

**VIETNAM NATIONAL UNIVERSITY, HANOI**  
**UNIVERSITY OF ENGINEERING AND TECHNOLOGY**



**VISION DOCUMENT FOR**  
**ONLINE ECOMMERCE WEBSITE**

**SEMESTER 232**

**GROUP 10**

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

<b>Course:</b>	<b>Software Engineering</b>
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<b>Instructor:</b>	<b>Assoc. Prof. Đặng Đức Hạnh</b> <b>Bsc. Kiều Văn Tuyên</b>

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# **Vision Document**

**for**

# **Online Ecommerce Website**

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**Prepared by Group 10**

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# 1. Introduction

## 1.1. *Purpose*

This document aims to meticulously gather, evaluate, and outline the fundamental requirements and functionalities of the Ecommerce Website. Its primary focus lies in understanding the needs of stakeholders and target users, elucidating why these needs are crucial, and subsequently defining the features necessary to meet them. While the specifics of how the Ecommerce Website addresses these requirements are elaborated in the use-case and supplementary specifications, this document provides a comprehensive overview of the overarching goals.

The Ecommerce Website stands as a virtual hub for a wide spectrum of goods, serving as an expansive marketplace that facilitates transactions on a global scale. Positioned as an internet-based enterprise, it boasts an extensive inventory spanning diverse categories ranging from books and electronics to groceries and beyond. Sellers leverage this platform to extend their market reach to a global audience, enjoying increased flexibility and access to a broader customer base.

Over the past decade, the convenience of online shopping has witnessed an unprecedented surge in popularity, transforming the way consumers engage with products and brands. This paradigm shift has elevated the significance of the online shopping website, establishing it as a dominant force in the digital marketplace. With the ease of exploration and comparison of various products, brands, and price points, customers now enjoy the luxury of browsing and purchasing items from the comfort of their homes, thereby reinforcing the platform's pivotal role in modern commerce.

## 1.2. *Scope*

This Vision Document applies to the Online Ecommerce Website (OEW), which will be developed by a group of five students at University of Engineering and Technology (UET-VNU). The team endeavors to engineer a client-server system that emulates the online ordering and shipment processes observed in prevalent e-commerce platforms such as Shopee or Amazon.

The platform will offer a wide range of products across various categories, providing customers with a convenient and seamless shopping experience. Key features include a robust product catalog, seller interface, user account management, advanced search and filtering options, secure transaction processing. The project will focus on developing user-friendly interfaces for both buyers and sellers, implementing scalable backend systems to manage inventory and transactions securely, and integrating social features to enhance user engagement. Target users include consumers seeking diverse shopping options, sellers looking to expand their market reach, and mobile users preferring on-the-go shopping experiences.

## 1.3. *Definitions, Acronyms, and Abbreviations*

OEW – Online Ecommerce Website

## 1.4. *References*

- [1] Ian Sommerville, *Software Engineering 10<sup>th</sup> Edition*, Pearson, 2016
- [2] [UTDCS-17-04 \(upc.edu\)](https://utdcs-17-04.upc.edu)



## 2. Positioning

### 2.1. *Business Opportunity*

In recent years, online shopping has become increasingly prevalent, emerging as a new consumer trend. The act of purchasing and selling goods online offers numerous conveniences to consumers. From the comfort of their homes, individuals can effortlessly procure desired items using a smartphone or computer. Online retail websites serve as virtual marketplaces where transactions occur over the internet. Consumers access these platforms established by sellers to browse merchandise, make purchases, complete transactions, and provide shipping information. Beyond facilitating transactions, online retail websites also function as electronic information hubs, serving either partially or wholly in the sales process, product provisioning, brand building, as well as proficient customer support and care.

