VIETNAM NATIONAL UNIVERSITY, HANOI

UNIVERSITY OF ENGINEERING AND TECHNOLOGY

SOFTWARE REQUIREMENTS SPECIFICATION DOCUMENTS

SEMESTER 232

GROUP 10

Group members:	**Phan Anh Tú**	**Student ID: 22028238**
	Mai Anh Tuấn	**Student ID: 22028144**
	Nguyễn Ngọc Hưng	**Student ID: 22028142**
	Nguyễn Đức Phát	**Student ID: 22028298**
	Nguyễn Nhật Phong	**Student ID: 22028272**

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Instructor: **Assoc. Prof. Đặng Đức Hạnh**

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Software Requirements Specification

for

Online Ecommerce Website

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Prepared by Group 10

University of Engineering and Technology

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		Reformat document	Phan Anh Tú

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1. Introduction

1.1. Purpose

The purpose of this software requirement specification is to offer a comprehensive outline of the necessities for an online ecommerce website. This document delineates the primary use cases for web customers engaging in online purchases, encompassing both the client and seller components.

The online ecommerce website serves as a virtual marketplace for a diverse array of goods, facilitating global transactions. It operates as an internet-based enterprise with an extensive inventory spanning categories such as books, electronics, groceries, and more.

Sellers utilize this platform to broaden their reach to a global audience, providing enhanced flexibility and market access. The convenience of online shopping has surged in popularity over the past decade, allowing customers to easily explore various products, brands, and price points from the comfort of their homes. This trend has solidified the online shopping website's position as a dominant force in the digital marketplace.

1.2. Intended Audience for the SRS:

The document describes the scope, functionality and features of an online shopping website which has a small group of audience. This document finds relevance to people from various different technical and non-technical backgrounds.

Throughout the document, one becomes familiarized with the scope of these online shopping websites - from their purpose, benefits and business as well as technical constraints. The context and origin of the product as well as its basic functionality are then explained in relevant detail along with an analysis of its different classes, design and implementation. We then detail the interface requirements, build analysis models and examine system features and non functional requirements.

1.3. Scope

The ecommerce website serves as a platform for a diverse range of goods sales and facilitates secure transactions between sellers and customers globally. It operates as a virtual enterprise, offering customers a wide array of products to browse and purchase online. Additionally, it provides sellers with a platform to list their products for customer viewing and purchase. The primary advantages of this service include the convenience of remote shopping, the ability to compare prices, brands, and customer reviews for a

deeper understanding of products, and the opportunity for retailers to reach a global audience.

It boasts a comprehensive database storing customer data and purchase history. The reviews section promotes transparency regarding product performance and user experience, featuring both user ratings and detailed reviews with optional product images. This fosters customer trust and community engagement.

Secure transactions and guaranteed, timely product delivery are key features. Increasing sales is a top priority, requiring the testing of various growth strategies such as minimizing management costs, fostering customer loyalty and satisfaction, and leveraging internet resources for technological innovation, marketing, and business development. Continuous research and development, particularly in logistics, are crucial for business growth. Expanding into emerging markets and investing in new ventures are also viable strategies.

The ecommerce website aims to provide a seamless and user-friendly platform for customers to conveniently select from a wide range of products, catering to the needs of both customers and sellers.

1.4. References

Vietnamese

[1] Trương Ninh Thuận; Đặng Đức Hạnh, *Giáo trình Phân tích và thiết kế hướng đối tượng*, Nhà xuất bản Đại học Quốc gia Hà Nội, 2013.

English

[2] Ian Sommerville, Software Engineering 10th Edition, Pearson, 2016

1.5. Overview

This document is prepared to explain all detailed information about overall system description, functional, non-functional and specific requirements, data and behavioural model description of the system. This document basically consists of three parts: the first

part includes introduction and overall description of the application/system/product/software/etc.

The second part contains specific requirements, data and behavioural model description of the system which are section 3, 4 and 5 in the document. Last part gives planning, conclusion and supporting information about the system

2. Overall Description

2.1.Product Perspective

The system comprises both user and seller subsystems. The online shopping website provides an excellent means to connect sellers and customers on a digital platform, enabling them to conduct transactions efficiently and securely regardless of physical distance. It offers customers a convenient way to shop online without the need to visit physical stores or meet sellers directly, and provides sellers with a platform to sell their products without the necessity of physical interaction with customers or the setup of physical stores. This system serves as a one-stop destination for customers to choose from millions of online products. Sellers can upload their product listings to the system, while customers can easily browse and shop anytime, anywhere conveniently.
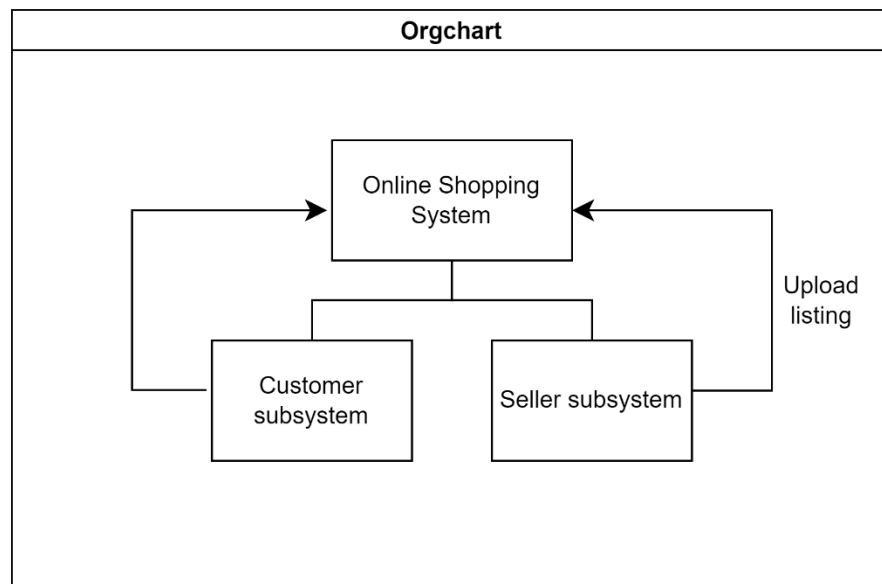
Figure 1. System Orgranization chart

2.2. Product Functions

The website is sketched out to have some basic functions as follows:

- Register an account
- Log in to the website
- Edit account information

For Users/ Customers:

- View items
- Search items
- Add items to cart
- View cart
- Change items in cart
- Proceed to buy items
- Delivery and payment
- Shipping tracking
- Order cancellation
- Order return
- Order confirmation
- Item reviews
- Etc.

Seller:

- Upload listings
- Edit items
- Items classification
- Delete items
- View order from customers
- Statistics of items sold
- Etc.

- Working with the Options menu bar
- Language options
- Display ads

2.3. User Classes and Characteristics

Customer - The individual is a verified user of the platform, intending to purchase a product from a seller using the system. They engage in various functions including registration, account viewing, logging in, browsing items, viewing item details, purchasing immediately, adding to cart, viewing cart contents, proceeding to purchase, entering delivery details and payment method, completing payment, placing orders,

reviewing past orders, tracking packages, writing reviews, canceling orders, returning items, and logging out.

Seller - The individual is a verified user of the product aiming to sell items via the platform. Sellers utilize various product functions such as registration, account viewing, logging in, uploading listings, monitoring sales, and delivering items to customers.

Administrator - is responsible for overseeing the following tasks:

- User and shop owner management, which includes handling accounts, permissions, and any related inquiries or issues.
- Reporting management and processing, involving the analysis of sales data, customer trends, and other relevant metrics to inform decision-making.
- Web maintenance duties, which encompass ensuring the website's functionality, security, and performance are optimized. This includes regular updates, troubleshooting, and addressing any technical issues that may arise.

2.4. Operating Environment

There is only one modes of using the software - **web applications**. Web applications can be run on Windows 7/8/8.1/10/11: Google Chrome (78 and later); Mozilla Firefox (70 and later); Internet Explorer (11 and later); Microsoft Edge (18.18362 and later), Mac OS X: Apple Safari (13.0.1 and later). The Internet is a basic necessity for the system to be accessed.

Front End   JS / HTML / CSS

Backend NodeJS / MySQL

2.5. Constraints

For maintenance convenience, customers are only allowed to make payments after adding items to their cart; proceeding directly to checkout with an empty cart is not an option. Specific brand-related agendas are not incorporated into our design. Sections showcasing daily deals, gifting options, and sales are omitted. The wish list feature is merged with the cart due to their similar purposes. While some platforms have experimented with building friendship communities among customers, concerns about transparency regarding product costs and personal spending within these communities pose privacy risks and limit developers' options. Real-time update capability in such systems places high demands on server capacity to handle sudden spikes in traffic. Interfaces with payment methods like Google Pay or PayPal increase the risk of middle attacks, necessitating additional security measures at payment gateways. The recommendation system is assumed to operate on the server side. Our system prioritizes customer needs over those of sellers, with more detailed functionalities designed for

customers than for sellers. The system is developed by JS / HTML / CSS and NodeJS / MySQL as back end

2.6.Assumptions and Dependencies

The tool must feature a user-friendly interface that is easy to comprehend. All essential hardware and software required for implementing and utilizing the tool are readily available. The system will be created, built, and put into operation according to the specifications outlined in the software requirements document. Initially, only one customer can place an order simultaneously, but efforts will be made to broaden this capability. The recommendation models will rely on server functionalities, with the server defining recommendations more explicitly relevant to customers.

3. External Interfaces Requirements

3.1.User Interfaces

3.1.1. Home Page
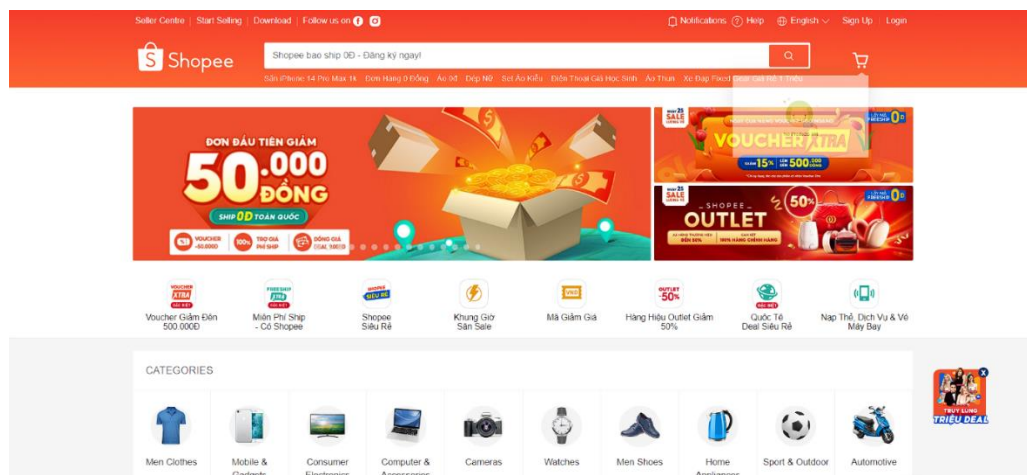
Figure 2. Home Page view when not logged in

- The home page of this ecommerce website is designed to be attractive and user – friendly

- It includes: search bar, buttons and links such as Login, Sign Up, Cart, Notifications, Seller Center, Start Selling, Change Language option, Username, and several suggestions based on their recently search

- It also showcases the best-selling items across popular categories such as electronics, clothes, watches, and more. It promotes ongoing sales, discounts, and special offers.

