

- Smart TVs [View Products](#)
- 4K Ultra HD TVs [View Products](#)
- OLED TVs [View Products](#)

**About Us**  
TVMart is your one stop shop for tvs.

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Email: support@tvmart.com

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Morbi, Gujarat  
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- **Product Display:** Lists products under each category with images, descriptions, and prices.

The screenshot shows the 'Products in 4K Ultra HD TVs' section. It features a large image of a Sony 55-inch 4K Ultra HD TV. Below the image, the product name 'Sony 55-inch 4K Ultra HD TV' is displayed, along with its price 'Price: ₹799.99'. A detailed description of the TV's features follows, including 'Sony Bravia 55-inch 4K UHD', 'HDR10 & Dolby Vision', 'Acoustic Multi-Audio for immersive sound', '120Hz Refresh Rate for smooth gaming', and 'Chromecast & AirPlay 2 Support'. There is also an 'Add to Cart' button. The left sidebar includes a 'Category' button highlighted in green, indicating the current page.

Your one-stop shop for all things TV!

### Products in 4K Ultra HD TVs

**Sony 55-inch 4K Ultra HD TV**  
Price: ₹799.99

Sony Bravia 55-inch 4K UHD  
HDR10 & Dolby Vision  
Acoustic Multi-Audio for immersive sound  
120Hz Refresh Rate for smooth gaming  
Chromecast & AirPlay 2 Support

[Add to Cart](#)

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## 4.1.2. Login Page

- **Login page:** users can login if they are registered.

Your one-stop shop for all things TV!

Signup Login

Menu

Home Category About Us Contact Us

**Login Form**

Email:

Password:  Show

Login

New user? Sign Up

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- **Registration page:** New users can register and then log in to access features.

Your one-stop shop for all things TV!

Signup Login

Menu

Home Category About Us Contact Us

**Sign Up Form**

Name:

Email:

Phone Number:

Password:  Show

Confirm Password:  Show

Address:

Register

Already a user? Login Now

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### 4.1.3. Cart Page

- **Product List:** Displays all products added to the cart, including name, price, and quantity.
- **Delete Items:** Users can remove products.

The screenshot shows the BHUMI TVMART website's cart page. At the top, there is a logo and the tagline "Your one-stop shop for all things TV!". On the right side of the header is a user profile icon. The main content area is titled "Your Cart". Inside the cart, there are three items listed:

- Product Name: Smart TV 75-inch | Quantity: 1 Remove
- Product Name: Smart TV 50-inch | Quantity: 1 Remove
- Product Name: Vizio 58-inch 4K Ultra HD TV | Quantity: 1 Remove

Below the cart items is a large green "Buy Now" button. To the left of the main content is a vertical sidebar menu with the following options:

- Menu
- Home**
- Category**
- About Us**
- Contact Us**
- Cart**
- Orders**

At the bottom of the page, there are four footer sections: "About Us", "Contact Us", "Address", and "Follow Us".

- **Buy Now:** A button to complete the order process.