The establishment of online retail websites not only facilitates transactions between buyers and sellers but also yields substantial value for businesses. These online commerce systems offer several significant benefits. Firstly, they boost sales revenue as online shopping increasingly becomes a prevalent habit among consumers, granting businesses access to a vast pool of potential customers. With professional construction and efficient optimization, well-managed websites can effectively drive sales figures. Secondly, the development of online retail websites aids in fostering and reinforcing brand credibility. A quality website boasting professional visuals and content aids businesses in making positive impressions on customers and partners, thereby enhancing brand visibility and effectiveness in promotional activities. Lastly, online shopping is not constrained by store operating hours, empowering customers to make purchases at any time, thereby enhancing convenience and flexibility throughout the shopping process.

### 2.2. *Problem Statement*

*Table 1. Problem Statement*

<b>The problem of</b>	The traditional brick-and-mortar retail model faces several challenges. These include limited operating hours, geographical constraints, and the need for physical infrastructure. Customers often have to travel to physical stores, which can be time-consuming and inconvenient. Additionally, small businesses struggle to compete with larger retailers due to their limited reach and resources.
<b>Affects</b>	This impacts on both Consumers and Retailers: <ul style="list-style-type: none"><li>• <b>Consumers:</b> The limitations of traditional commerce affect consumers significantly. They seek convenience, variety, and competitive prices. Online e-commerce platforms offer a solution by providing a vast selection of products accessible 24/7. Consumers can compare</li></ul>

	<p>prices, read reviews, and make informed decisions from the comfort of their homes.</p> <ul style="list-style-type: none"> <li>• <b>Retailers:</b> For retailers, embracing e-commerce opens up new opportunities. They can reach a global audience without the need for physical storefronts. E-commerce platforms allow businesses to scale efficiently, reduce overhead costs, and target specific customer segments. Moreover, data analytics enable personalized marketing and inventory management.</li> </ul>
<b>The impact of which is</b>	<p>That statement would impact on:</p> <ul style="list-style-type: none"> <li>• <b>Economic :</b> Limited market reach hinders economic growth. Small businesses miss out on opportunities to thrive, and consumers may pay higher prices due to reduced competition.</li> <li>• <b>Inconvenience for Consumers:</b> Consumers face inconvenience when they cannot find desired products locally or when they have to travel long distances to access specific stores.</li> <li>• <b>Missed Opportunities for Retailers:</b> Retailers miss out on potential sales and revenue from customers beyond their immediate vicinity.</li> </ul>
<b>A successful solution would be</b>	<p>Build an Online E-Commerce Systems that will provide:</p> <ul style="list-style-type: none"> <li>• <b>Accessibility:</b> E-commerce systems provide a virtual marketplace accessible to anyone with an internet connection. Consumers can browse, search, and purchase products from various vendors.</li> <li>• <b>Convenience:</b> Online shopping eliminates the need for travel, parking, and waiting in queues. Customers can shop at their convenience, whether it's early morning or late at night.</li> <li>• <b>Cost-Effectiveness:</b> E-commerce reduces operational costs associated with physical stores. Retailers can pass on these savings to consumers through competitive pricing.</li> </ul>

	<ul style="list-style-type: none"> <li>• <b>Global Reach:</b> Small businesses can compete on a global scale, reaching customers beyond their local markets. E-commerce platforms facilitate cross-border transactions.</li> <li>• <b>Personalization:</b> Data-driven insights allow retailers to tailor recommendations, promotions, and customer experiences. Personalized marketing enhances customer loyalty.</li> <li>• <b>Secure Transactions:</b> Secure payment gateways and encryption ensure safe online transactions, building trust among consumers.</li> </ul>
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### 2.3. *Product Position Statement*

