

## ❖ **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, [Ameem 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 Vindhyavasini 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.

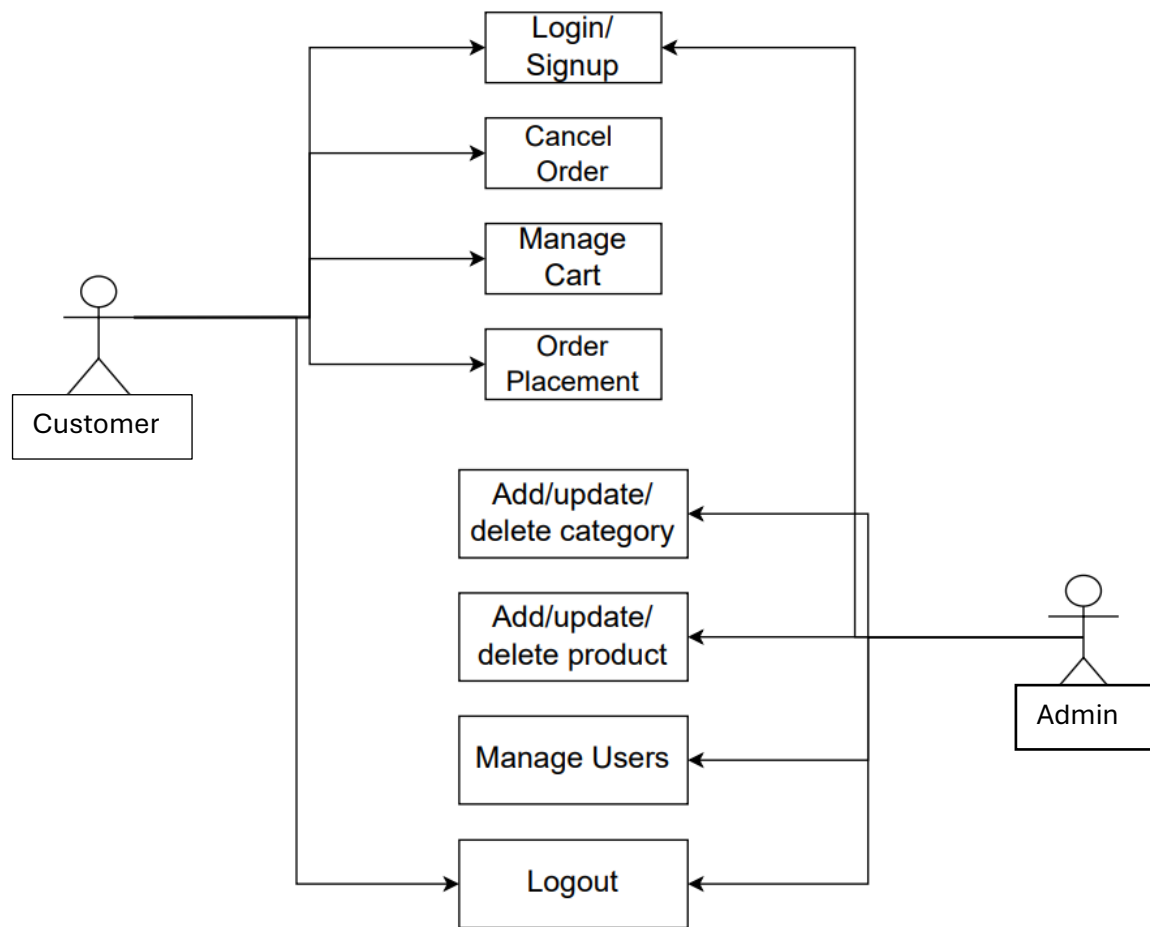
### **2.2 Scope of the Project**

- **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

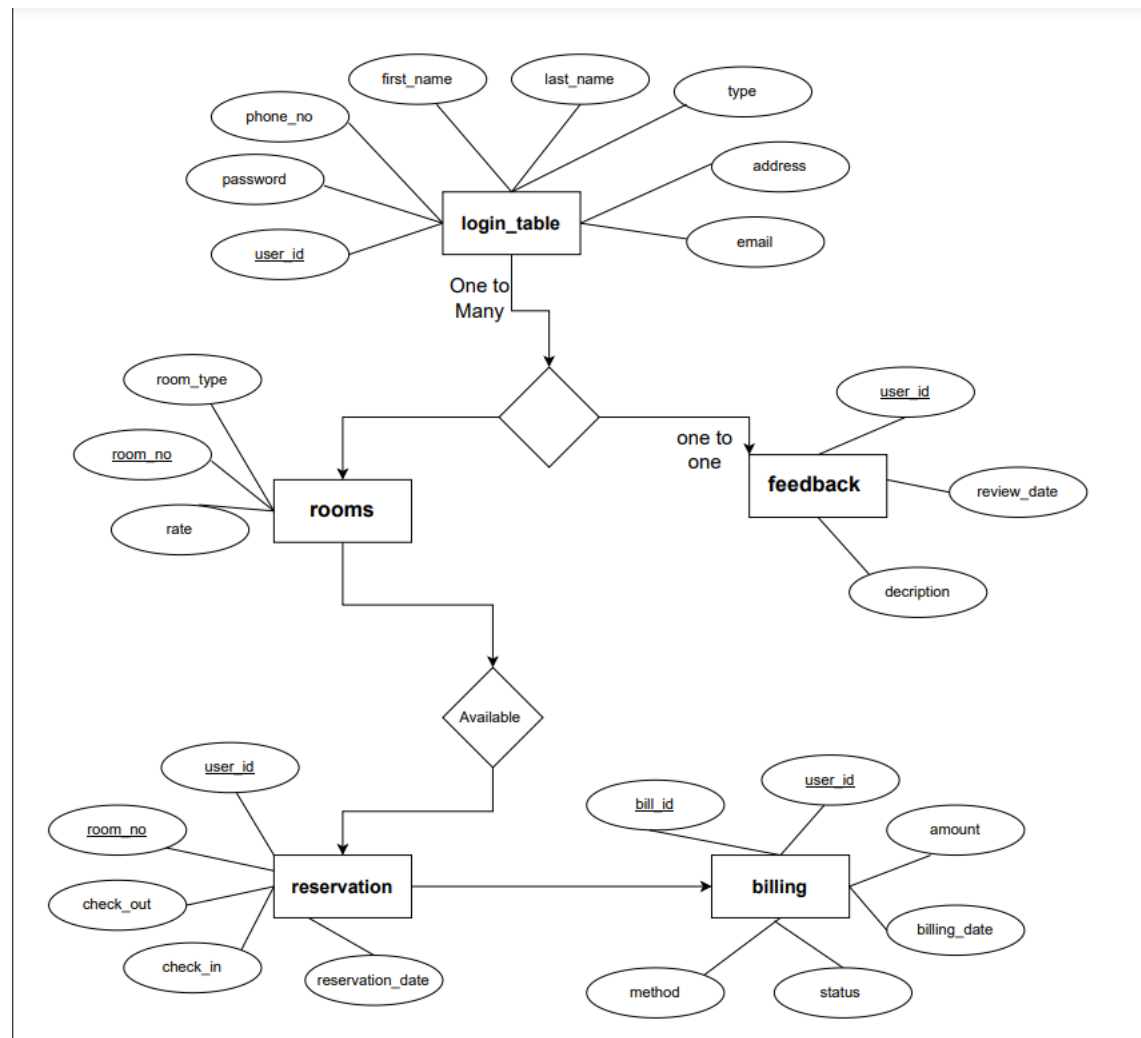
- **Technical Feasibility:** The use of Python, MySQL, and Tkinter ensures a reliable and easily maintainable system.
- **Operational Feasibility:** The system will enhance efficiency, reduce manual errors, and provide a user-friendly shopping experience.