3.1.2. Login
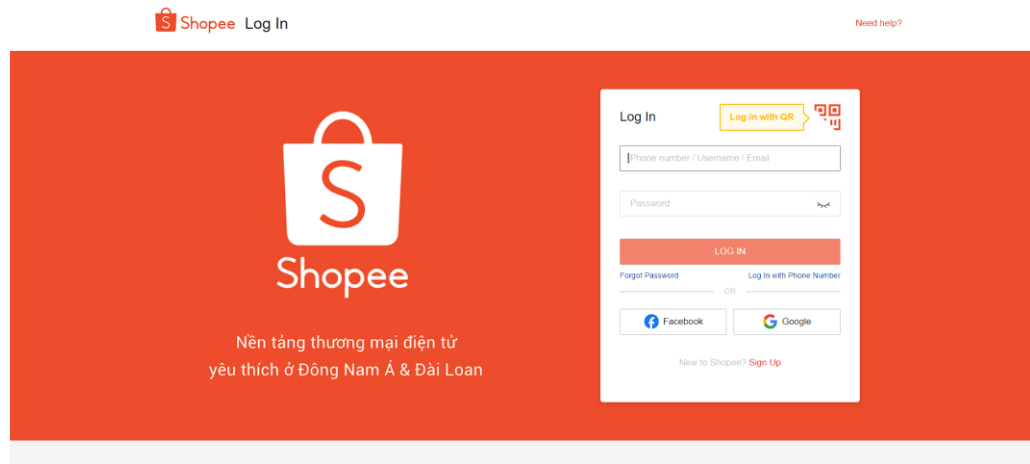
Figure 3. Login view

- This webpage enables users with an existing account within the online shopping platform to log in similar to Figure 2. Users have the option to sign in using either their phone number, username, email address associated with their account. In the early version, user can just sign in by their email. After entering their email address or phone number along with the corresponding password, the user can click on the "LOG IN" button. If the entered credentials are correct, the system will redirect the user to the homepage, and their username will be displayed on the top navigation bar as shown in Figure 3.
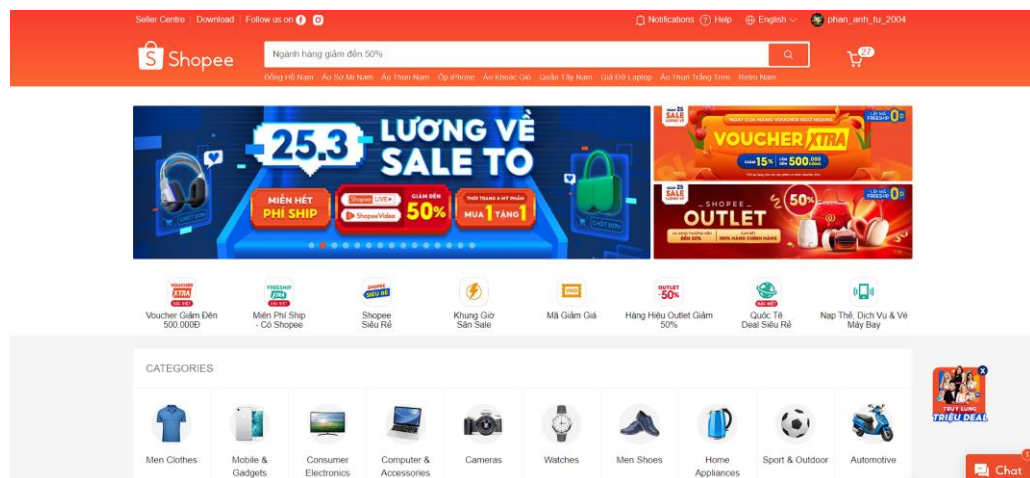
Figure 4. Home Page view after logged in

- If the entered email address or phone number is incorrect, the system will display an error message stating "Your account and/or password is incorrect, please try again." as shown in Figure 4.
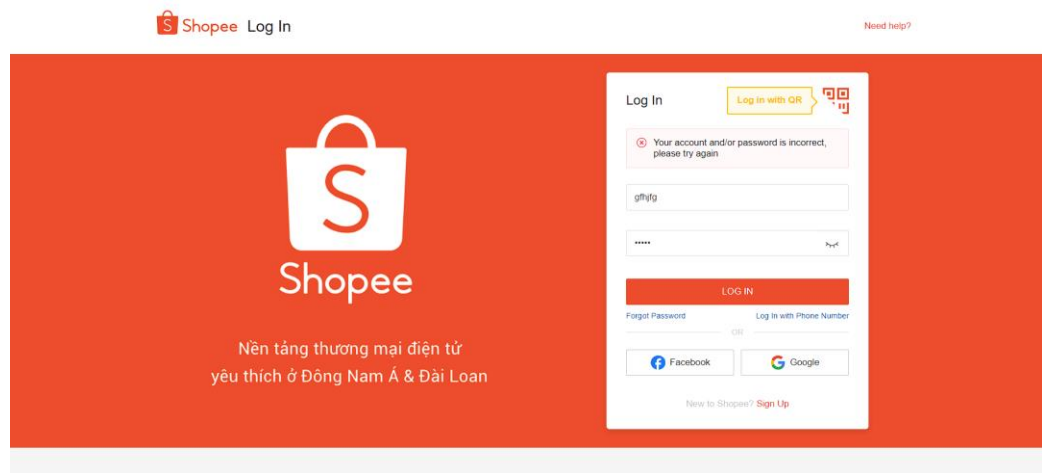
Figure 5. Login view when enter incorrect ID or password

- The sign-in page also includes a "Sign Up" button for new users. When clicked, this button redirects the user to the Sign Up page.

- Additionally, there are other fields such as "Forgot Password" and "Need Help" provided on the sign-in page. Clicking on these options directs the user to the appropriate pages for password recovery or assistance.

3.1.3. Create Account

Figure 6. Sign Up view

- This webpage illustrated in Figure 5 permits users to register a new account. Users are prompted to enter their name, email address, and password. The password field requires a minimum of 6 characters.

- Additionally, users are required to confirm their password by re-entering it. Following this step, users can proceed to create a new account by clicking the 'Create your account' button.

- This webpage also offers additional sections such as 'Conditions of Use,' 'Privacy Notice,' and 'Help,' which direct users to the relevant pages for more information.

- This page includes a sign-in field designed for users who already possess an account. After selecting the sign-in field, users who already have an account will be directed to the sign-in page for authentication purposes.

-

3.1.4. My Purchase
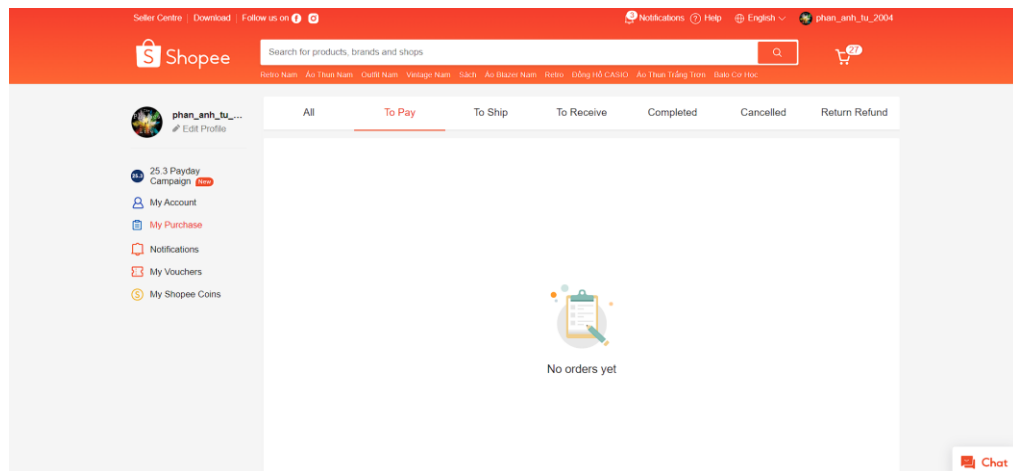
Figure 7. My Purchase view

- This page furnishes users with comprehensive details regarding their orders. It encompasses various categories such as 'All', 'To Pay', 'To Ship', 'To Receive', 'Completed', 'Cancelled', and 'Return Refund'.

- To access this page, users should navigate to the username button located in the top right corner of the webpage. Upon hovering or clicking on this button, a dropdown menu will appear, presenting a list of choices. From this menu, users should select 'My Purchases'. (Figure 7)
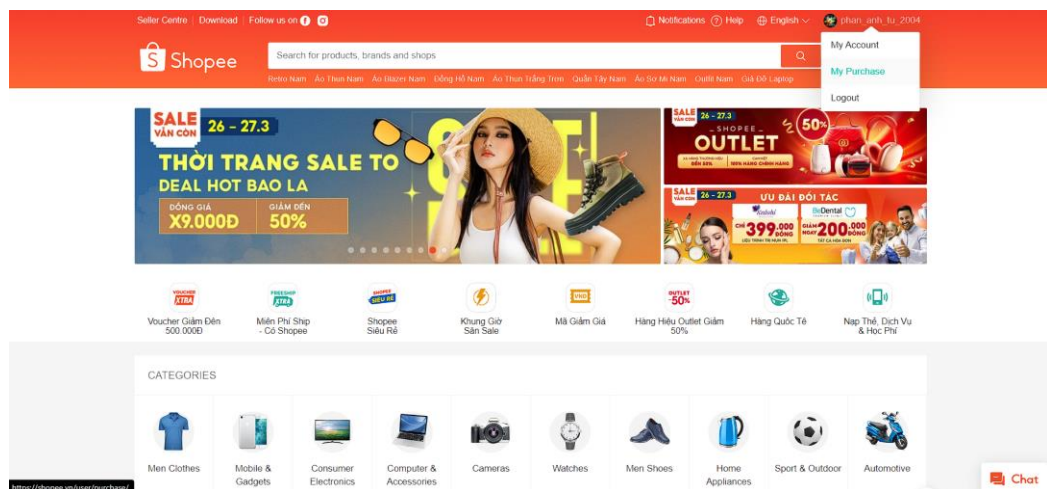
Figure 8. How to access to My Purchase page

- The "All" section includes the rest sections: 'To Pay', 'To Ship', 'To Receive', 'Completed', 'Cancelled', and 'Return Refund'.

- The "To Pay" section gives the information about all the orders that users placed, but haven't purchased yet. You can purchase online right away by clicking to the "PURCHASE" button corresponding to the order you want.

- The "To Ship" section gives users information about all the orders that have been forwarded to the seller for delivery to the shipping company. In that section, there is a "CANCEL" button for each order detail, means that users can cancel the order during

the time the seller deliver the order to the shipping company, and that order detail will move to the "Cancelled" section

- The "To Receive" section provides users with information about orders that are currently en route to them. Once your order has appeared in this, you can check its shipping journey. When the order arrive their place, there is a "CONFIRM" button, and the user hit that button only after receiving the order

- The "Complete" section consists of the order have been successfully delivered to the users. The users now can rate the order as well as comment about the quality of the order so that later user and base on these rates and comment to consider whether or not to buy it. Additionally, there is a "Buy Again" button, "Contact seller" button, and for 7 days from receipt of goods, users can see the "Return Request" button. When clicking on that button, the return request will be sent to the seller and that order will be moved to the "Return Refund" section

3.1.5. Shopping Cart

- This page as shown in Firgure 8 allows the user to save the items they wish to buy in the cart. It provides information about all the items added to the cart by the user. For each item in the cart functionalities like 'Delete' and 'Find similar' are provided to the user.
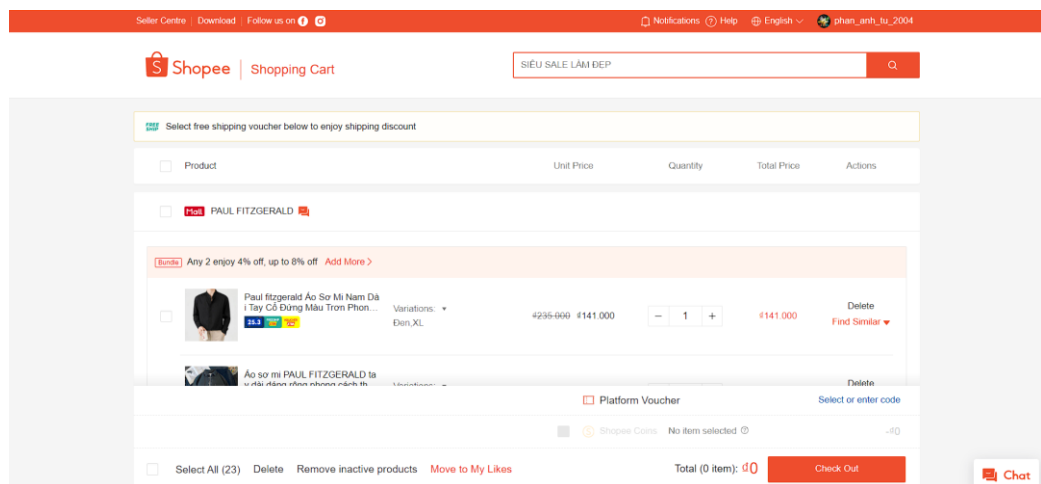
Figure 9. Cart view

- The user can select all the items they wish to buy from the cart by clicking the checkbox next to each item. The user can then select the 'Proceed to check out' button to proceed with purchasing the item(s).