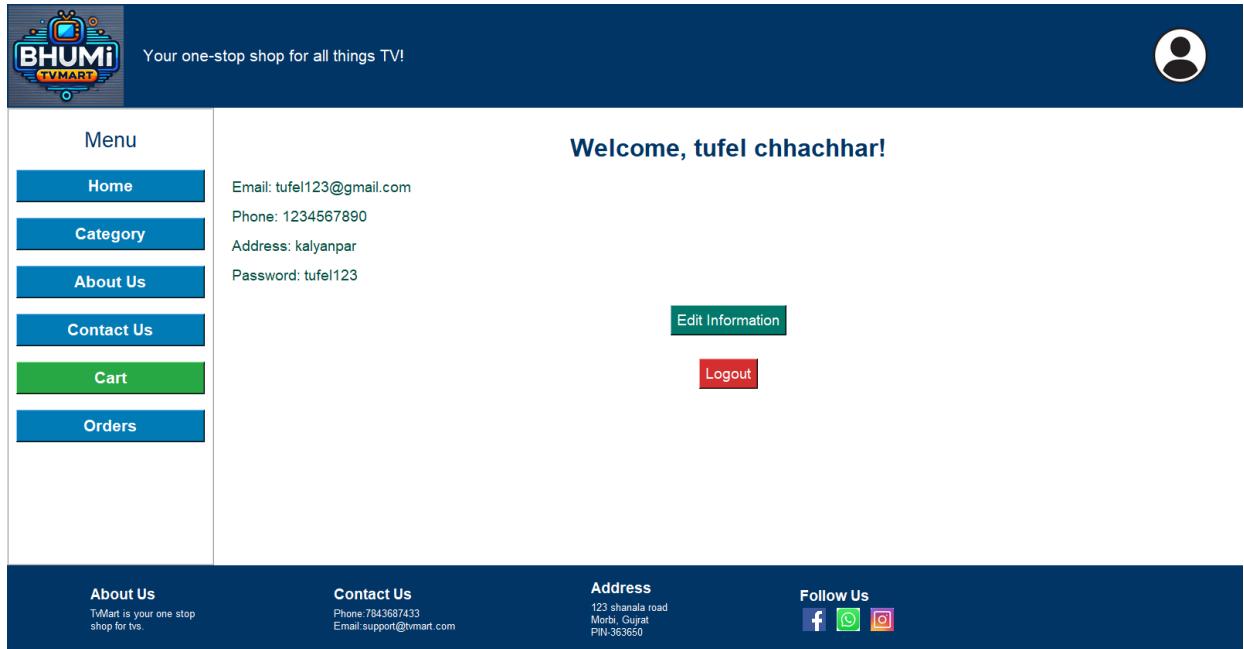
The screenshot shows a "Checkout" modal window. It contains fields for Name, Address, and Phone No., all filled with placeholder text. Below these fields, there are promotional messages showing the Total amount (₹2399.97), a Discount of ₹120.00, and a Final amount of ₹2279.97. At the bottom of the modal, there is a "Payment Method:" section with two options: "Cash on Delivery" (selected) and another option that is partially visible. A large green "Confirm Order" button is at the bottom of the modal. At the very bottom, a summary of the items in the cart is provided.

Items in your cart:

- Smart TV 75-inch (Quantity: 1, Price: ₹1299.99)
- Smart TV 50-inch (Quantity: 1, Price: ₹499.99)
- Vizio 58-inch 4K Ultra HD TV (Quantity: 1, Price: ₹599.99)

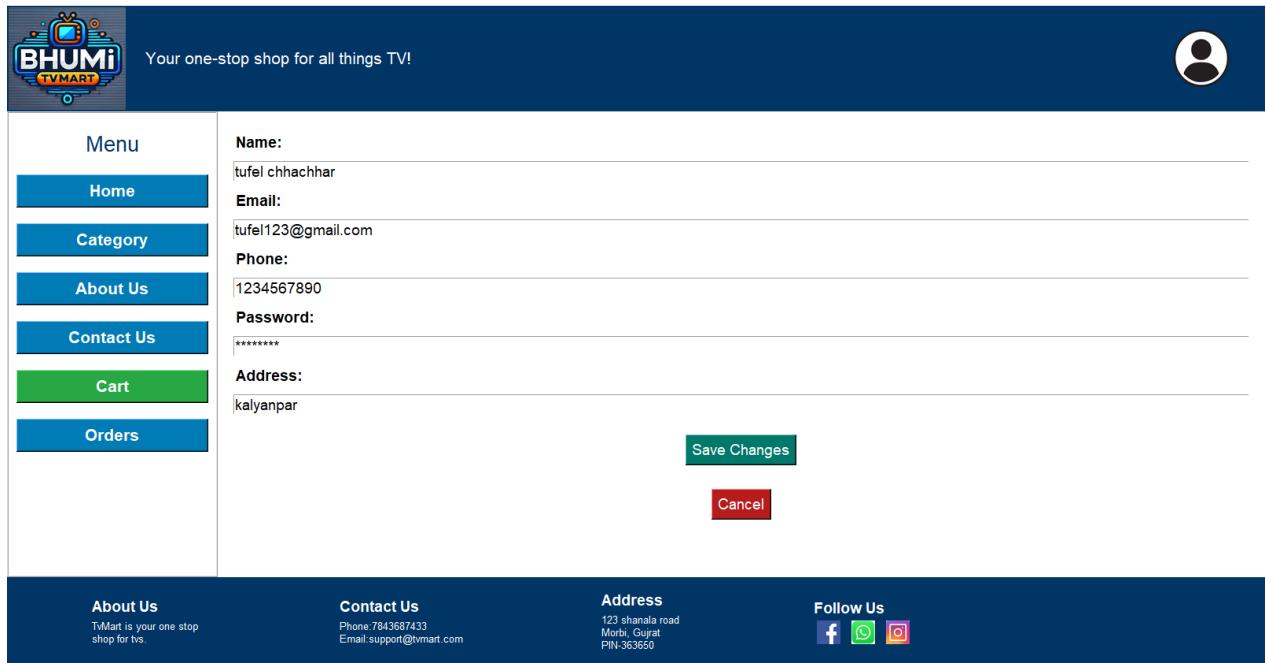
#### 4.1.4. Profile Page

- **User Information:** Displays personal details like name, email, and phone number.