Table 2. *Product Position Statement*

<b>Target Users</b>	encompass various segments, including startups and small businesses aiming to establish a digital footprint and access a worldwide clientele. Additionally, content-driven brands such as bloggers, influencers, and creators are targeted, seeking avenues to monetize their content through product sales. Moreover, boutiques and brick-and-mortar stores are catered to, as they aspire to broaden their market reach beyond their physical storefronts. These diverse user groups represent a spectrum of entrepreneurial endeavors and commercial aspirations, underscoring the system's versatility in accommodating different business models and marketing strategies.
<b>Online Ecommerce Website (OEWS)</b>	is an online comprehensive platform product
<b>That</b>	designed to facilitate businesses in establishing, overseeing, and expanding their virtual stores. It offers a suite of tools and features tailored to various aspects of online retail operations, including product listings, inventory supervision, order fulfillment, and customer assistance. Furthermore, it seamlessly integrates with diverse payment gateways, shipping services, and marketing channels, streamlining transactions and enhancing outreach to potential customers. This multifaceted solution serves as an

	indispensable resource for enterprises seeking to harness the power of digital commerce to drive growth and profitability in today's competitive market landscape.
<b>Our product</b>	offers a multitude of functionalities catering to both buyers and sellers in the digital marketplace. For buyers, it provides a convenient platform to browse through a diverse range of products across various categories, compare prices, read reviews, and make purchases from the comfort of their homes. Additionally, features such as secure payment options, and order tracking enhance the overall shopping experience. For sellers, the platform offers tools for product listing, inventory management, order processing, and customer engagement, enabling them to reach a wide audience and grow their businesses online.

### 3. Stakeholder and User Descriptions

#### 3.1. *Market Demographics*

The target market segment of the online ecommerce website comprises a broad spectrum of consumers who seek convenience, variety, and accessibility in their shopping experiences. This demographic includes individuals of all ages and demographics who embrace digital technology and prefer the ease of online shopping over traditional retail methods. Young adults and millennials, in particular, form a significant portion of the user base, drawn to the platform's extensive product offerings, competitive pricing, and seamless purchasing process. Additionally, busy professionals and working parents appreciate the time-saving benefits of online shopping, allowing them to efficiently fulfill their shopping needs amidst their hectic schedules. Moreover, small businesses and entrepreneurs utilize the platform to expand their market reach and establish a digital presence, leveraging its tools and features for product showcasing, sales, and customer engagement.

#### 3.2. *Stakeholder Summary*

*Table 3. Non-User Stakeholder Summary*

Name	Description	Responsibilities
<b>Requirements Specifier</b>	The requirements specifier (also known as a business analyst or product owner) plays a crucial role in understanding and documenting business needs and translating them into functional as well as non-functional requirements.	<ul style="list-style-type: none"> <li>Elicit and analyze business requirements from stakeholders (including users, management, and other teams).</li> <li>Create detailed requirement</li> </ul>

		<p>documents, user stories, and use cases.</p> <ul style="list-style-type: none"> <li>• Collaborate with developers, designers, and other team members to ensure alignment with business goals.</li> <li>• Prioritize features and enhancements based on business value.</li> <li>• Act as a bridge between business stakeholders and the development team.</li> </ul>
<b>Software Architecture</b>	Software architects design the overall structure and components of the e-commerce system.	<ul style="list-style-type: none"> <li>• Define the system's architecture, including high-level components, modules, and interactions.</li> <li>• Choose appropriate technologies, frameworks, and patterns.</li> <li>• Ensure scalability, maintainability, and extensibility.</li> <li>• Address cross-cutting concerns (security, performance, caching, etc.).</li> <li>• Collaborate with development teams to enforce architectural guidelines.</li> </ul>
<b>Developer</b>	Developers (software engineers or programmers) are responsible for building and maintaining the e-commerce platform.	<ul style="list-style-type: none"> <li>• Write clean, efficient, and maintainable code.</li> <li>• Develop features, APIs, and integrations.</li> <li>• Collaborate with UI/UX designers to implement responsive and user-friendly interfaces.</li> <li>• Optimize performance, security, and scalability.</li> <li>• Debug and fix issues reported by quality assurance (QA) and end-users.</li> <li>• Stay updated with industry trends and best practices.</li> </ul>