-

3.1.6. My Account
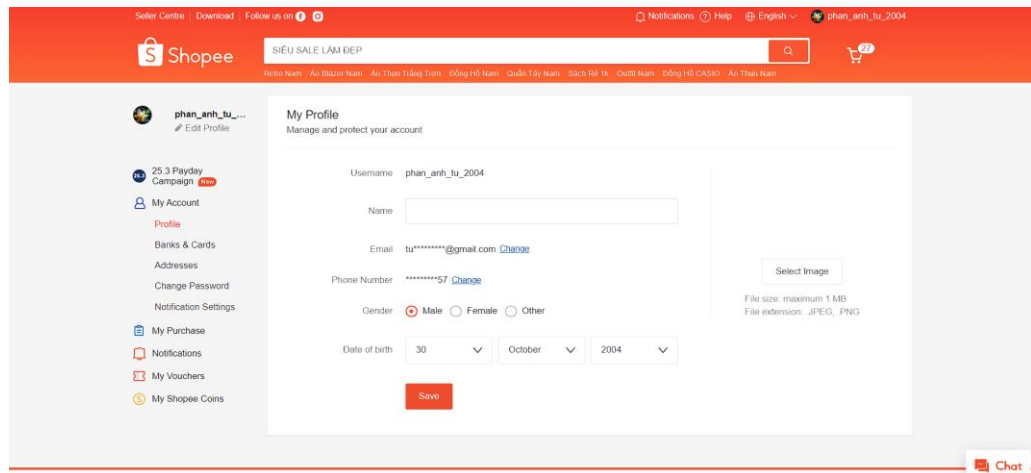
Figure 10. My Profile view

- My Account page comprises of several section:

- Profile: where users can edit name, email, gender, date of birth and avatar (Figure 9)

- Banks & Cards: where users can add credit cards or bank accounts for online purchase by clicking "Add new Card" and "Add new Bank Account" button, respectively (Figure 10)

- Addresses: users can set addresses for order shipping. There is a "Add new Address" button for this purpose. Users can also edit, or delete existing addresses as well as set default address if there are more than one addresses.

-

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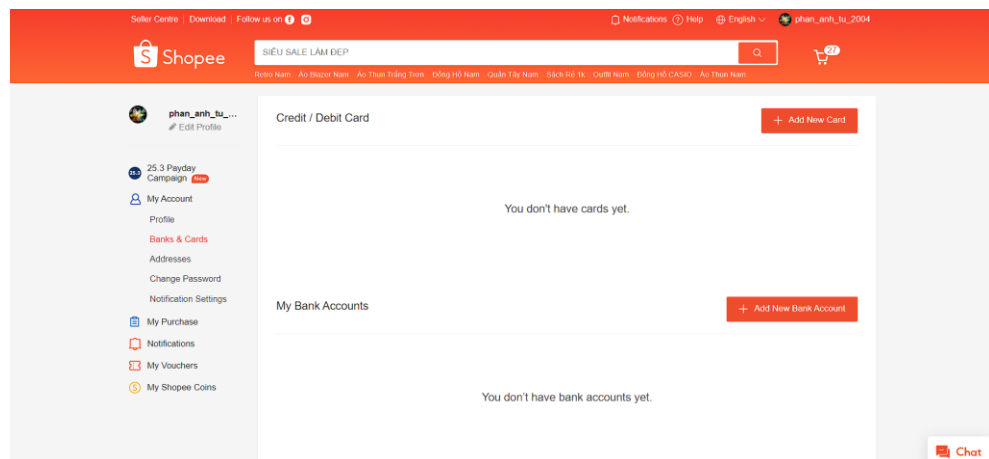
Figure 11. Banks & Cards view
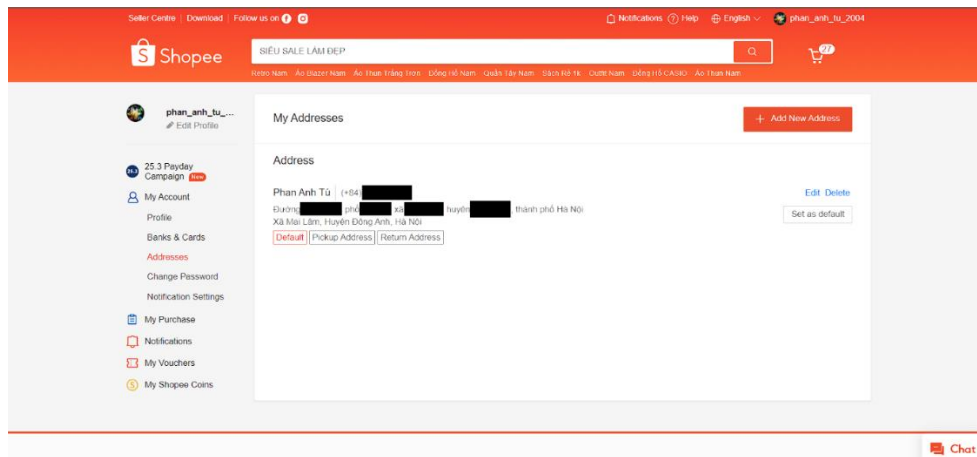
Figure 12. Addresses view

3.1.7. Sell
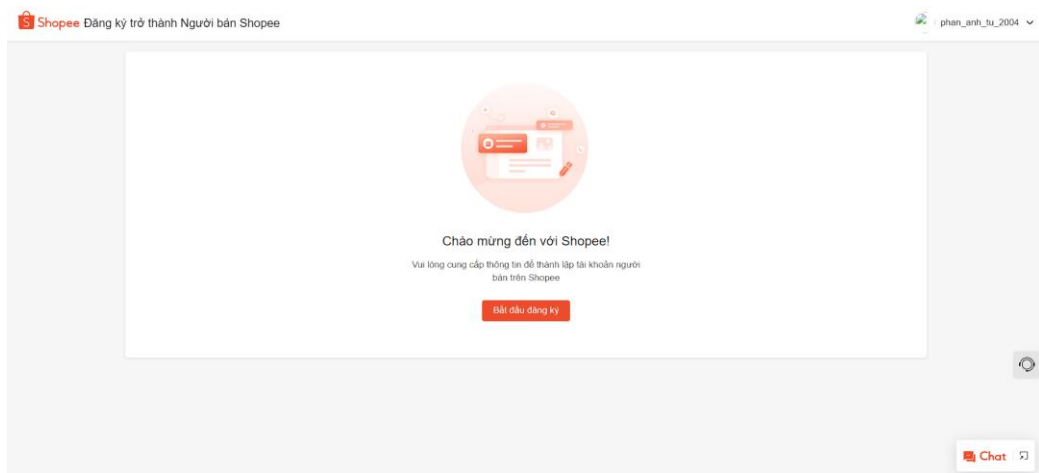
Figure 13. Seller Center view

- This webpage facilitates users to become sellers on the online shopping platform. Users interested in selling their products need to register as a seller. Registration involves providing various details about themselves and their business, including business location, business type, contact address, identity information, GST number, and bank account details.

- After successfully registering as a seller, users are required to upload their product listings onto the online shopping platform. Customers can then browse and purchase the seller's products. The seller is responsible for delivering the products to the customers and receiving payment for the transactions.

Figure 14. Positioning the "Seller Center" button

- To access this page, users just click to the "Seller Center" button displayed on the top left side at the Home page

3.1.8. Search Bar and Search result page

- Customers can utilize the "Search Bar" adjacent to the logo to swiftly and effortlessly conduct product searches, enabling them to find desired items promptly. Positioned within the top navigation bar, the search feature is prioritized, emphasizing its significance in the online shopping website's user experience.
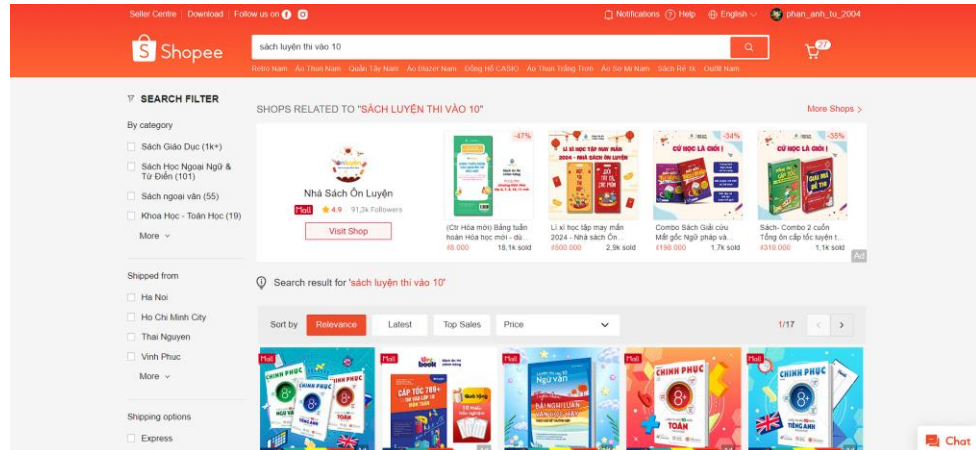
Figure 15. Search Result page view

- After you search for a keyword for the item you want to buy, the website will display search results for that item. Users can click on an item to view details of that item, or can filter search results by criteria such as category, shipping from, price,... (Figure)

3.1.9. Item View page
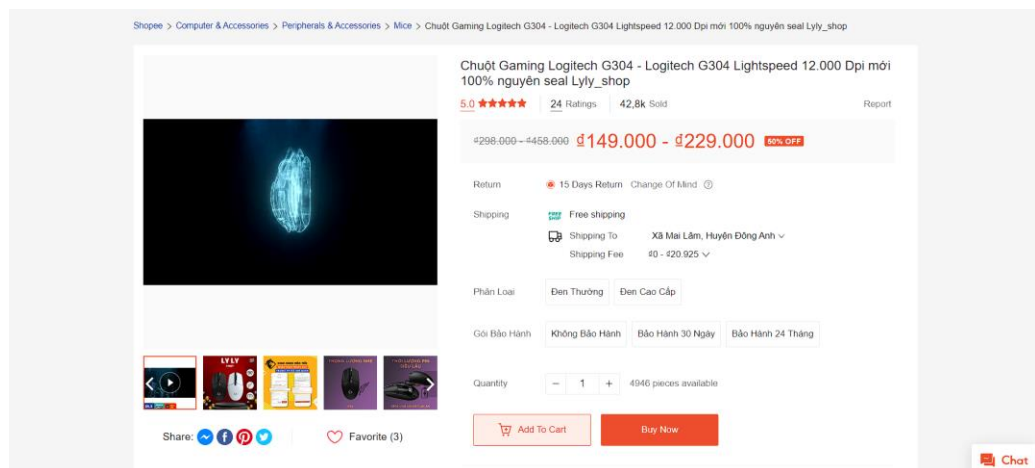
Figure 16. Item View page view

- Users can click on products while searching to view comprehensive information about them.

- Typically, this includes one or more images of the product, the product's name, features, price, and the brand selling it.

- After reviewing the product details, users can proceed to add the product to their cart or purchase it directly by clicking on the 'Add to Cart' or 'Buy Now' buttons,

respectively.

- Upon clicking the 'Buy Now' button, the user will be prompted to choose a payment method. After selecting the preferred payment method, they can proceed by clicking the 'Continue' button to finalize the order placement process.

- Users are presented with the billing details of the product. Additionally, they have the option to review the order, make adjustments to the delivery address if needed, and then finalize the process by clicking on the 'Place Your Order' button to complete the order placement.

- Once the user's order is successfully placed, they will receive a notification message to their phone number confirming the order.

3.2. Software Interfaces

- All the web pages of this online shopping website are primarily constructed using development tools such as HTML, CSS, JavaScript, and other related technologies.

- This online shopping website is accessible through the internet on any operating system, including Unix, Linux, Mac, Windows, and others.

- This system stores product data, customer data, and seller data in multiple databases housed within data centers situated across various geographical locations. The primary type of database used is MySQL.

- The online shopping website will communicate with the content manager to retrieve product specifications for users on the Product Specification page.