- **Economic Feasibility:** The cost of development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

## 2.4 Usecase Diagram

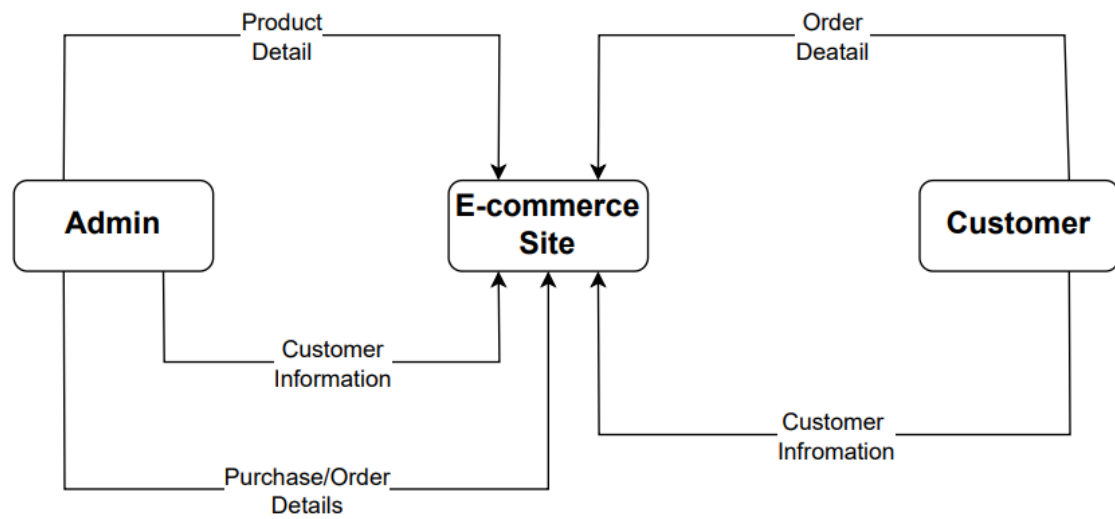




## 2.5 Entity Relationship Diagram



## 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:**

Column	Datatype	Size	Constraint
admin_id	Int	-	Primary key
username	Varchar	30	-
password	Varchar	255	-

- **Shipping\_cart Table:**

Column	Datatype	Size	Constraint
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:**