<b>Quality Assurance (QA)</b>	QA professionals ensure the quality and reliability of the e-commerce platform.	<ul style="list-style-type: none"> <li>• Create test plans, test cases, and test scripts.</li> <li>• Perform functional, regression, and usability testing.</li> <li>• Identify and report defects.</li> <li>• Validate data integrity, security, and compliance.</li> <li>• Collaborate with developers to resolve issues.</li> <li>• Participate in user acceptance testing (UAT).</li> </ul>
<b>Project Manager</b>	Project managers oversee the entire e-commerce project, ensuring successful delivery within scope, time, and budget.	<ul style="list-style-type: none"> <li>• Define project scope, objectives, and deliverables.</li> <li>• Create a detailed project plan, including tasks, milestones, and resources.</li> <li>• Monitor progress, track risks, and manage changes.</li> <li>• Coordinate communication among stakeholders.</li> <li>• Allocate resources effectively.</li> <li>• Ensure alignment with business goals and customer satisfaction.</li> </ul>

Due to a small group of members, these roles often collaborate closely and interchangeably, and effective communication is essential for successful e-commerce projects.

### 3.3. *User Summary*

*Table 4. User Summary*

Name	Description	Responsibilities
<b>Customers</b>	Customers are the end-users who visit the e-commerce platform to browse, shop, and make purchases.	Customers browse, select, and purchase products or services offered on the e-commerce platform. They provide feedback on their shopping experience and resolve any issues that arise with their orders through customer support channels.
<b>Sellers</b>	End user of the website	Sellers list their products or services, manage inventory, and

		process orders efficiently. They offer customer support to address inquiries and ensure a positive shopping experience for buyers. Sellers also monitor their performance metrics and continuously optimize their listings to maximize sales and satisfaction.
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### 3.4. *User Enviroment*

Users can also access OEW through web browsers on their desktop computers or laptops. By visiting the website, customers can explore product listings, read reviews, and make purchases. The desktop version offers additional screen real estate for detailed product views and comparison. Seller accounts on OEW have access to a web-based dashboard. The seller dashboard allows sellers to manage their products, inventory, orders, and other aspects of their business. Sellers can log in to the dashboard using their credentials and perform various tasks related to their online store.

For mobile users, OEW supports access through various operating systems and web browsers:

- **iOS:** OEW is compatible with Safari, the default web browser on iOS devices such as iPhones and iPads. Users can access the website using Safari on devices running iOS 10 or later.
- **Android:** OEW is compatible with Google Chrome, the default web browser on most Android devices. Users can access the website using Chrome on devices running Android 5.0 (Lollipop) or later.

For desktop and laptop users, OEW supports access through popular web browsers across different operating systems:

- **Windows:** OEW is compatible with web browsers such as Google Chrome, Mozilla Firefox, Microsoft Edge, and Opera on computers running Windows 7 or later.
- **macOS:** OEW is compatible with web browsers such as Safari, Google Chrome, Mozilla Firefox, and Opera on Mac computers running macOS 10.10 (Yosemite) or later.
- **Linux:** OEW is compatible with web browsers such as Google Chrome, Mozilla Firefox, and Opera on computers running various Linux distributions.

Keeping the web browsers up to date ensures compatibility with the latest features and security enhancements, providing users with a seamless browsing experience on OEW.