- The system's databases store comprehensive information about the products. The content manager retrieves various details about the product, including images, product name, features, price, brand selling it, product reviews, ratings, etc., which are then displayed to the users.

- The system will communicate with the bill-paying system to identify available payment methods, validate payments, and process transactions. It will share data including customer email/phone number, selected payment method, product IDs, quantities, prices, and payment details such as card number, name on the card, expiration date, etc., with the bill-payment system for processing.

- The system will interact with the credit management system to manage financing options. It will share data including the total price, payment method, and payment details with the credit management system for processing financing options.

- The system will communicate with the Sales system for order management. The Sales system will handle orders placed by customers, taking into account order details, the date and time of the order, delivery addresses, and approximate delivery dates.

- The system will interact with the shipping system to track orders and update shipping methods. After an order is placed, the shipping system takes charge of informing users about the shipping progress of their ordered products. These updates are communicated to customers via messages sent to their phone numbers and email addresses.

3.3. Communications Interfaces

- Users can access the online shopping website via the internet by searching for the system's name in a web browser.

- The system will utilize the HTTP protocol for communication over the internet.

- Upon placing an order, the system will send a confirmation message to the customer's email address and phone number, indicating that their order has been successfully placed.

- Additionally, the system will provide follow-up messages to the customer's phone number and email address to keep them informed about the shipping process, including updates such as 'product is dispatched from the site' and 'product is expected to arrive in 2 days', etc.

4. Analysis Models

4.1. Actor Description

Table 1. Actor Description

Actor	Description
Customer	The Customers Actor represents the individuals or entities who visit the e-commerce platform with the intent to browse, search for products, make purchases, and interact with the system's functionalities. Customers may include individual consumers, businesses, or other entities interested in buying products or services from the e-commerce platform.
Seller	The Seller Actor represents individuals or businesses who utilize the e-commerce platform to list, manage, and sell their products or services to customers. Sellers may range from individual entrepreneurs to large enterprises offering a variety of items for sale on the platform.
Server	The Server Actor represents the backend system infrastructure that supports the operations of the e-commerce platform. This includes the web servers, databases, and other components responsible for handling requests, processing transactions, managing data, and ensuring the overall functionality and performance of the platform.

4.2. Overall Uses Case Diagram
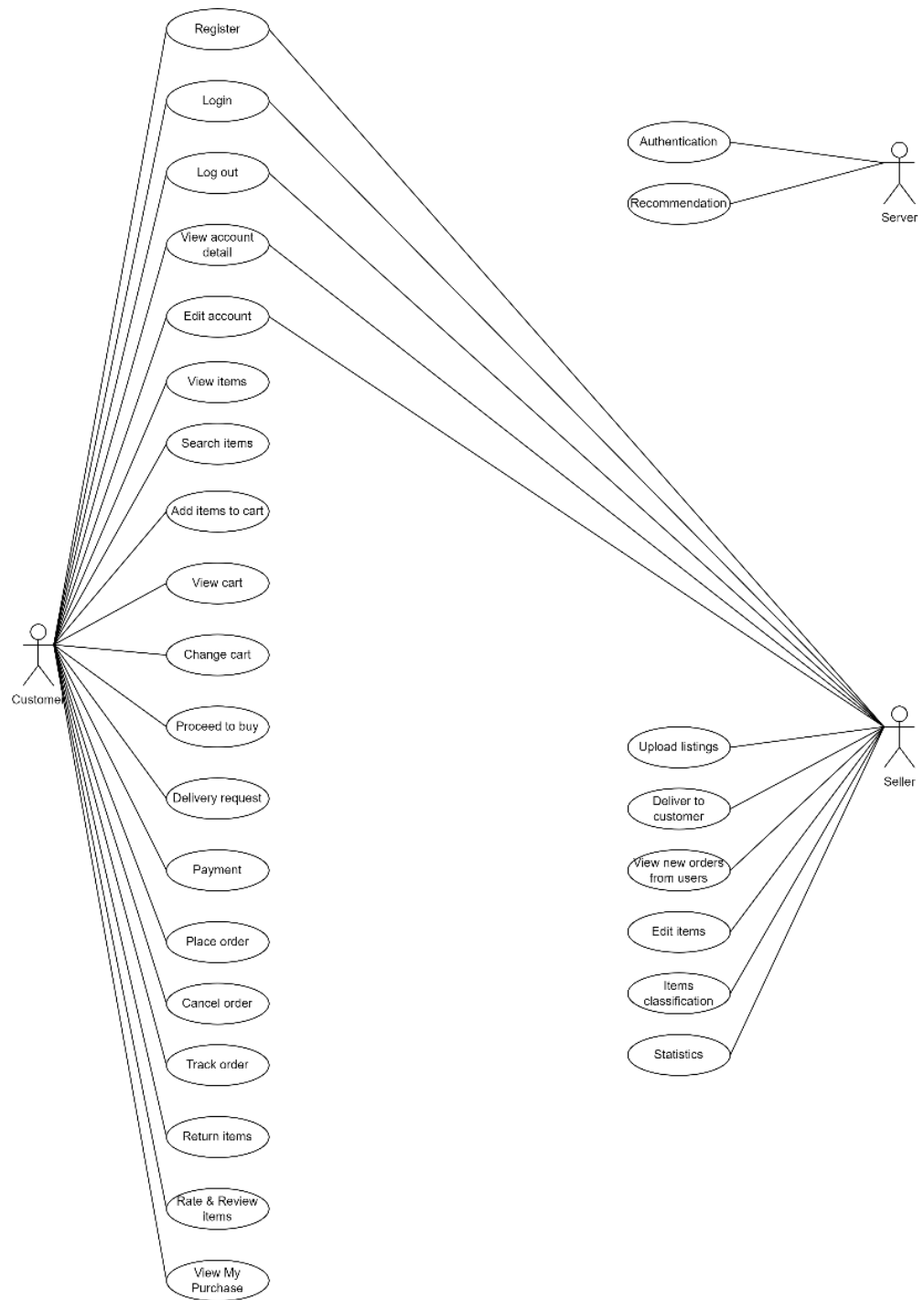
Figure 17. Overall Use Case Diagram

4.3. Customer Use Case Diagram
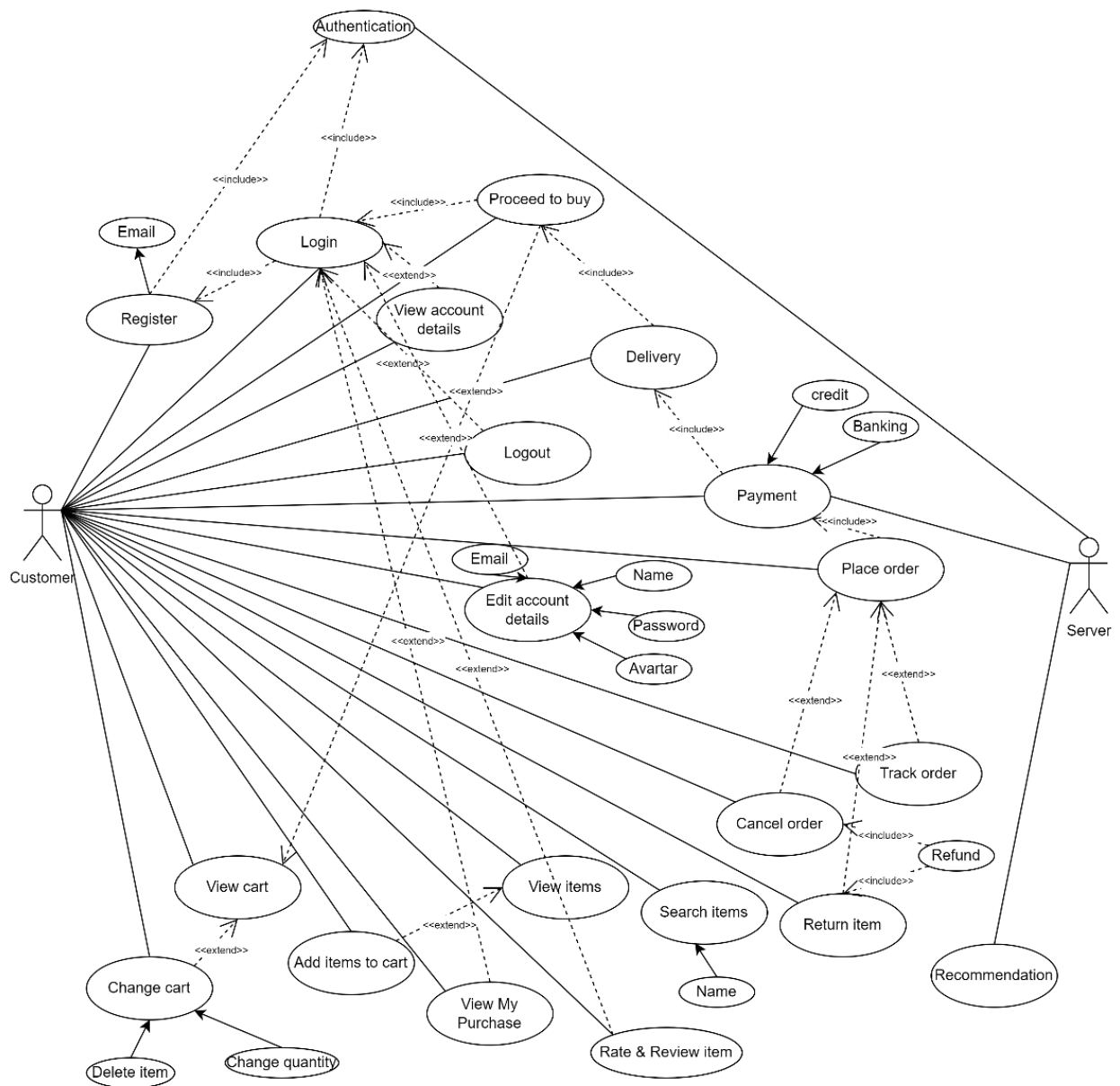
Figure 18. Customer Use Case Diagram

4.4.Seller Use Case Diagram
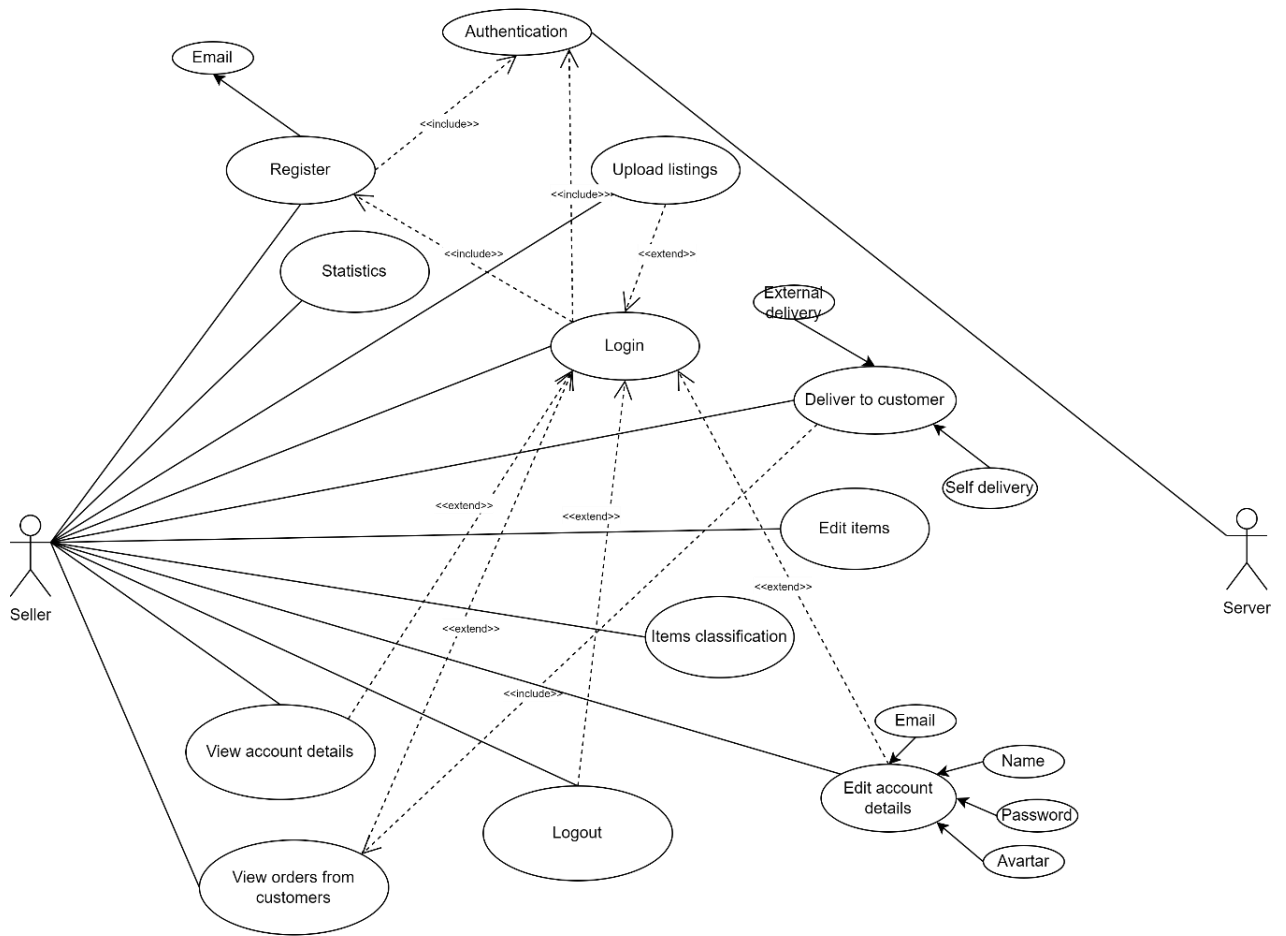
Figure 19. Seller Use Case Diagram