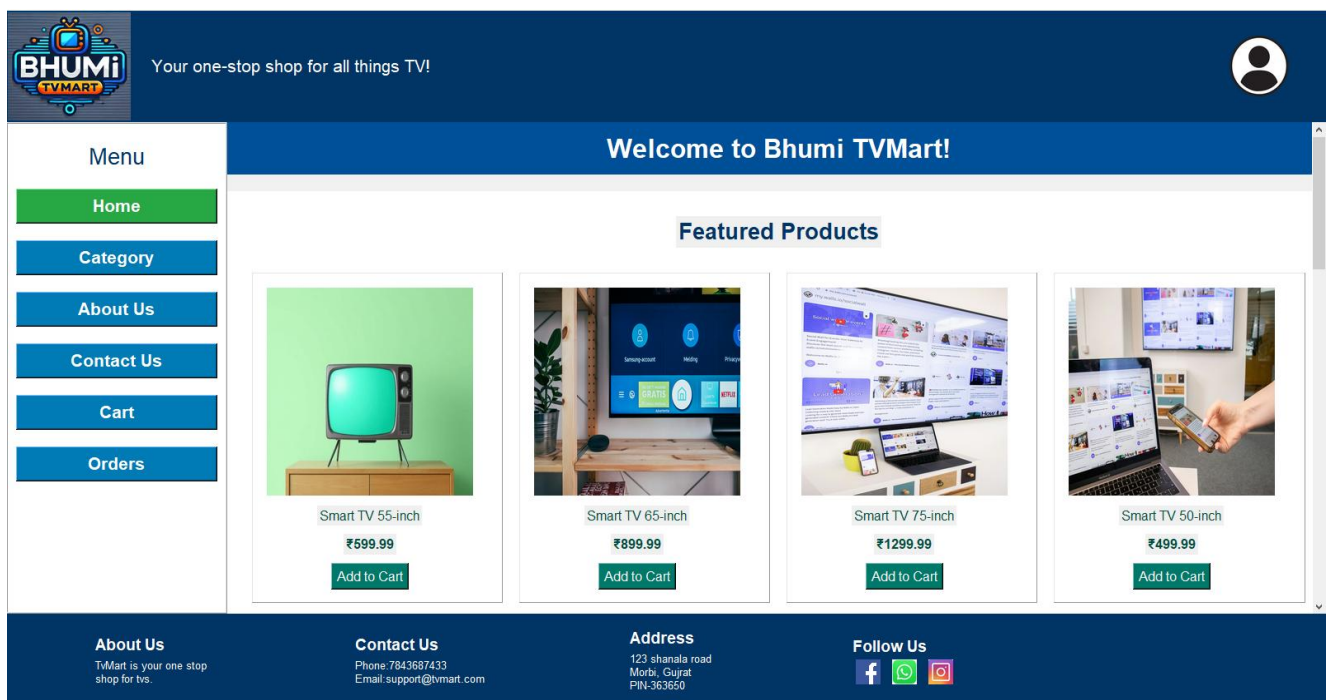
Column	Datatype	Size	Constraint
Customer_name	Varchar	50	-
Customer_email	Varchar	50	-
Phone_no	Varchar	10	-
description	Text	-	-