The screenshot shows the profile page of the BHUMI TVMART website. At the top, there's a logo with the text "BHUMI TVMART" and a tagline "Your one-stop shop for all things TV!". On the right side of the header is a user icon. The main content area has a dark blue background. On the left, a vertical menu bar lists "Menu", "Home", "Category", "About Us", "Contact Us", "Cart", and "Orders". In the center, a welcome message "Welcome, tufel chhachhar!" is displayed above a list of personal details: Email: tufel123@gmail.com, Phone: 1234567890, Address: kalyanpar, and Password: tufel123. Below this list are two buttons: "Edit Information" (green) and "Logout" (red). At the bottom of the page, there are sections for "About Us", "Contact Us", "Address", and "Follow Us" with social media links.

- **Edit Information:** Users can edit their personal information like password , name, email.



The screenshot shows the edit profile page of the BHUMI TVMART website. The layout is similar to the profile page, with the BHUMI logo at the top and a user icon on the right. The left sidebar contains the same menu as the previous screenshot. The main area now features input fields for editing personal information. The fields include "Name" (tufel chhachhar), "Email" (tufel123@gmail.com), "Phone" (1234567890), "Password" (\*\*\*\*\*), and "Address" (kalyanpar). Below these fields are two buttons: "Save Changes" (blue) and "Cancel" (red). At the bottom of the page, there are sections for "About Us", "Contact Us", "Address", and "Follow Us" with social media links.

#### 4.1.5. Order Page

- **Order History:** Users can view their past orders with details such as status, payment, and date.

The screenshot shows the 'Your Orders' section of the BHUMI TVMART website. On the left, there's a vertical menu with options: Home, Category, About Us, Contact Us, Cart, and Orders (which is highlighted in green). The main content area is titled 'Your Orders' and displays a single order summary. The order details are as follows:

- Items: Sony 55-inch 4K Ultra HD TV, Smart TV 55-inch, Smart TV 65-inch
- Final Price: ₹2184.97
- Shipping Address: kalyanpar
- Payment Method: Cash on Delivery
- Order Date: 2025-03-05 12:24:16

A red 'Cancel Order' button is visible at the bottom right of the order summary box. At the top right of the page, there's a user profile icon. The footer contains links for About Us, Contact Us, Address, and Follow Us (with icons for Facebook, Instagram, and Twitter).

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Email: support@tvmart.com

**Address**  
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PIN-363650

**Follow Us**

#### 4.1.6. Contact Us Page

- **Customer Support Info:** Displays contact details such as email and phone number.
- **Inquiry Form:** A simple form allowing users to send messages or requests directly to the Bhumi tvmart. Fields typically include name, email, phone, and message, with a "Send message" button to send inquiries.

Your one-stop shop for all things TV!

**Contact Us**

**Reach us at:**

Email: support@tvmart.com  
Phone: 7843687433  
Address: 123 Shanala Road, Morbi, Gujarat PIN-363650

**Our Location**

[Open Map](#)

**Send us a Message**

\* Name

\* Email

\* Phone Number

\* Message

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Your one-stop shop for all things TV!

\* Name

\* Email

\* Phone Number

\* Message

**Send Message**

\* Required fields

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## 4.1.7. About Us Page

- **Company Information:** Details about TVMart, its mission, and services.

The image displays two versions of a company's 'About Us' page from a website named 'BHUMI TVMART'. Both versions feature a dark blue header with the logo and a sub-header 'Your one-stop shop for all things TV!'. A user icon is in the top right corner.

**Top Screenshot Content:**

- Menu:** Home, Category, **About Us**, Contact Us, Cart, Orders.
- About Us:** Text: 'At TVMart, we strive to bring you the best viewing experiences by offering a wide range of high-quality TVs and related accessories. With a commitment to excellent customer service, competitive pricing, and secure online shopping, TVMart is your ultimate destination for all things TV.' Below this is another paragraph: 'Founded on the belief that technology should be accessible and enjoyable for everyone, we ensure that our collection is curated to meet the diverse needs of our customers, from tech enthusiasts to casual viewers. Shop with us and discover why countless customers trust TVMart.'
- Image:** A photograph showing a large display area filled with many television sets.
- Contact Information:** Address: 123 shanala road Morbi, Gujarat PIN-363650.
- Social Media:** Follow Us (Facebook, Instagram, YouTube).