5. System Features

5.1. User Accounts

5.1.1. Description and Priority

Both customers and sellers are required to have accounts in the shopping system to engage in transactions. Users without accounts are limited to browsing permissions from the homepage and cannot make purchases or list goods. Customer accounts will contain details such as their name, email address or phone number, and password. Both types of users can access and modify their account details in the future. Seller accounts will include information pertinent to the selling entity or individual, such as name, contact information, GST number, PAN number, licenses, and address.

Priority level: High

5.1.2. Stimulus/Response Sequences

On the homepage, users can choose either the signup or login option and input their details for registration or login accordingly. If the provided information meets the necessary criteria, an account will be created, and users will be directed to the login page, or they will be logged into their account and redirected to the homepage.

Account details can be edited or viewed by clicking on the appropriate buttons. When editing details, users can input new information and save changes. Once the changes are verified, the updated details are successfully applied.

5.1.3. Functional Requirements

5.1.3.1.   REQ-1: Register

- **Description:** This use case enables both customers and sellers to register for an account on the e-commerce platform. Users provide their name, email address or phone number, and password.
- **Flow:**
    - *Stimulus (Request Action):*
        - User navigates to the Shopee-like e-commerce website and clicks on the "Sign Up" or "Register" button.
        - The registration form is displayed, prompting the user to fill in their details.
    - *Responses:*
        - User fills out the registration form with their details.
        - If the email address or phone number is invalid, display an error message indicating the issue and prompt the user to correct it.

- If the email address or phone number is already in use:
  - Display an error message informing them that the email address or phone number is already registered. Provide options for them to either log in or reset their password.
- Allow the user to correct the information and resubmit the form.
- If the issue persists after correction, provide further assistance such as contacting customer support.

- **Alternative Flow(s):**
  - If the provided email address or phone number is already in use or invalid:
  - Prompt the user to re-enter a valid choice.

- **Special Requirement:**
  - The system should ensure the security and privacy of user data during registration.

- **Pre-condition:**
  - The user must not be logged into an existing account.

- **Post-condition:**
  - Successful registration results in the display of the login page.

- **Extension Point:**
  - None.

- **Interface Requirement:**
  - None.

5.1.3.2. REQ-2: View Account Details

- **Description:** This use case allows both customers and sellers to view their account details on the online e-commerce platform. Users can access this feature by clicking on the "View Account Details" button prominently displayed on the homepage.

- **Flow:**
  - *Stimulus (Request Action):*
    - Users, both customers, and sellers, upon accessing the homepage of the online e-commerce platform, notice a prominent button labeled "View Account Details.".
  - *Responses:*
    - Upon clicking the "View Account Details" button, the platform redirects the user to a dedicated page or modal window specifically designed to display their account details.
    - The page or modal window loads swiftly, providing a seamless user experience.

- The displayed account details include information provided by the user during the account creation process, such as personal information, address information, payment information, and account settings.

- Each section of the account details is organized in a clear and intuitive manner, with appropriate headings and labels to guide the user's navigation.

- Users have the option to review their account information thoroughly and make any necessary updates or edits directly from this page, typically through an "Edit" or "Update" button associated with each section.

- The interface is designed to be user-friendly and visually appealing, with a clean layout and easy-to-understand instructions, ensuring that users can interact with their account details effortlessly.

- **Alternative Flow(s):**
  o None.

- **Special Requirement:**
  o The platform must ensure the security and privacy of user account details, implementing appropriate measures to safeguard sensitive information.

- **Pre-condition:**
  o The user must be logged into their account to access the account details.

- **Post-condition:**
  o Users successfully view their account details and can proceed to make any necessary updates or edits if required.

- **Extension Point:**
  o None.

- **Interface Requirement:**
  o None.

5.1.3.3.   REQ-3: Login

- **Description:** This use case enables both customers and sellers to log into the online e-commerce platform. Users access the login page and provide their registered email address/phone number and password to authenticate their identity.

- **Flow:**
  o *Stimulus (Request Action):*
    - On the login page:
      o The user navigates to the login page and enters their registered email address/phone number and password into the respective input fields.

- o *Responses:*
  - Upon submission of valid credentials, the system authenticates the user's identity and verifies that the provided email address/phone number and password combination match those stored in the database.
  - If the authentication is successful:
    - o The system responds by redirecting the user to the homepage of the online e-commerce platform, providing access to the full range of features.
    - o The homepage loads promptly, welcoming the user and displaying relevant content such as featured products, promotions, and personalized recommendations based on their browsing history or preferences.

- **Alternative Flow(s):**
  - o If the entered email address/phone number is invalid or doesn't match the password:
    - Prompt the user to re-enter valid credentials.

- **Special Requirement:**
  - o The system must securely authenticate users and protect sensitive account information during the login process.
  - o There should be measures in place to prevent brute force attacks or unauthorized access attempts.

- **Pre-condition:**
  - o Users must have registered accounts on the platform.
  - o Users must navigate to the login page.

- **Post-condition:**
  - o Successfully authenticated users are redirected to the homepage and granted access to their account details and platform features.

- **Extension Point:**
  - o None.

- **Interface Requirement:**
  - o None.

5.1.3.4.   REQ-4: Logout

- **Description:** This use case allows both customers and sellers to log out of their accounts on the online e-commerce platform. Users initiate the logout process by locating and clicking on the "logout" button while navigating the platform's homepage.

- **Flow:**
  - o *Stimulus (Request Action):*

- Users, both customers, and sellers, while navigating the homepage of the online e-commerce platform, locate and click on the "logout" button. This button is typically located in a prominent position on the page, often in the header or navigation bar, to ensure ease of access.

  o *Responses:*
    - Upon clicking the "logout" button, the system immediately initiates the logout process for the user's account.
    - The user's session is terminated, effectively logging them out of their account and revoking access to any personalized or secure areas of the platform.
    - Simultaneously, the system redirects the user to the login page, ensuring a seamless transition from the logged-in state to the login interface.
    - The login page is displayed, ready to accept credentials for either customer or seller accounts, depending on the user's role.
    - The homepage content is no longer accessible to the user, and any sensitive information or personalized settings associated with their account are securely cleared from the session.

- **Alternative Flow(s):**
    - None.

- **Special Requirement:**
    o The system must ensure the security of user sessions and sensitive information during the logout process.
    o Any active sessions or tokens associated with the user should be invalidated to prevent unauthorized access.

- **Pre-condition:**
    o Users must be logged into their accounts on the platform.

- **Post-condition:**
    o Users are successfully logged out of their accounts and redirected to the login page.
    o Access to the homepage and any personalized content is revoked.

- **Extension Point:**
    o None.

- **Interface Requirement:**
    o None.

5.1.3.5.   REQ-5: Edit Account Details

- **Description:** This use case allows both customers and sellers to edit their account

details on the online e-commerce platform. Users begin on the homepage, navigate to their account dashboard, and select the specific detail they wish to edit, such as personal information, address, payment method, or account settings.

- **Flow:**
  - *Stimulus (Request Action):*
    - Users, both customers, and sellers, begin on the homepage of the online e-commerce platform.
    - They navigate to the username button located in the top right corner of the webpage and click on it, triggering a dropdown menu to appear.
    - From the dropdown menu, they select the option labeled "My Account," which directs them to their account dashboard.
  - *Responses:*
    - Once on the account dashboard, the user identifies the specific detail they wish to edit.
    - They click on the corresponding section or link to initiate the editing process.
    - The system presents a form or interface where the user can enter the new details.
    - After entering the new details, the user clicks the "Save" button to submit the changes.
    - Upon successful submission, the system processes the updated information and confirms the successful update to the user.
    - A notification or success message is displayed on the screen, indicating that the account details have been successfully updated.
    - The system may also provide a brief summary of the changes made for the user's reference.

- **Alternative Flow(s):**
    - If the entered details are invalid:
      - Prompt the user to re-enter valid credentials.

- **Special Requirement:**
  - The system must ensure the security and privacy of user account details during the editing process.
  - Proper validation checks should be implemented to verify the accuracy and validity of the entered details.

- **Pre-condition:**
  - Users must be logged into their accounts on the platform.
  - Users must navigate to their account dashboard.

- **Post-condition:**

o Users successfully update their account details, and the changes are reflected in the system.

o Users receive confirmation of the successful update and may review the changes made.

- **Extension Point:**

    o None.

- **Interface Requirement:**

    o None.

5.2. The search facility

5.2.1. Description and Priority

To search for items within the extensive catalogue of products in the shopping system, customers can opt to search for a product by entering keywords related to the desired item. Relevant options are available in a dropdown menu within the search bar. Upon selection, the system displays products related to the keyword entered or the image uploaded by the customer.

Priority level: High

5.2.2. Stimulus/Response Sequences

1. Search for a product

- Stimulus: customer enters keywords into the search box.

- Response: dropdown menu immediately appears, suggesting the most relevant products based on the entered keywords.

5.2.3. Functional Requirements

5.2.3.1. REQ-1: Search Item

- **Description:** This use case enables customers to search for products on the online e-commerce platform while they are on the homepage. Customers can initiate the search process by clicking on the "Search" button (Magnifier icon) or using a designated search bar to enter keywords related to the item they are looking for.

- **Flow:**

    o *Stimulus (Request Action):*

        ▪ Customers, while on the homepage of the online e-commerce platform, initiate the search process:

            o They click on the "browse" button or a designated search bar to activate the search function.

            o Upon activation, a text input field appears where users can enter keywords related to the item they are searching for, such as the item name or brand.

- o *Responses:*
  - After entering the keywords related to the desired item and submitting the search query, the system processes the request.
  - The system then retrieves and displays a list of products that are relevant to the searched item.
  - Each item in the list is typically presented with its name, image, price, and other relevant details to aid the customer in making an informed decision.
  - The list of products may be paginated or displayed in a scrollable format, depending on the platform's design and layout.
  - Customers can browse through the list of search results and click on individual products to view more detailed information or make a purchase.

- **Alternative Flow(s):**
  - If no results are found for the searched term/keyword:
    - o Display message: "No results found for the searched term/keyword. Please check your spelling or try using more general terms.".

- **Special Requirement:**
  - o The search functionality should be efficient and provide relevant results to enhance the customer's shopping experience.
  - o The system should support various search filters and sorting options to help customers refine their search results.

- **Pre-condition:**
  - o Customers must be on the homepage of the online e-commerce platform.

- **Post-condition:**
  - o Customers receive a list of relevant products based on their search query and can proceed to browse or make a purchase.

- **Extension Point:**
  - o None.

- **Interface Requirement:**
  - o None.

5.2.3.2.   REQ-2: View Item

- **Description:** This use case allows customers to view the details of a specific item while browsing through the list of items displayed on the online e-commerce platform. Customers can click on a particular item they are interested in to access its details.