## 4.Implementation and Testing

### 4.1 Screen Layouts

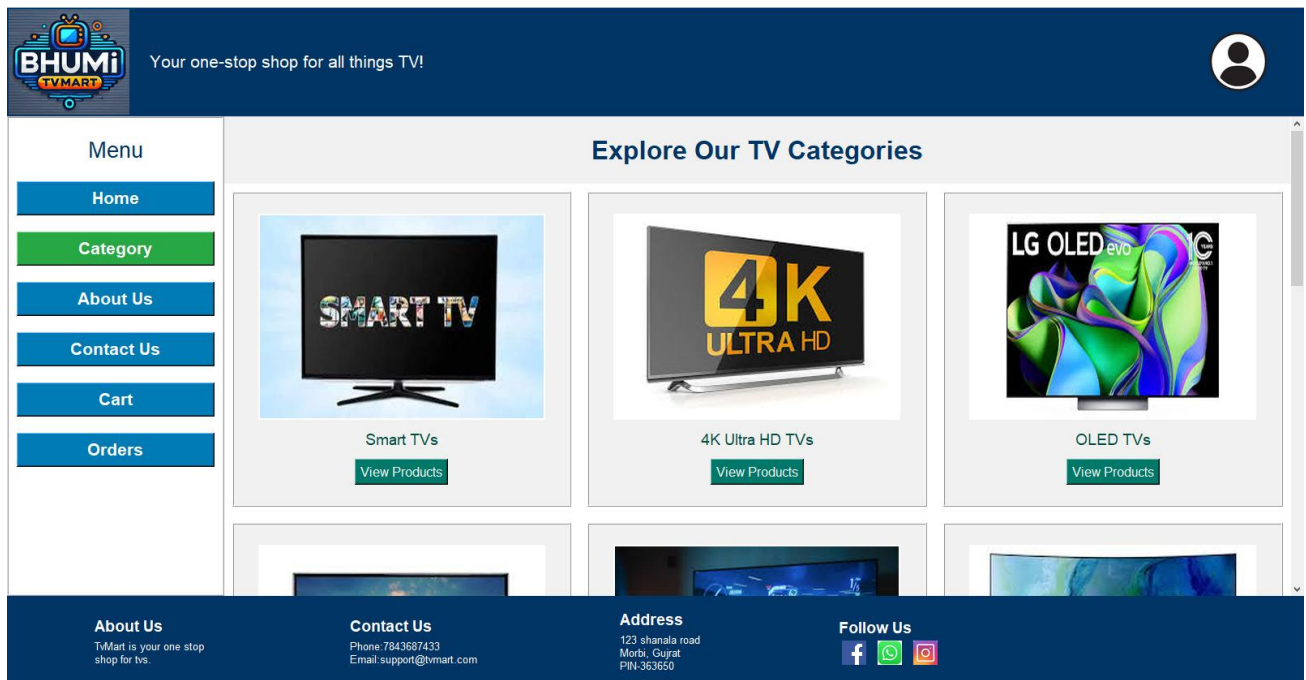
#### 4.1.1. Homepage

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

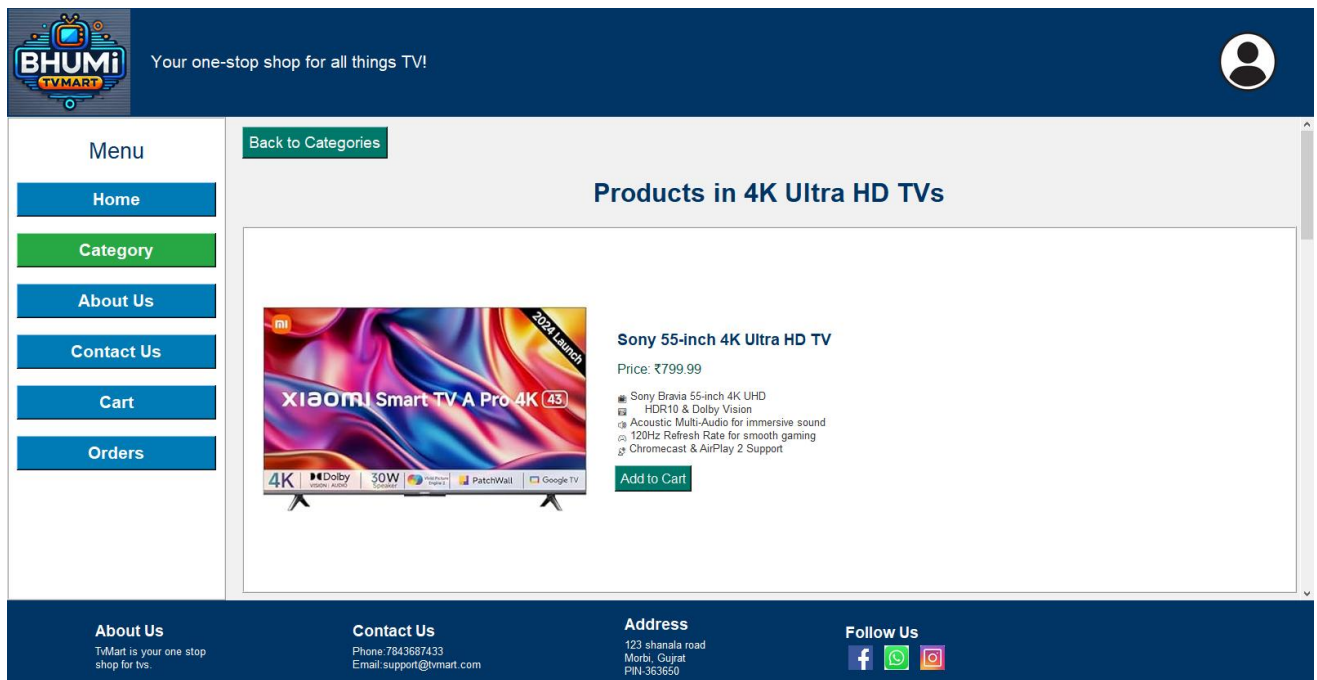


### 4.1.2. Category Page

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

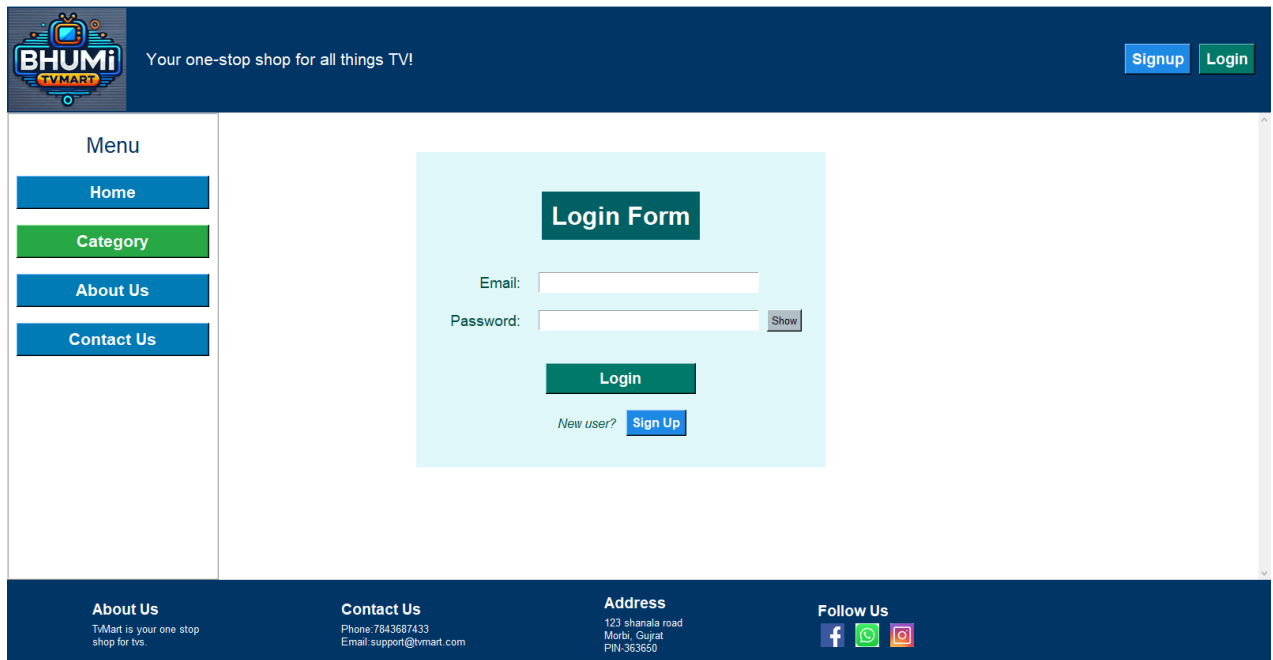


- **Product Display:** Lists products under each category with images, descriptions, and prices.



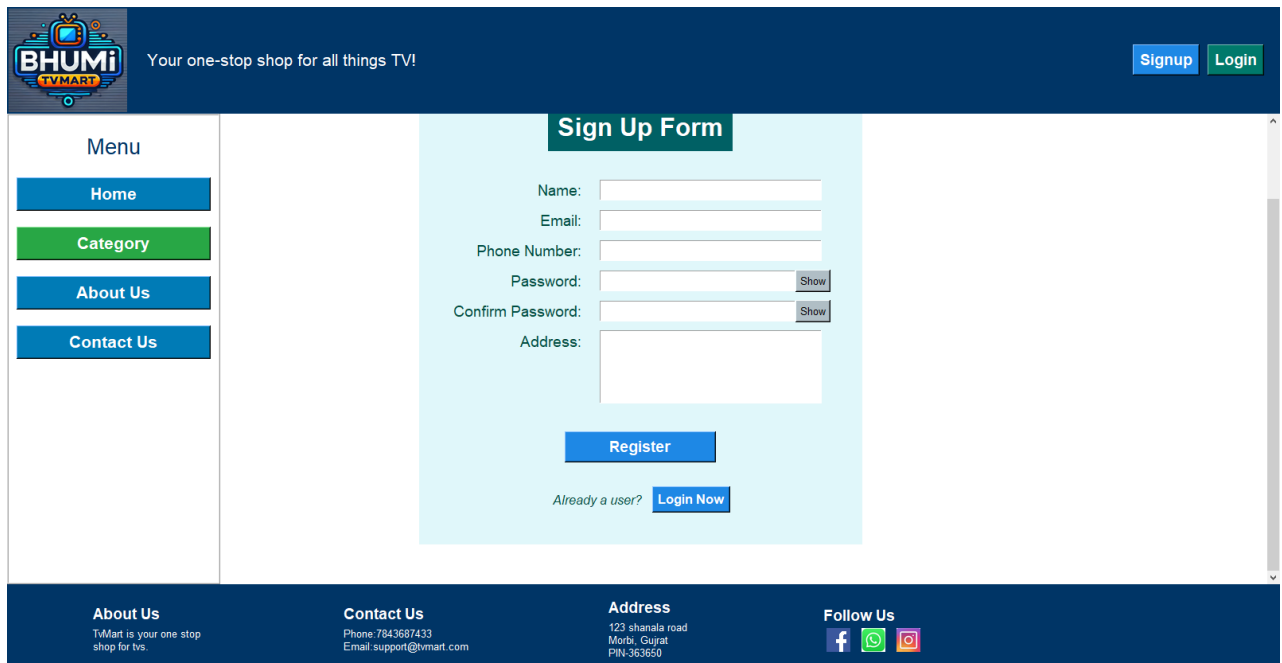
### 4.1.2. Login Page

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



The screenshot shows the login page of BHUMI TVMART. The header features the BHUMI TVMART logo and the tagline "Your one-stop shop for all things TV!". Navigation links for "Signup" and "Login" are in the top right. A left sidebar contains a "Menu" with links to Home, Category, About Us, and Contact Us. The main content area displays a "Login Form" with fields for Email and Password, a "Show" button for password visibility, a "Login" button, and a "New user? Sign Up" link. The footer includes "About Us", "Contact Us" (with phone and email), "Address" (123 shanala road, Morbi, Gujarat, PIN-363650), and "Follow Us" social media icons.