**Bottom Screenshot Content:**

- Menu:** Home, Category, **About Us**, Contact Us, Cart, Orders.
- About Us:** Text: 'Our dedicated team is made up of passionate individuals committed to ensuring a seamless experience for our customers. Whether you're looking for guidance or after-sales support, we're here to assist you every step of the way.'
- Image:** Three photographs of team members:
  - Founder:** Two men sitting at a desk in an office environment.
  - CEO:** A man in a suit standing with arms crossed in an office setting.
  - Manager:** A man in a suit sitting at a desk working on a laptop.
- Contact Information:** Address: 123 shanala road Morbi, Gujarat PIN-363650.
- Social Media:** Follow Us (Facebook, Instagram, YouTube).

#### 4.1.8. Header

- Before login:



- After login:



#### 4.1.9. Footer



## 4.2.1. Admin Panel

### 4.2.1.1 Dashboard

- **Overview:** Displays total users, products, categories, and orders.
- **Recent Orders:** A quick view of recent purchases.

Your one-stop shop for all things TV!

**Admin Dashboard**

**Quick Overview**

Total Users	Total Admins	Total Blocked Users	Total Products	Total Orders	Total Revenue
10	3	2	51	1	₹2184.97

**Orders and Revenue Overview**

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**Admin Dashboard**

**Recent Orders**

Order ID	Customer	Total	Date
9	tufel chhachhar	₹2184.97	2025-03-05 12:24:16

**About Us**  
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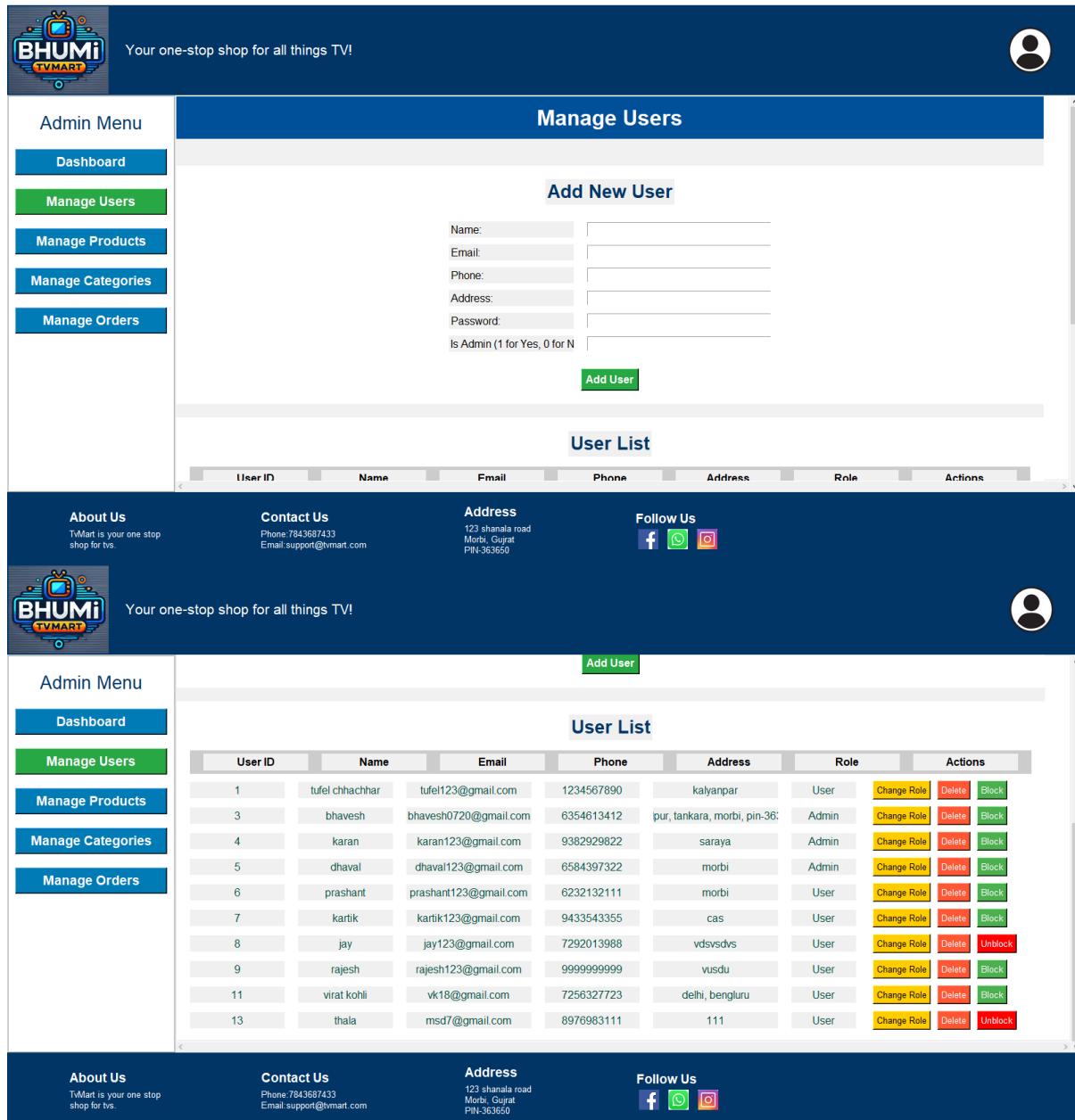
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### 4.2.1.2 Manage Users