- **Flow:**

- o *Stimulus (Request Action):*
  - ▪ Customers, while browsing through the list of items displayed on the online e-commerce platform, click on a specific item they are interested in to view its details.
- o *Responses:*
  - ▪ Upon clicking on the item, the system retrieves and presents the details of the selected item.
  - ▪ The details displayed typically include:
    - o Item Name: The name or title of the product.
    - o Price: The price of the item, along with any applicable discounts or promotions.
    - o Brand: The brand or manufacturer of the product.
    - o Size: The available sizes or dimensions of the item (if applicable).
    - o Material: The material composition of the item (if applicable).
    - o Quantity: The available quantity of the item for purchase.
    - o Delivery Date: An estimated delivery date or shipping timeframe for the item.
    - o Images: Multiple images or photos of the item from various angles, allowing customers to see the product in detail.
    - o Ratings and Reviews: Customer ratings and reviews for the item, providing valuable feedback and insights from other shoppers.
  - ▪ Additionally, an "Add to Cart" button is prominently displayed, allowing customers to easily add the item to their shopping cart for purchase.
- **Alternative Flow(s):**
  - ▪ None.
- **Special Requirement:**
  - o The system should efficiently retrieve and present item details to enhance the customer's shopping experience.
  - o Ratings and reviews should be displayed in a user-friendly format, providing relevant information to assist customers in making informed purchasing decisions.
- **Pre-condition:**
  - o Customers must be browsing the list of items displayed on the online e-commerce platform.
- **Post-condition:**

- o Customers successfully view the details of the selected item and can proceed to add it to their shopping cart or continue browsing.
  - **Extension Point:**
    - o None.
  - **Interface Requirement:**
    - o None

5.3. Shopping cart facility

5.3.1. Description and Priority

Once the customer views and chooses an item they want to purchase, they must add the item to their cart using the "add to cart" button. The shopping cart holds all the items the customer intends to buy, with each user account having its own associated shopping cart. Users can browse for items, add them to the cart, and seamlessly continue shopping. They have the option to purchase all items in the cart at once when they're ready.

Priority level: high

5.3.2. Stimulus/Response Sequences

1. Add items to cart

   - Stimulus: Customer must click on the add item to cart button on the item view page
   - Response: The system will add the requested item to the user's cart.

2. View all the item in cart

   - Stimulus: The customer clicks on the view cart button.
   - Response: A list of all items along with price of individual item, quantity and total cost of the cart is displayed

3. Change items in cart

   - Stimulus: Customer has the option to remove items from the cart or change the quantity of the products by clicking on the delete item button next to the item or 'plus' or 'minus' symbols respectively
   - Response: The item will be deleted or its quantity will change respectively

4. Proceed to buy

   - Stimulus: The customer clicks on the proceed to buy button
   - Response: The system will navigate to the payment page

5. Continue shopping

   - Stimulus: The customer clicks on the continue shopping button
   - Response: Going back to the home page

5.3.3. Functional Requirements

- **Description:** This use case enables customers to add items to their shopping cart while viewing the details of the item on the online e-commerce platform. Customers can click on the "Add to Cart" button provided on the item view page to initiate the process.

- **Flow:**

  o *Stimulus (Request Action):*

    ▪ Customers, while viewing the details of an item on the online e-commerce platform, decide to add the item to their shopping cart.

    ▪ They locate and click on the "Add to Cart" button provided on the item view page.

  o *Responses:*

    ▪ Upon clicking the "Add to Cart" button, the system processes the customer's request to add the item to their shopping cart.

    ▪ The system verifies the availability of the selected item and checks if the customer's account is eligible to make the purchase.

    ▪ If the item is available and the customer meets the necessary criteria, the system adds the item to the customer's shopping cart.

    ▪ A confirmation message is displayed to the customer, indicating that the item has been successfully added to their cart.

    ▪ Optionally, the system may display a summary of the items currently in the customer's cart, including the newly added item.

    ▪ The customer can continue browsing or proceed to checkout, depending on their preference.

- **Alternative Flow(s):**

    ▪ If the item being added is already in the cart:

      o Increase the quantity of that item by 1 in the cart.

- **Special Requirement:**

  o The system should efficiently handle the addition of items to the cart to ensure a seamless shopping experience for customers.

  o Real-time inventory updates should be implemented to accurately reflect item availability.

- **Pre-condition:**

  o The selected item is successfully added to the customer's shopping cart, and the customer receives confirmation of the action..

- **Post-condition:**

  o Customers receive a list of relevant products based on their search query and can proceed to browse or make a purchase.

- **Extension Point:**

o None.

- **Interface Requirement:**

    o None.

5.3.3.2.   REQ-2: View Shopping Cart

- **Description:** This use case allows customers to view the contents of their shopping cart while navigating any page of the online e-commerce platform. Customers can click on the "View Cart" button, which is typically available as a persistent element accessible from any page of the website, to initiate the process.

- **Flow:**

    o *Stimulus (Request Action):*

        ▪ Customers, while navigating any page of the online e-commerce platform, decide to view the contents of their shopping cart.

        ▪ They locate and click on the "View Cart" button, which is typically available as a persistent element accessible from any page of the website.

    o *Responses:*

        ▪ Upon clicking the "View Cart" button, the system retrieves the contents of the customer's shopping cart.

        ▪ The system presents a dedicated page or modal window displaying a list of items that have been added to the cart.

        ▪ For each item in the cart, the system displays relevant details such as:

            o Item Name

            o Price per unit

            o Quantity

            o Subtotal (Price per unit multiplied by quantity)

        ▪ Additionally, the system calculates and displays the total cost of all items in the cart, including any applicable taxes or shipping charges.

        ▪ The customer is provided with options to:

            o Update the quantity of items in the cart

            o Remove items from the cart

            o Proceed to checkout

        ▪ Customers can review the contents of their cart, make any necessary adjustments, and proceed with the checkout process if they are satisfied with their selection..

- **Alternative Flow(s):**

        ▪ If the cart is empty:

            o Display "cart empty" and provide an option to return to the homepage by clicking on "continue shopping".

- **Special Requirement:**
  - o The system should efficiently retrieve and display the contents of the customer's shopping cart to provide a seamless shopping experience.
  - o Clear and intuitive navigation options should be provided for customers to manage their cart items and proceed with checkout.
- **Pre-condition:**
  - o Customers must be logged into their accounts on the online e-commerce platform.
- **Post-condition:**
  - o Customers must be logged into their accounts on the online e-commerce platform.
- **Extension Point:**
  - o None.
- **Interface Requirement:**
  - o None.

5.3.3.3.   REQ-3: Change Items in Cart

- **Description:** This use case allows customers to make changes to the items in their shopping cart while on the shopping cart page of the online e-commerce platform. Customers can choose to remove items from the cart by clicking on the "delete item" button or adjust the quantity of items using the "+" and "-" buttons.
- **Flow:**
  - o *Stimulus (Request Action):*
    - ▪ Customers, while on the shopping cart page of the online e-commerce platform, decide to make changes to the items in their cart.
    - ▪ They have two options to perform this action:
      - o Click on the "delete item" button next to the item they wish to remove from the cart.
      - o To change the quantity of items:
        - ▪ Click on the "+" button to increase the quantity by 1.
        - ▪ Click on the "-" button to decrease the quantity by 1.
  - o *Responses:*
    - ▪ Upon performing the desired action(s) to change items in the cart, the system processes the customer's request accordingly.
    - ▪ If the customer clicks on the "delete item" button:
      - o The system removes the selected item from the cart.
      - o The item is no longer displayed on the shopping cart page.
    - ▪ If the customer adjusts the quantity of items:

- o The system updates the quantity of the respective item in the cart.
- o The changes are reflected in real-time on the shopping cart page.
- o If the quantity is decreased to zero, the item may be automatically removed from the cart, or the system may prompt the customer to confirm the removal.
  - ▪ The shopping cart page dynamically adjusts to display the updated list of items and their quantities, along with any changes made by the customer.
  - ▪ The total cost of the items in the cart is recalculated based on the updated quantities, ensuring accuracy in the displayed information.

- **Alternative Flow(s):**
  - ▪ None.

- **Special Requirement:**
  - o The system should handle changes to items in the cart accurately and efficiently, ensuring a seamless shopping experience for customers.
  - o Real-time updates should be implemented to reflect changes in item quantities and total costs on the shopping cart page.

- **Pre-condition:**
  - o Customers must have items added to their shopping cart on the online e-commerce platform.

- **Post-condition:**
  - o The customer successfully makes changes to the items in their shopping cart, and the changes are reflected on the shopping cart page.

- **Extension Point:**
  - o None.

- **Interface Requirement:**
  - o None.

5.3.3.4.   *REQ-4: Proceed to Buy*

- **Description:** This use case allows customers to proceed with purchasing the items in their shopping cart on the online e-commerce platform. Customers can click on the "Proceed to Buy" button, typically displayed on the shopping cart page, to initiate the checkout process.

- **Flow:**
  - o *Stimulus (Request Action):*

- Customers, while reviewing the contents of their shopping cart on the shopping cart page of the online e-commerce platform, decide to proceed with purchasing the items.

- They locate and click on the "Proceed to Buy" button, which is typically prominently displayed on the shopping cart page.

  o *Responses:*

    - Upon clicking the "Proceed to Buy" button, the system processes the customer's request to initiate the checkout process.

    - The system redirects the customer to the payment page, where they can complete their purchase.

    - The payment page typically includes:

    - Billing and shipping information: Customers may be required to confirm or enter their billing and shipping details, including name, address, and contact information.

    - Payment methods: Customers can select their preferred payment method from available options, such as credit/debit card, PayPal, or other online payment gateways.

    - Order summary: A summary of the items being purchased, including names, quantities, prices, and total cost.

    - Order review: Customers have the opportunity to review their order details before finalizing the purchase.

    - The payment page is designed to be user-friendly, guiding customers through the checkout process step-by-step and ensuring a seamless and secure transaction experience.

    - Once the customer completes the necessary steps on the payment page, they can finalize their purchase by confirming the order and making the payment.

- **Alternative Flow(s):**

  - None.

- **Special Requirement:**

  o The payment page should be secure and PCI-compliant to ensure the safety of customer's payment information.

  o User-friendly interfaces and clear instructions should be provided on the payment page to guide customers through the checkout process smoothly.

- **Pre-condition:**

  o Customers must have items added to their shopping cart on the online e-commerce platform.

- **Post-condition:**

  o The customer successfully completes the checkout process and finalizes their purchase.

- **Extension Point:**

  o None.

- **Interface Requirement:**

  o None.

5.3.3.5.   REQ-5: Continue Shopping

- **Description:** This use case allows customers to continue shopping instead of proceeding to checkout while reviewing the contents of their shopping cart on the shopping cart page of the online e-commerce platform. Customers can click on the "Continue Shopping" button to return to browsing products.

- **Flow:**

  o *Stimulus (Request Action):*

    ▪ Customers, while reviewing the contents of their shopping cart on the shopping cart page of the online e-commerce platform, decide to continue shopping instead of proceeding to checkout.

    ▪ They locate and click on the "Continue Shopping" button, which is typically provided as an option on the shopping cart page.

  o *Responses:*

    ▪ Upon clicking the "Continue Shopping" button, the system processes the customer's request to return to browsing products.

    ▪ The system redirects the customer to the homepage of the online e-commerce platform.

    ▪ The homepage is displayed, allowing the customer to resume their browsing experience and explore additional products and categories.

    ▪ Customers can navigate the website as usual, searching for new items, exploring promotions, or revisiting previously viewed categories.

    ▪ The transition back to the homepage is seamless, ensuring a smooth and uninterrupted shopping experience for the customer.

- **Alternative Flow(s):**

    ▪ None.

- **Special Requirement:**

  o The "Continue Shopping" button should be easily accessible and clearly visible on the shopping cart page to provide customers with a convenient option to return to browsing.

  o The transition back to the homepage should be quick and seamless to maintain the flow of the customer's shopping experience.

-   **Pre-condition:**
    -   o Customers must be reviewing the contents of their shopping cart on the shopping cart page.

-   **Post-condition:**
    -   o The customer successfully returns to browsing products on the homepage of the online e-commerce platform.

-   **Extension Point:**
    -   o None.