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

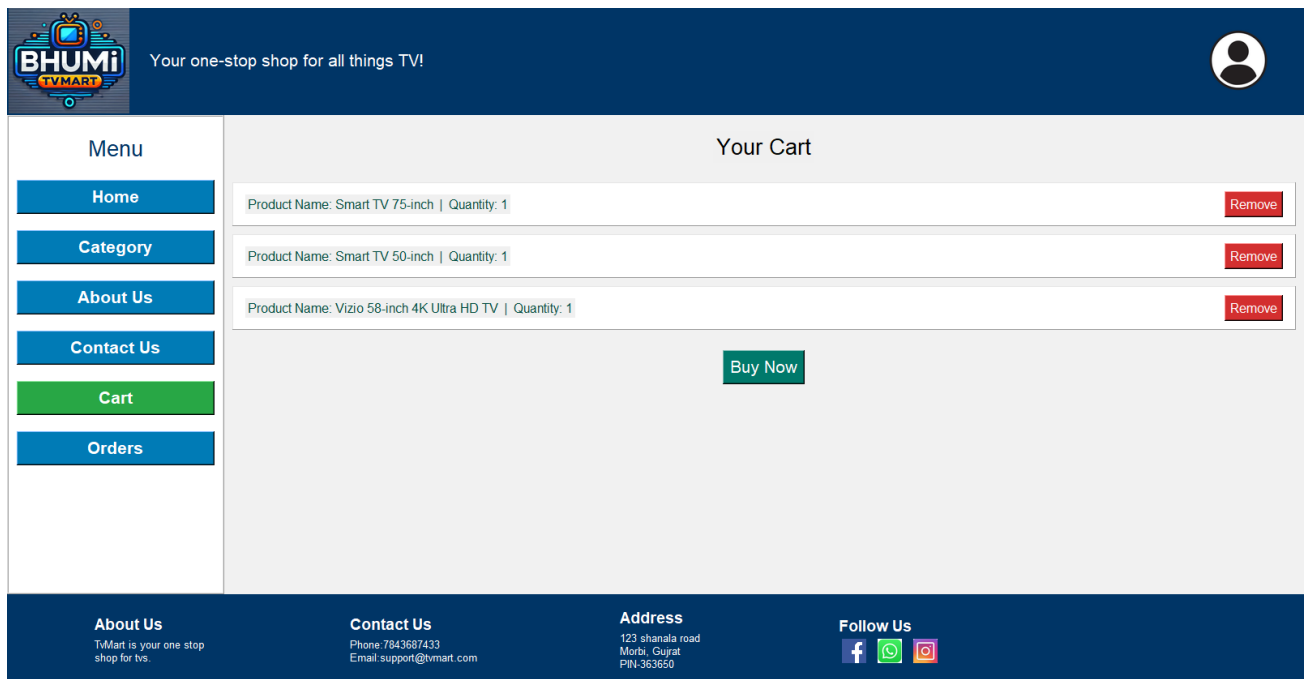


The screenshot shows the sign-up page of BHUMI TVMART. The header and footer are identical to the login page. The left sidebar is also the same. The main content area displays a "Sign Up Form" with fields for Name, Email, Phone Number, Password, Confirm Password, and Address. Each password field has a "Show" button. A "Register" button is at the bottom of the form, with a link "Already a user? Login Now" below it.



### 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.




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


The screenshot shows a checkout form window titled "Checkout". It contains input fields for Name (tufel chhachhar), Address (kalyanpar), and Phone No (1234567890). Below these fields, a summary box displays: Total: ₹2399.97, Discount: -₹120.00, and Final: ₹2279.97. The Payment Method section shows "Cash on Delivery" selected. A large green "Confirm Order" button is at the bottom. Below the button, a list of items in the cart is shown: Smart TV 75-inch (Quantity: 1, Price: ₹1299.99), Smart TV 50-inch (Quantity: 1, Price: ₹499.99), and 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.



Your one-stop shop for all things TV!



Menu

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

Welcome, tufel chhachhar!

Email: tufel123@gmail.com  
Phone: 1234567890  
Address: kalyanpar  
Password: tufel123

[Edit Information](#)




[Logout](#)

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


**Contact Us**  
Phone: 7843687433  
Email: support@tvmart.com

**Address**  
123 shanala road  
Morbi, Gujarat  
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- **Edit Information:** Users can edit their personal information like password , name, email.



Your one-stop shop for all things TV!



Menu

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

**Name:**  
tufel chhachhar

**Email:**  
tufel123@gmail.com

**Phone:**  
1234567890

**Password:**  
\*\*\*\*\*

**Address:**  
kalyanpar

[Save Changes](#)




[Cancel](#)

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### 4.1.5. Order Page

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



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Menu

Home

Category

About Us

Contact Us

Cart

Orders

### Your Orders

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

[Cancel Order](#)

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#### 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.

**BHUMI TVMART** Your one-stop shop for all things TV!

**Menu**

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

**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

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Email: support@tvmart.com

**Address**  
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**BHUMI TVMART** Your one-stop shop for all things TV!

**Menu**

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

\* 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.



Your one-stop shop for all things TV!



Menu

Home

Category

About Us

Contact Us


Cart

Orders

## About Us

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.

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.



About Us

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Your one-stop shop for all things TV!



Menu

Home

Category


About Us

Contact Us


Cart

Orders


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.