### 3.5. *Stakeholder (Users) Profiles*

#### 3.5.1. *Customers*

Table 5. Customers Profile

<b>Description</b>	Customers are the primary users of the e-commerce platform. They visit the website or app to explore products, make purchases, and engage with the platform.
<b>Type</b>	End-users who interact with the platform for shopping purposes.
<b>Responsibilities</b>	<ul style="list-style-type: none"> <li>• <b>Browsing and Searching:</b> Customers explore product listings, search for specific items, and discover new products.</li> <li>• <b>Product Selection:</b> They choose products based on preferences, quality, price, and reviews.</li> <li>• <b>Adding to Cart and Checkout:</b> Customers add selected items to their cart and proceed to checkout for payment.</li> <li>• <b>Review and Feedback:</b> After receiving products, they leave reviews and ratings to help other users.</li> </ul>
<b>Success Criteria</b>	<ul style="list-style-type: none"> <li>• <b>User Satisfaction:</b> High user satisfaction, positive reviews, and repeat visits.</li> <li>• <b>Smooth Checkout Process:</b> Easy navigation, clear steps, and secure payment options.</li> <li>• <b>Quality Products:</b> Satisfied with the purchased products.</li> </ul>
<b>Limitation</b>	<ul style="list-style-type: none"> <li>• <b>Limited Control:</b> Customers have limited control over the platform's functionality. They rely on the features provided by the e-commerce website.</li> <li>• <b>Privacy Concerns:</b> Customers share personal information (such as shipping addresses and payment details) with the platform, raising privacy concerns.</li> <li>• <b>Risk of Fraud:</b> Customers face the risk of encountering fraudulent sellers or fake products.</li> <li>• <b>Lack of Physical Interaction:</b> Unlike in physical stores, customers cannot physically inspect products before purchasing.</li> </ul>
<b>Benefit</b>	<ul style="list-style-type: none"> <li>• <b>Convenience:</b> E-commerce platforms offer 24/7 accessibility, allowing customers to shop from anywhere at any time.</li> <li>• <b>Wide Selection:</b> Customers have access to a vast range of products, often more than what physical stores can offer.</li> </ul>



	<ul style="list-style-type: none"> <li>• <b>Price Comparison:</b> Online platforms enable easy comparison of prices, reviews, and product specifications.</li> <li>• <b>Reviews and Ratings:</b> Customers benefit from other users' experiences through product reviews and ratings.</li> <li>• <b>Home Delivery:</b> The convenience of doorstep delivery saves time and effort.</li> </ul>
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### 3.5.2. Sellers

Table 6. Sellers Profile

<b>Description</b>	Sellers are businesses or individuals who list their products on the e-commerce platform for sale.
<b>Type</b>	Business entities or individuals offering products for sale.
<b>Responsibilities</b>	<ul style="list-style-type: none"> <li>• <b>Product Listing:</b> Creating detailed product listings with images, descriptions, and prices.</li> <li>• <b>Inventory Management:</b> Monitoring stock levels and restocking products.</li> <li>• <b>Order Fulfillment:</b> Processing orders, packaging, and shipping.</li> <li>• <b>Payment Processing:</b> Receiving payments through the platform.</li> </ul>
<b>Success Criteria</b>	<ul style="list-style-type: none"> <li>• <b>Sales Volume:</b> Achieving sales targets and revenue goals.</li> <li>• <b>Positive Ratings:</b> High ratings from satisfied customers.</li> <li>• <b>Efficient Operations:</b> Smooth order processing and timely delivery.</li> </ul>
<b>Limitation</b>	<ul style="list-style-type: none"> <li>• <b>Fees and Commissions:</b> E-commerce platforms charge fees or commissions on sales, impacting profit margins.</li> <li>• <b>Competition:</b> Sellers face intense competition from other vendors on the same platform.</li> <li>• <b>Limited Brand Control:</b> Sellers operate within the platform's branding and design constraints.</li> <li>• <b>Quality Assurance Challenges:</b> Ensuring consistent product quality and accurate descriptions can be challenging.</li> </ul>
<b>Benefit</b>	<ul style="list-style-type: none"> <li>• <b>Convenience:</b> E-commerce platforms offer 24/7 accessibility, allowing customers to shop from anywhere at any time.</li> <li>• <b>Wide Selection:</b> Customers have access to a vast range of products, often more than what physical stores can offer.</li> </ul>

	<ul style="list-style-type: none"> <li>• <b>Price Comparison:</b> Online platforms enable easy comparison of prices, reviews, and product specifications.</li> <li>• <b>Reviews and Ratings:</b> Customers benefit from other users' experiences through product reviews and ratings.</li> <li>• <b>Home Delivery:</b> The convenience of doorstep delivery saves time and effort.</li> </ul>
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### 3.6. Key Stakeholder or User Needs