-   **Interface Requirement:**
    -   o None.

5.4. Payment

5.4.1. Description and Priority

-   Description: This feature involves handling payments within the system, allowing users to make purchases securely.
-   Priority: Medium

5.4.2. Stimulus/Response Sequences

1. User initiates checkout process

-   Stimulus: User clicks on the "Check out" button after reviewing their bills
-   Response: System displays the checkout page with payment options.

2. System presents payment options:

-   Stimulus: System loads the checkout page.
-   Response: System presents various payment methods such as credit/debit cards, PayPal, and other options.

3. User selects preferred payment method:

-   Stimulus: User selects a payment method from the available options.
-   Response: System displays relevant fields for the selected payment method (e.g., card details, PayPal login).

4. System processes payment:

-   Stimulus: User submits payment information.
-   Response: System securely transmits payment data to the selected payment gateway for processing.

5. Payment gateway sends confirmation to the system:

-   Stimulus: Payment gateway processes the payment request.
-   Response: Payment gateway sends a confirmation response (success or failure) to the

system.

6. System updates order status and sends confirmation to the user:

- Stimulus: System receives payment confirmation from the gateway.

- Response: System updates the order status to "paid" and generates an order confirmation message to be sent to the user via email

5.4.3. Functional Requirements

5.4.3.1. REQ-1: Delivery details

- **Description:** This use case allows customers to input their delivery address on the delivery and payment page of the online e-commerce platform. Customers enter details such as house number, street address, pin code, city, and state and then proceed by clicking on "deliver to this address".

- **Flow:**
    o *Stimulus (Request Action):*
        ▪ Customers navigate to the delivery and payment page during checkout.
        ▪ On the delivery and payment page, customers enter the following delivery address details:
            o House number
            o Street address
            o Pin code
            o City
            o State
        ▪ After entering the delivery address, customers click on the "deliver to this address" button.
    o *Responses:*
        ▪ Upon clicking the "deliver to this address" button, the system processes the entered delivery details.
        ▪ The system then displays the payment page for the customer to proceed with the payment process.

- **Alternative Flow(s):**
    o In case of an invalid address entry:
        ▪ The system cancels the order and informs the customer that the address provided is invalid.
        ▪ The customer is prompted to enter a valid delivery address before proceeding with the order.

- **Special Requirement:**
    o The system should validate the entered delivery address to ensure accuracy and prevent delivery issues.

o Clear error messages should be provided to customers in case of invalid address entry.

- **Pre-condition:**

  o Customers must have selected items for purchase and proceeded to the delivery and payment page during checkout.

- **Post-condition:**

  o Valid delivery details are successfully entered, and the customer proceeds to the payment page.

- **Extension Point:**

  o None.

- **Interface Requirement:**

  o None.

5.4.3.2.   REQ-2: Payment details

- **Description:** This use case enables customers to input their payment details on the delivery and payment page of the online e-commerce platform. Customers can choose their preferred payment mode (debit/credit card or pay on delivery) and input the necessary details. After providing valid payment details and clicking "deliver to this address", the system processes the payment, and if successful, displays the place order page.

- **Flow:**

  o *Stimulus (Request Action):*

    ▪ Customers navigate to the delivery and payment page during checkout.

    ▪ On the delivery and payment page, customers select their preferred payment mode:

      o Debit/Credit Card:

      o Enter card number

      o Enter CVV number

      o Pay on Delivery

    ▪ After entering payment details, customers click on the "deliver to this address" button.

  o *Responses:*

    ▪ Upon clicking the "deliver to this address" button, the system processes the entered payment details.

    ▪ If payment is successful:

      o The system displays a confirmation message indicating "Payment Successful".

- o The place order page is displayed, allowing the customer to finalize the order.
        - ▪ If payment is unsuccessful:
            - o The system prompts the customer to re-enter valid payment details.
            - o The customer cannot proceed with the order until valid payment details are provided.

- **Alternative Flow(s):**
    - o In case of invalid payment details:
        - ▪ The system prompts the customer to re-enter valid payment details.
        - ▪ Until successful payment, the customer cannot proceed with placing the order.

- **Special Requirement:**
    - o The system should securely handle and validate payment details to ensure transaction security.
    - o User-friendly error messages should be provided to guide customers in case of invalid payment details.

- **Pre-condition:**
    - o Customers must have entered valid delivery details and proceeded to the delivery and payment page during checkout.

- **Post-condition:**
    - o Successful payment details are entered, and the customer can proceed to the place order page.

- **Extension Point:**
    - o None.

- **Interface Requirement:**
    - o None.

5.4.3.3.   REQ-3: Place order

- **Description:** This use case enables customers to place their order on the place order page of the online e-commerce platform. Customers click on the "place order" button to confirm their purchase. Upon successful placement of the order, the system displays a confirmation message indicating that the order has been successfully placed, and then redirects the customer to the home page.

- **Flow:**
    - o *Stimulus (Request Action):*
        - ▪ Customers navigate to the place order page after completing the checkout process.

- On the place order page, customers review the order details.
- Customers click on the "place order" button to confirm their purchase.

  o *Responses:*
  - Upon clicking the "place order" button, the system processes the order confirmation.
  - If the order is successfully placed:
  - The system displays a confirmation message indicating "Order Successfully Placed".
  - The home page is displayed, indicating that the order has been processed.
  - If the customer exits the page without placing the order:
  - The order is not placed, and no action is taken.

- **Alternative Flow(s):**
  o If the customer exits the page without placing the order:
  - No action is taken, and the order is not placed.

- **Special Requirement:**
  o The system should ensure that orders are placed only when explicitly confirmed by the customer.
  o It should prevent accidental order placements and provide a clear confirmation message upon successful order placement.

- **Pre-condition:**
  o Customers must have reviewed their order details and proceeded to the place order page during checkout.

- **Post-condition:**
  o The order is successfully placed, and the customer is redirected to the home page.

- **Extension Point:**
  o None.

- **Interface Requirement:**
  o None.

5.5. Cancel, track and return orders

5.5.1. Description and Priority

- Description: Orders and returns feature offers order management and flexibility to return orders within certain period of time that is specified by the seller of that item.The customer can view and manage orders that are yet to be delivered to the customer. He/she can cancel the order that is yet to be delivered or return the item that is delivered

and get the paid amount back, or view past orders and returns. Also upon successful placing of the order, the customer can track order, i.e the delivery stagedispatchment, shipment of the item along with the location- city, state in which the item is currently in.

- Priority: Medium

5.5.2. Stimulus/Response Sequences

In the home page the customer can click on 'orders and returns' button, a list of past and existing orders and returns are displayed. If the customer wants to cancel an existing order that is not yet delivered he/she can click on cancel order in the orders section of the returns and orders page, and if the customer wants to return an item that is delivered, he/she can click on return item and enter the reason for cancelling order or returning an item in the reason box. If the customer wants to track the order that had been placed earlier and yet to be delivered he/ she can click on the track order button of that particular item and the different stages of the delivery of the item will be displayed along with the date, time and location at that time, and current stage of the item.

5.5.3. Functional Requirements

5.5.3.1.   REQ-1: Cancel order

- **Description:** This use case enables customers to cancel an existing order on the orders and returns page of the online e-commerce platform. Customers can initiate the cancellation process by clicking on the "Cancel Order" button next to the respective order and providing a reason for cancellation.

- **Flow:**
    o *Stimulus (Request Action):*
        ▪ Customers navigate to the orders and returns page on the online e-commerce platform.
        ▪ On the orders and returns page, customers locate the order they wish to cancel.
        ▪ Customers click on the "Cancel Order" button next to the respective order.
    o *Responses:*
        ▪ Upon clicking the "Cancel Order" button, the system processes the cancellation request.
        ▪ The system prompts the customer to type in the reason for cancelling the order.
        ▪ After providing the reason, the customer confirms the cancellation.

- **Alternative Flow(s):**
    o None.

- **Special Requirement:**
    o The system should ensure that customers can only cancel orders that are eligible for cancellation based on predefined criteria (e.g., order status, time

elapsed since order placement).

- o It should provide clear instructions and prompts to guide customers through the cancellation process.

- **Pre-condition:**

  - o Customers must be logged in to their account on the online e-commerce platform.

  - o The order to be cancelled must be in a cancellable state.

- **Post-condition:**

  - o The order is successfully cancelled, and the orders and returns page remains displayed for the customer to view.

- **Extension Point:**

  - o None.

- **Interface Requirement:**

  - o None.

5.5.3.2.   REQ-2: Track order

- **Description:** This use case enables customers to track the status of their orders on the orders and returns page of the online e-commerce platform. Customers can access tracking information by clicking on the "Track Order" button next to the respective order.

- **Flow:**

  - o *Stimulus (Request Action):*

    - ▪ Customers navigate to the orders and returns page on the online e-commerce platform.

    - ▪ On the orders and returns page, customers locate the order they wish to track.

    - ▪ Customers click on the "Track Order" button next to the respective order.

  - o *Responses:*

    - ▪ Upon clicking the "Track Order" button, the system processes the request to track the order.

    - ▪ The system retrieves and displays the tracking information associated with the selected order.

    - ▪ Tracking information typically includes:

      - o Order status updates (e.g., processing, shipped, out for delivery, delivered)

      - o Estimated delivery date or time frame

      - o Shipping carrier details (if applicable)

o   Tracking number or link to track the shipment's progress.

-   **Alternative Flow(s):**

    o   None.

-   **Special Requirement:**

    o   The system should provide accurate and up-to-date tracking information to customers.

    o   It should ensure that customers can track orders seamlessly without encountering any technical issues or delays.

-   **Pre-condition:**

    o   Customers must be logged in to their account on the online e-commerce platform.

    o   The order must be in a state where tracking information is available (e.g., order is processed, shipped).

-   **Post-condition:**

    o   The tracking information of the selected order is successfully displayed for the customer to view.

-   **Extension Point:**

    o   None.

-   **Interface Requirement:**

    o   None.

5.5.3.3.   REQ-3: Return Order

-   **Description:** This use case allows customers to initiate the return process for an item on the orders and returns page of the online e-commerce platform. Customers can select the item they wish to return and provide a reason for the return by clicking on the "Return Item" button next to the item.

-   **Flow:**

    o   *Stimulus (Request Action):*

        ▪   Customers navigate to the orders and returns page on the online e-commerce platform.

        ▪   On the orders and returns page, customers locate the item they wish to return.

        ▪   Customers click on the "Return Item" button next to the respective item.

    o   *Responses:*

        ▪   Upon clicking the "Return Item" button, the system processes the return request.

- ▪ The system prompts the customer to type in the reason for returning the item.
- ▪ After providing the reason, the customer confirms the return.

- **Alternative Flow(s):**
  - o None.
- **Special Requirement:**
  - o The system should ensure that customers can only return items that are eligible for return based on predefined criteria (e.g., return window, item condition).
  - o It should provide clear instructions and prompts to guide customers through the return process.
- **Pre-condition:**
  - o Customers must be logged in to their account on the online e-commerce platform.
  - o The item to be returned must be eligible for return based on the platform's return policy.
- **Post-condition:**
  - o The item is successfully booked for return, and the orders and returns page remains displayed for the customer to view.
- **Extension Point:**
  - o None.
- **Interface Requirement:**
  - o None.

5.6. Seller features

5.6.1. Description and Priority

- Description: The Sellers features encompass functionalities tailored to users acting as sellers within the system. Some functions can be mentioned as: managing items, viewing more than goods or offering incentives.
- Priority: High

5.6.2. Stimulus/Response Sequences

1. Seller registers an account:
- Stimulus: Seller navigates to the registration page and fills out the required information.
- Response: System verifies the information provided and creates a seller account.
2. Seller lists a product for sale:
- Stimulus: Seller accesses the product listing page and provides details of the item to be

listed.

- Response: System validates the listing information and adds the product to the marketplace.

3. Seller manages product inventory:

- Stimulus: Seller accesses the inventory management section to update product quantities and attributes.

- Response: System updates the product inventory and reflects changes in the marketplace.

5.6.3. Functional Requirements

5.6.3.1.   REQ-1: Product Listing and Management

- **Description:** This use case allows sellers to list and manage their products on the online marketplace platform. Sellers access the product listing page and provide details such as title, description, price, and images for their products. The system validates the provided information and adds the product to the marketplace if it passes validation. Sellers have the option to customize certain aspects of the product listing, and once the product is successfully added, the system provides confirmation to the seller.