Founder



CEO



Manager

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### 4.1.8. Header

- Before login:



- After login:



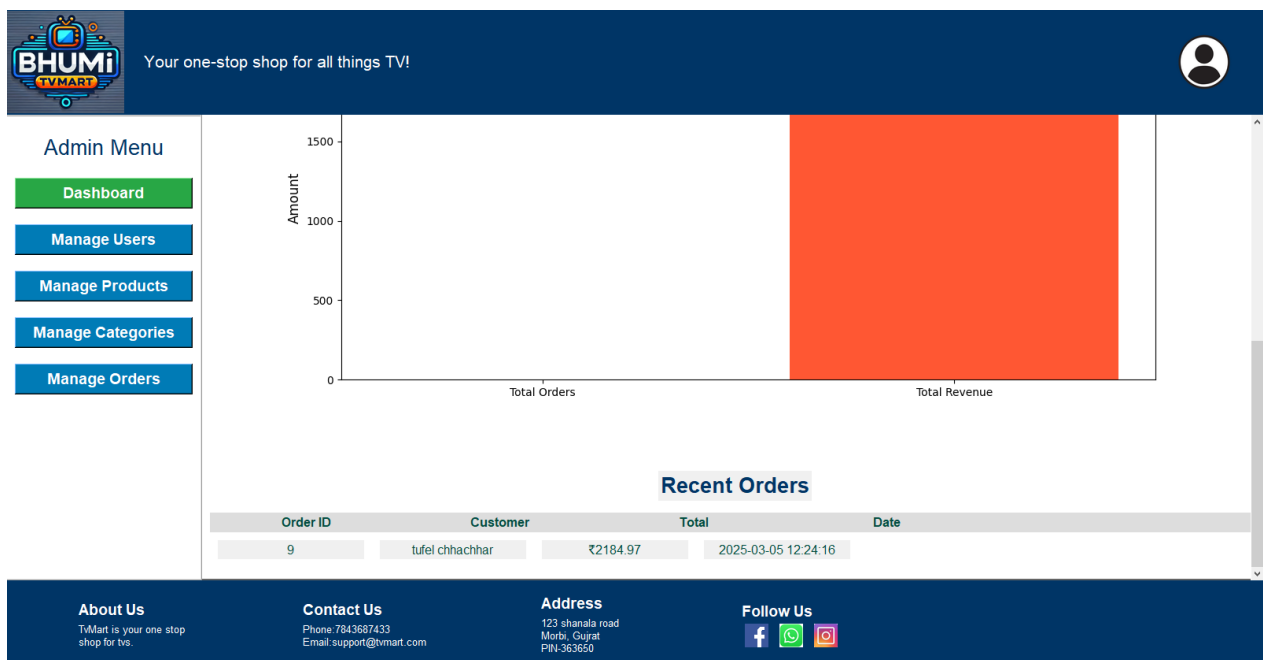
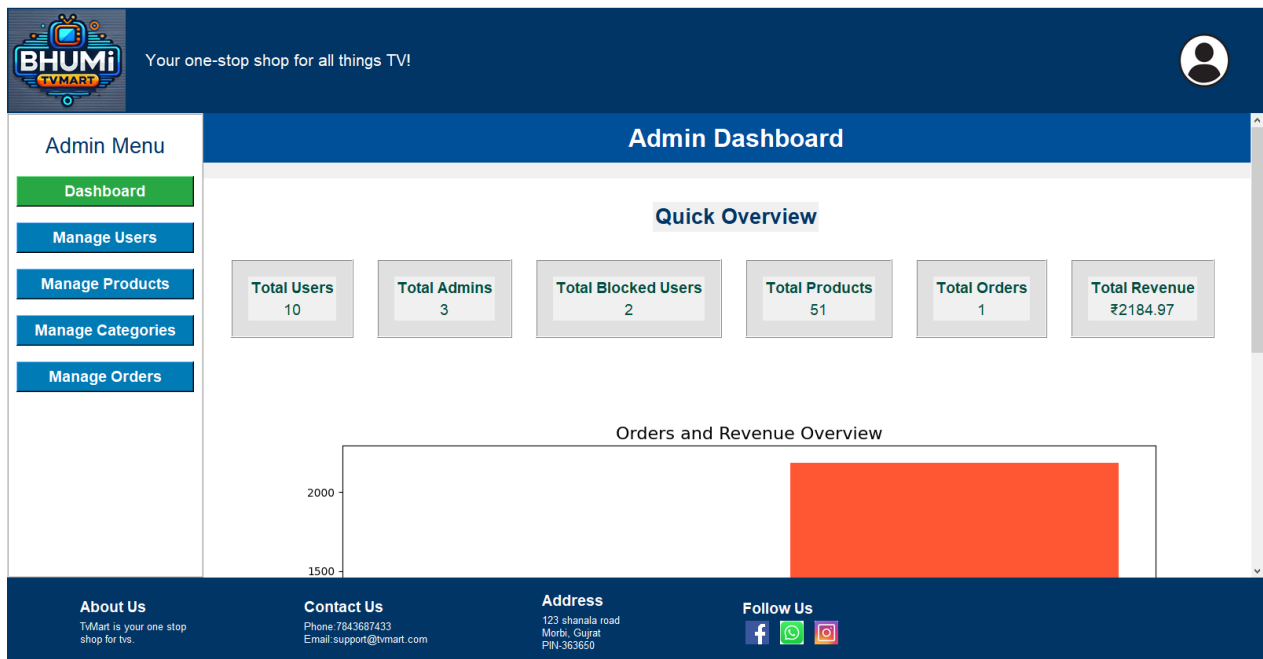
### 4.1.9. Footer



## 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.



### 4.2.1.2 Manage Users

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



Your one-stop shop for all things TV!