Table 7. Key Stakeholder and User Needs

Name	Description	Priority	Concerns	Proposed Solutions
<b>Convenience and Accessibility</b>	Users expect a convenient shopping experience. They want to find products easily, add them to their cart, and complete transactions without hassle.	High	Any friction in the process (such as complex navigation or slow loading times) can deter users.	Streamline the user journey, optimize page load times, and ensure responsive design across devices.
<b>Trust and Security</b>	Users require trust in the platform. They want secure payment options, protection against fraud, and assurance that their personal data is safe.	High	Fear of data breaches or unauthorized access.	Implement robust security measures, use SSL encryption, and clearly communicate privacy policies.
<b>Transparency and Information Accuracy</b>	Users want accurate product descriptions, pricing, and availability information.	Medium - high	Misleading descriptions, hidden costs, or out-of-stock items.	Regularly update product details, provide clear pricing, and indicate stock availability.
<b>Quality Assurance and Reviews</b>	Users rely on product reviews and ratings. They want assurance of quality before making a purchase.	Medium - high	Lack of reviews or negative feedback.	Encourage buyers to leave reviews, and ensure accurate representation of products.

## 4. Product Overview

### 4.1. Product Perspective

#### 4.1.1. Architectural Model: Three Layered Package Diagram – MVC Structure

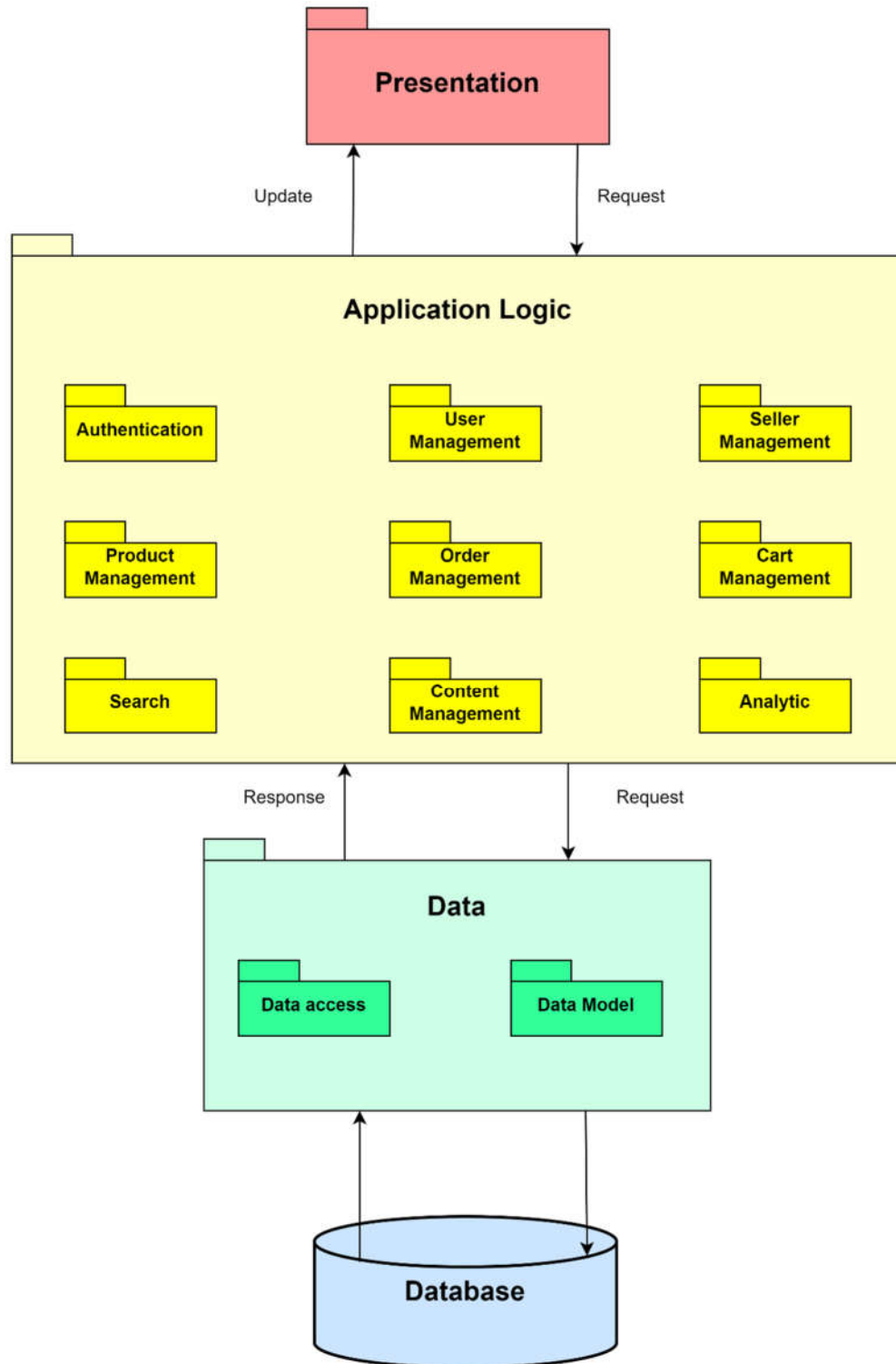


Figure 1. Architecture Model

Figure 1 describes the high-level organization of the system. The system is built with a three-tier architecture consisting of three layers: *Presentation Layer*, *Logic Layer*, and *Data Layer*.

- **Presentation Layer**

This layer's main responsibility is to interact with users. It consists of interface components (such as winform, webform, etc.) and performs tasks such as data input, data display, and data validation before calling the Business Logic Layer (BLL).