- **User List:** View registered users with options to block/unblock or remove them.



The screenshot shows the Admin Dashboard of the BHUMI TVMART application. The left sidebar contains a navigation menu with links: Admin Menu, Dashboard, Manage Users (which is highlighted in green), Manage Products, Manage Categories, and Manage Orders. The main content area has a blue header bar with the title "Manage Users". Below it, there is a form titled "Add New User" with fields for Name, Email, Phone, Address, Password, and a checkbox for "Is Admin (1 for Yes, 0 for N)". A green "Add User" button is at the bottom of the form. Below this, there is a table titled "User List" with columns: User ID, Name, Email, Phone, Address, Role, and Actions. The table lists 13 user entries. At the bottom of the page, there are sections for "About Us", "Contact Us", "Address", and "Follow Us" with social media icons.

User ID	Name	Email	Phone	Address	Role	Actions
1	tufel chhachhar	tufel123@gmail.com	1234567890	kalyanpar	User	<span>Change Role</span> <span>Delete</span> <span>Block</span>
3	bhavesh	bhavesh0720@gmail.com	6354613412	pur, tankara, morbi, pin-36: 123 shanala road Morbi, Gujarat PIN-363650	Admin	<span>Change Role</span> <span>Delete</span> <span>Block</span>
4	karan	karan123@gmail.com	9382929822	saraya	Admin	<span>Change Role</span> <span>Delete</span> <span>Block</span>
5	dhaval	dhaval123@gmail.com	6584397322	morbi	Admin	<span>Change Role</span> <span>Delete</span> <span>Block</span>
6	prashant	prashant123@gmail.com	6232132111	morbi	User	<span>Change Role</span> <span>Delete</span> <span>Block</span>
7	kartik	kartik123@gmail.com	9433543355	cas	User	<span>Change Role</span> <span>Delete</span> <span>Block</span>
8	jay	jay123@gmail.com	7292013988	vdsvsdvs	User	<span>Change Role</span> <span>Delete</span> <span>Unblock</span>
9	rajesh	rajesh123@gmail.com	9999999999	vusdu	User	<span>Change Role</span> <span>Delete</span> <span>Block</span>
11	virat kohli	vk18@gmail.com	7256327723	delhi, bengluru	User	<span>Change Role</span> <span>Delete</span> <span>Block</span>
13	thala	msd7@gmail.com	8976983111	111	User	<span>Change Role</span> <span>Delete</span> <span>Unblock</span>

### 4.2.1.3 Manage Products

- **Add Product:** Admins can add new products with images, descriptions, and pricing.

**Manage Products**

**Add New Product**

Product Name: \_\_\_\_\_

Price: \_\_\_\_\_

Category ID: \_\_\_\_\_

Image Path: \_\_\_\_\_

Browse \_\_\_\_\_

Information: \_\_\_\_\_

Add Product

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- **Update/Delete Products:** Modify or remove existing products.

ID	Product Name	Price	Stock Level	Image Path	Actions
3	Smart TV 75-inch	₹1299.99	1	images/s_tv3.jpg	
4	Smart TV 50-inch	₹499.99	1	images/s_tv4.jpg	
5	Smart TV 43-inch	₹399.99	1	images/s_tv5.jpg	
6	Sony 55-inch 4K Ultra HD TV	₹799.99	2	images/4k_uhd_tv_1.jpg	
7	LG 65-inch 4K Ultra HD TV	₹899.99	2	images/4k_uhd_tv_2.jpg	
8	Samsung 50-inch 4K Ultra HD TV	₹699.99	2	images/4k_uhd_tv_3.jpg	

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#### 4.2.1.4 Manage Categories

- **Category List:** View, add, update, or delete product categories.