Admin Menu

Dashboard

Manage Users

Manage Products

Manage Categories

Manage Orders

Manage Users

Add New User

Name:

Email:

Phone:

Address:

Password:

Is Admin (1 for Yes, 0 for N)

Add User

User List

User ID	Name	Email	Phone	Address	Role	Actions
1	tufel chhachhar	tufel123@gmail.com	1234567890	kalyanpar	User	<div>Change Role</div> <div>Delete</div> <div>Block</div>
3	bhaves	bhaves0720@gmail.com	6354613412	pur, tankara, morbi, pin-36:	Admin	<div>Change Role</div> <div>Delete</div> <div>Block</div>
4	karan	karan123@gmail.com	9382929822	saraya	Admin	<div>Change Role</div> <div>Delete</div> <div>Block</div>
5	dhaval	dhaval123@gmail.com	6584397322	morbi	Admin	<div>Change Role</div> <div>Delete</div> <div>Block</div>
6	prashant	prashant123@gmail.com	6232132111	morbi	User	<div>Change Role</div> <div>Delete</div> <div>Block</div>
7	kartik	kartik123@gmail.com	9433543355	cas	User	<div>Change Role</div> <div>Delete</div> <div>Block</div>
8	jay	jay123@gmail.com	7292013988	vdsvdvs	User	<div>Change Role</div> <div>Delete</div> <div>Unblock</div>
9	rajesh	rajesh123@gmail.com	9999999999	vusdu	User	<div>Change Role</div> <div>Delete</div> <div>Block</div>
11	virat kohli	vk18@gmail.com	7256327723	delhi, bengluru	User	<div>Change Role</div> <div>Delete</div> <div>Block</div>
13	thala	msd7@gmail.com	8976983111	111	User	<div>Change Role</div> <div>Delete</div> <div>Unblock</div>

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Address

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### 4.2.1.3 Manage Products

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

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Admin Menu

Dashboard

Manage Users

Manage Products

Manage Categories

Manage Orders

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.

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Admin Menu

Dashboard

Manage Users

Manage Products

Manage Categories

Manage Orders

3	Smart TV 75-inch	₹1299.99	1	images/s_tv3.jpg	 Immersive Dolby Atmos Sound  HDMI 2.1 - Perfect for Gaming  Built-in Alexa & Google Assistant	<div>Edit</div> <div>Del</div>
4	Smart TV 50-inch	₹499.99	1	images/s_tv4.jpg	 50-inch Full HD Smart TV  Crystal Clear Display Quality  Stereo Speakers with Bass Boost  Netflix, YouTube, and Prime Video Supp	<div>Edit</div> <div>Del</div>
5	Smart TV 43-inch	₹399.99	1	images/s_tv5.jpg	 43-inch LED Smart TV  HD Resolution with Bright Panel  Wi-Fi Connectivity & Streaming Apps  Surround Sound Technology  HDMI & USB Support	<div>Edit</div> <div>Del</div>
6	ony 55-inch 4K Ultra HD T	₹799.99	2	images/4k_uhd_tv_1.jpg	 Sony Bravia 55-inch 4K UHD  HDR10 & Dolby Vision  Acoustic Multi-Audio for immersive sou  120Hz Refresh Rate for smooth gamin  Chromecast & AirPlay 2 Support	<div>Edit</div> <div>Del</div>
7	G 65-inch 4K Ultra HD T	₹899.99	2	images/4k_uhd_tv_2.jpg	 LG 65-inch 4K UHD Display  AI Picture Enhancement  Dolby Atmos for cinematic sound  Game Optimizer for best performance  Built-in WebOS & Magic Remote	<div>Edit</div> <div>Del</div>
8	sung 50-inch 4K Ultra HI	₹699.99	2	images/4k_uhd_tv_3.jpg	 Samsung 50-inch Crystal UHD  PurColor for rich visuals  Adaptive Sound for clear audio  HDMI 2.1 - Best for gaming	<div>Edit</div> <div>Del</div>

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#### 4.2.1.4 Manage Categories

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



Your one-stop shop for all things TV!



Admin Menu

- Dashboard
- Manage Users
- Manage Products
- Manage Categories
- Manage Orders

### Manage Categories

**Add New Category**

Category Name

Image Path (URL or Local Path)

Browse

Add Category

**Category List**




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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Admin Menu

- Dashboard
- Manage Users
- Manage Products
- Manage Categories
- Manage Orders

Add Category

**Category List**




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>
13	kkk	<a href="#">Edit</a> <a href="#">Delete</a>

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### 4.2.1.5 Manage Orders

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



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Admin Menu

Dashboard

Manage Users

Manage Products

Manage Categories

Manage Orders

Manage Orders

Order List

Order ID	Customer	Total Price	Order Date	Actions
9	tufel chhachhar	₹2299.97	2025-03-05 12:24:16	Delete

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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.