- **Logic Layer**

This layer is divided into two main tasks:

1. It responds to data manipulation requests from the GUI layer, processes the data from the Presentation Layer before passing it down to the Data Layer, and saves it to the database management system (DBMS).
2. It checks data constraints, integrity, and validity, performs calculations, and handles business logic requests before returning the results to the Presentation Layer.

- **Data Layer**

This layer is responsible for communicating with the database management system (DBMS), such as performing tasks related to storing and querying data (searching, adding, deleting, updating, etc.).

#### 4.1.2. Definition of Packages

Table 8. Definition of Packages

No.	Name	Description
1	<b>Authentication</b>	The Authentication package plays a pivotal role in ensuring the security and integrity of user interactions within the ecommerce platform. In addition to managing user authentication and authorization processes, it also oversees user signup and sign-in functionalities. This includes validating user credentials during the signup process, such as verifying email addresses or phone numbers, and securely storing login information. Upon sign-in, the Authentication package verifies user identities through various methods, such as username/password authentication, social login integrations, or multi-factor authentication (MFA). Furthermore, it maintains user sessions and permissions, enabling secure access to the platform's features and resources while safeguarding against unauthorized access. By integrating robust authentication mechanisms, the package enhances the platform's security posture and ensures a trustworthy environment for users to engage in ecommerce activities.
2	<b>User Management</b>	The User Management package assumes a central role in fostering a secure and compliant environment within the ecommerce platform. Beyond conventional user account management tasks, it delves into the intricacies of user