The screenshot shows the Admin Menu interface for BHUMi TVMART. The left sidebar has a 'Manage Categories' button highlighted in green. The main content area is titled 'Manage Categories' and contains two sections: 'Add New Category' and 'Category List'. The 'Add New Category' section includes fields for 'Category Name' and 'Image Path (URL or Local Path)', with a 'Browse' button and a green 'Add Category' button. The 'Category List' section displays a table with columns 'Category ID', 'Category Name', and 'Actions'. It lists two categories: '1 Smart TVs' and '2 4K Ultra HD TVs', each with 'Edit' and 'Delete' buttons.

Category ID	Category Name	Actions
1	Smart TVs	<a href="#">Edit</a> <a href="#">Delete</a>
2	4K Ultra HD TVs	<a href="#">Edit</a> <a href="#">Delete</a>

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This screenshot shows the same Admin Menu interface as the previous one, but with a larger 'Category List'. The table now contains 13 entries, including 'kkk' at the bottom. The rest of the interface remains the same, with the 'Manage Categories' button in the sidebar and the 'Category List' table in the main content area.

Category ID	Category Name	Actions
1	Smart TVs	<a href="#">Edit</a> <a href="#">Delete</a>
2	4K Ultra HD TVs	<a href="#">Edit</a> <a href="#">Delete</a>
3	OLED TVs	<a href="#">Edit</a> <a href="#">Delete</a>
4	LED TVs	<a href="#">Edit</a> <a href="#">Delete</a>
5	Gaming TVs	<a href="#">Edit</a> <a href="#">Delete</a>
6	QLED TVs	<a href="#">Edit</a> <a href="#">Delete</a>
7	Curved TVs	<a href="#">Edit</a> <a href="#">Delete</a>
8	Plasma TVs	<a href="#">Edit</a> <a href="#">Delete</a>
9	Budget TVs	<a href="#">Edit</a> <a href="#">Delete</a>
10	High-End TVs	<a href="#">Edit</a> <a href="#">Delete</a>
11	4K TVs	<a href="#">Edit</a> <a href="#">Delete</a>
12	Ultra HD TVs	<a href="#">Edit</a> <a href="#">Delete</a>
13	kkk	<a href="#">Edit</a> <a href="#">Delete</a>

**About Us**  
TVMart is your one stop shop for tvs.

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#### 4.2.1.5 Manage Orders

- **Order Management:** View all orders, and cancel orders if needed.

The screenshot shows the Admin Dashboard of BHUMI TVMART. The left sidebar has a 'Admin Menu' with links: Dashboard (selected), Manage Users, Manage Products, Manage Categories, and Manage Orders (highlighted in green). The main content area is titled 'Manage Orders' and shows an 'Order List' table with one row of data. The table columns are Order ID, Customer, Total Price, Order Date, and Actions. The data row is: Order ID 9, Customer tufel chhachhar, Total Price ₹2299.97, Order Date 2025-03-05 12:24:16, and Actions (Delete button).

Order ID	Customer	Total Price	Order Date	Actions
9	tufel chhachhar	₹2299.97	2025-03-05 12:24:16	<a href="#">Delete</a>

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## 4.2 Testing

### 4.2.1. Unit Testing

- **Purpose:** Unit testing focuses on testing individual components or units of the code, such as functions, methods, or classes, to ensure they work correctly in isolation. The goal is to catch bugs early in the development process, making the application more robust and reliable.
- **Approach:** Typically involves writing test cases using testing frameworks (e.g., PyTest for Python). Each test targets a specific function or module, checking its outputs against expected results. Unit tests help developers quickly identify and fix issues at the code level, promoting good coding practices and modular design.
- **Test Scenarios:**
  - **Login Module:**
    - Test Case: Valid Email and Password
      - ✓ Expected Result: Successful login and redirection to the user dashboard.
      - ✓ Outcome: Pass
    - Test Case: Invalid Email or password
      - ✓ Expected Result: Error message indicating invalid Email or password.
      - ✓ Outcome: Pass
  - **Sign Up Module:**
    - Test Case: Valid Details for All Fields
      - ✓ Expected Result: Successful registration and redirection to the login page.
      - ✓ Outcome: Pass
    - Test Case: Missing Required Fields (e.g., First Name or Password)
      - ✓ Expected Result: Error message indicating missing required fields.
      - ✓ Outcome: Pass
    - Test Case: Weak Password (e.g., no uppercase letters or special characters)
      - ✓ Expected Result: Error message indicating the password must meet strength requirements.
      - ✓ Outcome: Pass
    - Test Case: Mismatched Passwords (Password and Confirm Password)
      - ✓ Expected Result: Error message indicating passwords do not match.