- **Flow:**

  o *Stimulus (Request Action):*

    ▪ Sellers access the product listing page on the online marketplace platform.

    ▪ Sellers provide product details, including title, description, price, and images.

  o *Responses:*

    ▪ The system validates the provided product details to ensure they meet the platform's listing requirements and standards.

    ▪ If the provided information passes validation:

      o The system adds the product to the marketplace.

      o A new product listing is created within the marketplace platform, making the product available for potential buyers to view and purchase.

      o The product listing includes essential details such as the product title, description, price, images, and any additional attributes or specifications relevant to the product category.

      o Sellers may customize certain aspects of the product listing, such as specifying shipping options, setting inventory levels, or configuring promotional pricing.

- ▪ Confirmation is provided to the seller, indicating that the product has been successfully added to the marketplace and is now live and available for sale.

- **Alternative Flow(s):**
  - o None.

- **Special Requirement:**
  - o The system should validate the provided product details to ensure compliance with platform standards.
  - o Sellers should be able to customize aspects of the product listing to optimize sales and marketing strategies.

- **Pre-condition:**
  - o Sellers must be registered and logged in to their account on the online marketplace platform.

- **Post-condition:**
  - o The product is successfully listed on the marketplace and is available for sale to potential buyers.

- **Extension Point:**
  - o None.

- **Interface Requirement:**
  - o None.

5.6.3.2. REQ-2: Inventory Management

- **Description:** This use case enables sellers to manage their product inventory on the online marketplace platform. Sellers navigate to the inventory management section and update product quantities, attributes, and availability status. The system provides fields and options for sellers to input and submit updated information, which includes adjusting product quantities, updating attributes, and changing availability status. Once submitted, the system updates the product inventory accordingly and reflects these changes in the marketplace. Buyers browsing the marketplace see accurate and up-to-date information about product availability, quantities, and attributes.

- **Flow:**
  - o *Stimulus (Request Action):*
    - ▪ Sellers navigate to the inventory management section on the online marketplace platform.
    - ▪ Sellers update product quantities, attributes, and availability status.
  - o *Responses:*
    - ▪ The system provides fields and options for sellers to update various aspects of their product inventory.
    - ▪ Sellers input and submit the updated information, which may include:

- o Adjusting the quantity of available units for each product.

- o Updating product attributes or specifications.

- o Changing the availability status (e.g., in stock, out of stock).

    - ▪ Sellers may manage product variants independently, such as different sizes, colors, or configurations.

    - ▪ Once submitted, the system updates the product inventory accordingly.

- **Alternative Flow(s):**
  - o None.

- **Special Requirement:**
  - o The system should ensure that inventory updates are reflected in real-time to provide accurate information to buyers.
  - o Sellers should have the option to manage product variants independently to cater to diverse customer preferences.

- **Pre-condition:**
  - o Sellers must be registered and logged in to their account on the online marketplace platform.
  - o Product listings must exist in the seller's inventory for updates to be made.

- **Post-condition:**
  - o The product inventory is successfully updated, and changes are reflected in the marketplace for buyers to view.

- **Extension Point:**
  - o Sellers may have the option to set automated inventory alerts for low stock levels or out-of-stock items.
  - o Advanced features such as inventory forecasting or integration with third-party inventory management systems may be implemented for sellers with large product catalogs.

- **Interface Requirement:**
  - o None.

5.6.3.3. REQ-3: Deliver to customer

- **Description:** This use case enables sellers to manage the delivery process for new orders on the online marketplace platform. Sellers, upon accessing the "View New Orders" page, select the "Deliver to Customer" option for an order. They are then prompted to choose between delivering the items independently (self-delivery) or hiring an external delivery agency. Upon selection, the item is added to the delivery queue, and the items undergo the delivery process.

- **Flow:**
  - o *Stimulus (Request Action):*

- Sellers navigate to the "View New Orders" page on the online marketplace platform.
- Sellers identify the order they wish to manage for delivery.
  o *Responses:*
    - Sellers click on the "Deliver to Customer" option for the selected order.
    - Sellers are presented with the choice to select either:
      o Self-delivery: Sellers choose to deliver the items independently.
      o External delivery: Sellers opt to hire an external delivery agency for delivery.
    - Upon selecting the delivery method, the item is added to the delivery queue for processing.
      o If self-delivery is chosen, sellers proceed to manage the delivery process internally.
      o If external delivery is chosen, sellers coordinate with the external delivery agency for shipment.
    - The item undergoes the delivery process according to the selected method.
    - For self-delivery:
      o Sellers handle packaging, labeling, and shipping of the item to the customer.
      o Sellers update the order status upon successful delivery.
    - For external delivery:
      o Sellers coordinate with the external delivery agency to arrange pickup and delivery.
      o Sellers update the order status once the external delivery agency completes the delivery.

- **Alternative Flow(s):**
  o None.
- **Special Requirement:**
  o The system should provide seamless integration with external delivery agencies for efficient coordination.
  o Sellers should have access to real-time tracking and updates on the delivery status of each item.
- **Pre-condition:**

- o Sellers must be registered and logged in to their account on the online marketplace platform.
  - o New orders must be available for delivery on the "View New Orders" page.
- **Post-condition:**
  - o The item is successfully added to the delivery queue, and the delivery process is initiated according to the selected method.
- **Extension Point:**
  - o Advanced features such as automated notifications to customers upon shipment or integration with shipping carriers for real-time tracking may be implemented.
  - o Sellers may have the option to schedule delivery dates or set delivery preferences for specific orders.
- **Interface Requirement:**
  - o None.

5.7. Other system features

5.7.1. REQ-1: Rate and Review

- **Description:** This use case enables customers who have purchased a product to provide feedback by rating and reviewing the product. After receiving the purchased item and experiencing its use, the customer decides to rate and review the product. The system sends an email to the customer, thanking them for their purchase and inviting them to rate and review the product. The email contains a direct link or button to the product review section on the platform. Upon clicking the link, the customer is directed to the product page where they can rate the product using a star rating system and write a review sharing their experience. After submission, the system acknowledges the customer's feedback with a confirmation message. The customer's rating and review are then displayed on the product page for other potential buyers to see, providing valuable insights..
- **Flow:**
  - o *Stimulus (Request Action):*
    - ▪ After receiving and experiencing the purchased item, the customer decides to provide feedback by rating and reviewing the product.
  - o *Responses:*
    - ▪ The system sends an email to the customer, thanking them for their purchase and inviting them to rate and review the product.
    - ▪ The email contains a direct link or button to the product review section on the platform.
    - ▪ Upon clicking the link, the customer is directed to the product page.

- The customer rates the product using a star rating system and writes a review sharing their experience.
- After submission, the system acknowledges the customer's feedback with a confirmation message.
- The customer's rating and review are displayed on the product page for other potential buyers to see.

- **Alternative Flow(s):**
    o If the customer decides not to leave a review after receiving the email invitation, the system may send a follow-up reminder after a certain period.
    o Alternatively, if the customer expresses dissatisfaction with the product, the system may prompt them to provide additional details or contact customer support for further assistance.

- **Special Requirement:**
    o The system should ensure that the process of leaving a review is user-friendly and accessible.
    o Reviews should be moderated to maintain quality and prevent spam or inappropriate content.

- **Pre-condition:**
    o The customer must have purchased the product.
    o The system should have the customer's email address to send the invitation.

- **Post-condition:**
    o The customer's rating and review are successfully submitted and displayed on the product page.

- **Extension Point:**
    o The system may offer incentives for customers to leave reviews, such as loyalty points or discounts on future purchases.
    o Advanced features such as sentiment analysis of reviews or recommendations based on customer feedback may be implemented to enhance the review system.

- **Interface Requirement:**
    o None.

6. Other Nonfunctional Requirements

6.1. Performance Requirements

The structure and management of the information system can significantly impact performance in the following manners:

6.1.1. Scalability

- The website shall be able to handle a large number of concurrent users and transactions without experiencing significant performance degradation. The system should be able to scale horizontally by adding more servers to the system as needed.

6.1.2. Response Time

- The website shall be responsive and provide a good user experience. The response time for all pages and transactions shall be within 2 seconds.

6.1.3. Load Testing

- The website shall be load tested to ensure that it can meet the performance requirements. Load testing shall be performed using a variety of tools and techniques, such as JMeter and Gatling.

6.2. Safety Requirements

6.2.1. Prevention of Harmful Products

- The system must incorporate measures to prevent the listing, promotion, or sale of harmful or prohibited products to users.

- Implement content filtering mechanisms to detect and flag products that pose potential risks to users' health, safety, or well-being.

6.3. Security Requirements

6.3.1. Secure Authentication

- Implement robust authentication mechanisms, such as multi-factor authentication (MFA) or strong password policies, to verify the identity of users and prevent unauthorized access to accounts.

6.3.2. Secure Payment Processing

- Payment processing must encrypt sensitive payment data and adhere to industry best practices for handling financial transactions.

6.4. Software Quality Attributes

6.4.1. Usability

- Ease of Navigation: Users should be able to find desired products and complete purchases intuitively. The website should have a clear and consistent navigation structure with easily identifiable menus and search functions.

- Task Completion Time: Users should be able to complete core tasks like product browsing, adding items to cart, and checkout within a reasonable timeframe. Aim for an average task completion time of under 3 minutes.

- Error Prevention and Recovery: The website should prevent common user errors through clear instructions and input validation. When errors occur, provide user-friendly error messages and clear paths for recovery

6.4.2. Reliability

- Error Rate: The website should have a low error rate, with minimal occurrences of bugs or crashes that could disrupt user experience. Aim for a defect escape rate of 95% or higher.
- Data Consistency: Data stored in the system, such as product information and user accounts, should be consistent and accurate across all instances.

6.4.3. Maintainability

- Modular Design: The website should be built using a modular architecture that allows for easy modification and addition of new features.
- Code Documentation: The website code should be well-documented with clear comments and explanations to facilitate future maintenance and updates.

6.5. Business Rules

6.5.1. User Role Permissions

- Different user roles have specific permissions and restrictions within the system. For example:
- Administrators have the authority to add, edit, or delete user accounts and access all features and functionalities.
- Regular users can only access certain functionalities such as browsing products, making purchases, and updating their profiles.

6.5.2. Payment Authorization

- Only authorized personnel or payment gateways can process payments and complete transactions. This ensures compliance with financial regulations and prevents unauthorized access to payment information.

6.5.3. Order Processing Workflow

- Orders must follow a predefined workflow for processing, including steps such as order verification and payment confirmation. This ensures consistency and efficiency in handling orders and fulfillment.

6.5.4. Return and Refund Policies

- The system enforces predefined return and refund policies, specifying conditions under which customers are eligible for returns or refunds. This ensures consistency and fairness in handling customer inquiries and disputes.

7. Other Requirements

A strong commercial backend system is essential for accurately distinguishing between customer and seller details. Additionally, a comprehensive management backend is needed to handle inventory and meet general system requirements. Authorization from payment services is crucial to enable customers to make payments via payment gateways. It's imperative to have a clearly defined privacy policy, two-step verification via external mail to safeguard against any breaches in both user and system data.

8. Appendix A: Glossary

Table 2. Glossary

Term	Expansion	Meaning
Scalability		refers to the ability of a system, network, or process to handle a growing amount of work, or its potential to be enlarged to accommodate that growth. In simpler terms, scalability is the capacity of a system to grow and adapt to increased demands without sacrificing performance or stability.
Order Processing Workflow		refers to the series of steps or activities involved in managing and fulfilling customer orders within a business. This workflow typically begins when a customer places an order and ends when the order is successfully delivered or fulfilled.
Load testing		a type of performance testing conducted on a software application, system, or website to assess its behavior and performance under normal and peak load conditions. The primary objective of load testing is to determine the system's response time, throughput, and scalability when subjected to a specific workload or user load.
UI	User Interface	UI stands for User Interface, it encompasses the visual elements and interactive components of a software application that users interact with to navigate, input data, and receive feedback.

9. Appendix B: Field Layouts

9.1. Fields with information required to Login

Table 3. Fields with information required to Login

FIELD	MINIMUM LENGTH	DATA TYPE	Description	Is Mandatory
email-id	-	Alphanumeric		Y
Password	9	Alphanumeric		Y