- ✓ Outcome: Pass
- Test Case: Duplicate Email Registration
  - ✓ Expected Result: Error message indicating the email is already registered.
  - ✓ Outcome: Pass

- **Order Module:**

- Test Case: Placing an Order with Valid Details.
  - ✓ Expected Result: Order is successfully placed, and confirmation is displayed.
  - ✓ Outcome: Pass
- Test Case: Placing an Order with an Empty Cart.
  - ✓ Expected Result: Error message indicating the cart is empty.
  - ✓ Outcome: Pass

- **Admin Module:**

- Test Case: Add New Product.
  - ✓ Expected Result: Product appears in the product list.
  - ✓ Outcome: Pass
- Test Case: Update Products Details (e.g., Rate Change)
  - ✓ Expected Result: Changes are successfully reflected in the product catalog.
  - ✓ Outcome: Pass
- Test Case: Delete Product
  - ✓ Expected Result: Product is removed from the database.
  - ✓ Outcome: Pass
- Test Case: Invalid Admin Credentials for Login
  - ✓ Expected Result: Error message indicating invalid credentials.
  - ✓ Outcome: Pass
- Test Case: Block User Account
  - ✓ Expected Result: User account is blocked, and blocked status is reflected in the system.
  - ✓ Outcome: Pass
- Test Case: Toggle User Role (Admin/User)
  - ✓ Expected Result: User role is successfully changed, and changes are visible in the user list.
  - ✓ Outcome: Pass

## 4.2.2. Integration Testing

- **Purpose:** Integration testing examines how different modules or components of the application interact with each other. It ensures data flows smoothly between different parts of the system.
- **Approach:** Integration tests involve scenarios where multiple functions, modules, or APIs are tested together. The goal is to detect any interface defects or mismatches between integrated components.
- **Test Scenarios:**
  - **Login and Sign Up Integration:**
    - Test Case: Successful Registration Followed by Login
      - ✓ Scenario: A new user signs up successfully and then attempts to log in with the newly registered credentials.
      - ✓ Expected Result: User is redirected to the dashboard after logging in successfully.
      - ✓ Outcome: Pass
    - Test Case: Login with Blocked or Disabled Account
      - ✓ Scenario: An admin blocks a user account, and the user then tries to log in.
      - ✓ Expected Result: User receives an error message indicating the account is blocked or disabled.
      - ✓ Outcome: Pass
  - **Cart And Order Processing:**
    - Test Case: Adding items to cart and placing an order.
      - ✓ Scenario: User adds products to the cart and places an order.
      - ✓ Expected Result: Order is processed, and cart is emptied.
      - ✓ Outcome: Pass
  - **Admin and User Management Integration:**
    - Test Case: Admin adds new products and update UI
      - ✓ Scenario: Admin adds a new product, and it reflects in the user panel.
      - ✓ Expected Result: Users can see the newly added product in the catalog.
      - ✓ Outcome: Pass
    - Test Case: Admin Blocks User and Restricts Access
      - ✓ Scenario: Admin blocks a user, and the user attempts to log in.
      - ✓ Expected Result: Access is denied with an appropriate message.
      - ✓ Outcome: Pass

### **4.2.3. User Acceptance Testing (UAT)**

- **Purpose:** UAT is conducted to validate the system against user requirements and ensure the application meets the needs of its end users. It involves real users testing the application in a controlled environment to provide feedback on usability, functionality, and overall satisfaction.
- **Approach:** Real users test the application by performing common tasks like browsing, purchasing, and managing profiles.
- **Test Scenarios:**
  - **Product Browsing and Purchase:**
    - Scenario: Viewing Product Categories and Details
      - ✓ Steps: User browses categories and selects a product.
      - ✓ Expected Result: Product details and images load correctly.
      - ✓ Outcome: Pass
    - Scenario: Adding a product to cart and placing an order
      - ✓ Steps: User adds an item to the cart and completes checkout.
      - ✓ Expected Result: Order is successfully placed, and confirmation is displayed.
      - ✓ Outcome: Pass
  - **User Profile:**
    - Scenario: Editing Profile Information
      - ✓ Steps: User updates name, email, or password.
      - ✓ Expected Result: Changes are saved and reflected in the profile.
      - ✓ Outcome: Pass
  - **Login and User Access:**
    - Scenario: Logging in with Valid Credentials
      - ✓ Steps: The user enters valid email and password details on the login page.
      - ✓ Expected Result: Successful login and redirection to the user dashboard.
      - ✓ Outcome: Pass
    - Scenario: Attempting to Login with Blocked Account
      - ✓ Steps: The user attempts to log in after being blocked by the admin.
      - ✓ Expected Result: Login fails with a message indicating the account is blocked.
      - ✓ Outcome: Pass

## 4.3 Future Enhancement

### 4.3.1. Mobile Application

- **Purpose:** Developing a mobile application for Bhumi TV Mart would provide users with a more convenient and seamless shopping experience, allowing them to browse products, manage carts, place orders, and track deliveries from their smartphones.
- **Approach:** The mobile app will have a user-friendly interface optimized for touch interaction, ensuring smooth navigation. Technologies like React Native or Flutter can be used for cross-platform development (Android & iOS). The app will sync with the existing database and backend, ensuring real-time product availability and order updates.
  - Additional features may include:
    - Push notifications for new product arrivals, offers, and order updates.
    - One-click checkout with saved payment methods.
    - QR code scanner for quick product searches.
    - Voice search to enhance user accessibility.

### 4.3.2. Advanced Analytics

- **Purpose:** Advanced analytics would help Bhumi TV Mart gain insights into customer shopping behavior, sales trends, and product demand. This data-driven approach can optimize inventory management, pricing strategies, and marketing campaigns.
- **Approach:** Data collection from key interactions (e.g., product views, cart additions, purchases). Integration with analytics tools like Google Analytics, Power BI, or custom dashboards to visualize user trends.
  - **Machine learning algorithms** for:
    - Personalized product recommendations based on browsing history.
    - Predicting demand spikes for better stock management.
    - Identifying customer segments for targeted promotions.

### **4.3.3. Integration**

- **Purpose:** Enhancing Bhumi TV Mart with third-party integrations will improve payment security, order tracking, and customer engagement, making transactions more reliable and user-friendly.
- **Approach:**
  - Payment Gateway Integration
    - Secure transactions using APIs from Stripe, Razorpay, PayPal, Google Pay, or UPI.
    - Support for EMI options, buy now pay later (BNPL), and wallets.
  - SMS & Email Notifications
    - Automated order confirmations, shipping updates, and promotional offers.
  - Real-time Delivery Tracking
    - Integration with logistics partners like Shiprocket, Delhivery, or Bluedart for tracking shipments directly in the app.

## 5. Tools and Technology

### 5.1 What is Python?

- **Definition:** Python is a high-level, interpreted programming language known for its clear syntax and readability, making it easy to learn and use. It emphasizes code readability with its use of significant indentation, allowing developers to write clear and logical code for both small and large-scale projects.
- **Features:** Python supports multiple programming paradigms, including procedural, object-oriented, and functional programming, making it flexible and versatile. It has an extensive standard library and numerous third-party packages that extend its capabilities.
- **Uses:** Python is widely used in various fields such as web development (Django, Flask), data analysis (Pandas, NumPy), artificial intelligence and machine learning (TensorFlow, PyTorch), automation, scientific computing, and more. Its popularity continues to grow due to its broad application range and supportive community.

### 5.2 What is MySQL?

- **Definition:** MySQL is an open-source relational database management system (RDBMS) that uses Structured Query Language (SQL) for accessing, managing, and manipulating data in databases. It is developed, distributed, and supported by Oracle Corporation.
- **Features:** Known for its high performance, reliability, and ease of use, MySQL offers features like robust security, high availability, and scalability, which make it suitable for both small applications and large-scale enterprise systems.
- **Uses:** MySQL is commonly used in web applications, data warehousing, and e-commerce platforms, powering popular websites like Facebook, Twitter, and YouTube. It provides a solid foundation for managing data in content management systems (e.g., WordPress) and other data-driven applications.

### 5.3 Bibliography

- **Python Documentation:** The official Python documentation provides comprehensive information about Python's syntax, libraries, and usage examples. Available at <https://docs.python.org/>.
- **MySQL Documentation:** This resource covers MySQL's features, commands, and best practices for managing databases effectively. Available at <https://dev.mysql.com/doc/>.
- **Web Development Resources:** Various online tutorials and official documentation provide guidance on web development using different technologies, supporting a wide range of web-based projects.