		<p>behavior to uphold the platform's rules of engagement. From meticulous user registration processes, including identity verification and fraud detection measures, to facilitating transparent and trustworthy profile management functionalities, this package ensures the integrity of user information. Moreover, it administers account-related activities such as password resets and account deactivations, safeguarding against unauthorized access and misuse. Furthermore, through sophisticated role-based permissions, it delineates distinct access levels for users based on their roles (e.g., customers, sellers, administrators), bolstering platform security and user trust. By actively monitoring user behavior and enforcing compliance with platform policies, the User Management package plays a pivotal role in cultivating a resilient and inclusive ecommerce ecosystem.</p>
3	<b>Seller Management</b>	<p>The Seller Management package within the ecommerce platform serves as a pivotal hub, orchestrating various aspects of sellers' operations with meticulous attention to detail. From streamlining registration and verification processes to empowering sellers with intuitive tools for product listing management, it ensures a seamless and engaging experience. Moreover, it facilitates performance tracking and optimization by providing insightful analytics, fostering continuous improvement and growth. By fostering effective communication channels between sellers and administrators, it nurtures a collaborative environment conducive to success. In essence, the Seller Management package embodies empowerment, enabling sellers to thrive and excel within the dynamic ecommerce landscape.</p>
4	<b>Product Management</b>	<p>The Product Management package is responsible for managing the lifecycle of products within the ecommerce platform. It includes functionalities for product catalog management, such as adding new products, updating product information, managing product categories and attributes, and handling product variations (e.g., sizes, colors). Product Management also encompasses inventory management, pricing strategies, and product recommendation systems. It reserved for sellers.</p>
5	<b>Order Management</b>	<p>The Order Management package handles the processing and fulfillment of orders placed by customers. It includes functionalities for order creation, order tracking, inventory reservation, order status updates, and communication with customers regarding order fulfillment and delivery. Additionally, Order Management manages returns, exchanges, and refunds processes to ensure customer satisfaction.</p>
6	<b>Cart Management</b>	<p>The Cart Management package manages the shopping cart functionality for customers, allowing users to add, remove, and modify items before completing their purchases. It maintains the state of users' carts across sessions, calculates order totals, applies discounts or promotions, and handles cart abandonment scenarios.</p>

		Cart Management ensures a seamless and intuitive shopping experience for customers.
7	<b>Search</b>	The Search package provides robust search functionalities to help users discover products efficiently. It includes features such as keyword search, faceted search, filtering options (by category, price range, etc.), and sorting mechanisms (by relevance, price, rating, etc.). Search utilizes indexing and search algorithms to deliver accurate and relevant search results to users.
8	<b>Content Management</b>	The Content Management package oversees the creation, organization, and presentation of non-product-related content on the platform. This includes managing static pages, blog posts, promotional banners, FAQs, and other informational or marketing content. Content Management systems often include features for content versioning, scheduling, localization, and SEO optimization.
9	<b>Analytics</b>	The Analytics package collects, analyzes, and interprets data to gain insights into user behavior, market trends, and platform performance. It tracks key metrics such as website traffic, user engagement, conversion rates, and sales performance. Analytics tools and dashboards enable stakeholders to make data-driven decisions, optimize strategies, and improve the overall effectiveness of the ecommerce platform.
10	<b>Data Access</b>	The Data Access package provides interfaces and methods for accessing and manipulating data stored in the underlying database management system (DBMS). It abstracts database interactions, handles database connections, executes database queries, and manages transactions. Data Access ensures efficient and secure access to data while maintaining data integrity and consistency.
11	<b>Data Model</b>	The Data Model package defines the structure and relationships of the data entities within the ecommerce system. It includes entity-relationship diagrams, database schemas, and data models that represent entities such as users, products, orders, and transactions. The Data Model serves as a blueprint for organizing and storing data efficiently, supporting the system's functionalities and business requirements.

## 4.2. Summary of Capabilities

Table 9. Summary of Capabilities

Name	Supporting Features
<b>Self-Service Knowledge Base</b>	Customers can find answers to common questions without contacting support via: <ul style="list-style-type: none"> <li>• <b>Comprehensive FAQs.</b></li> <li>• <b>Search functionality.</b></li> <li>• <b>Tutorials and guides.</b></li> </ul>
<b>Quick Search and Filtering</b>	Users can find products swiftly.

	<ul style="list-style-type: none"> <li>• <b>Filters:</b> Refine search results by category, price, ratings, etc.</li> </ul>
<b>Order Tracking and Notifications</b>	<p>Users can monitor order status.</p> <ul style="list-style-type: none"> <li>• <b>Real-Time Tracking:</b> Show delivery progress.</li> <li>• <b>Delivery Alerts:</b> Notify users of order updates.</li> </ul>
<b>Handling Product Returns and Refunds</b>	<p>Streamlined process for returns, exchanges, and refunds by:</p> <ul style="list-style-type: none"> <li>• <b>Clear return policies.</b></li> <li>• <b>Online form for initiating returns.</b></li> <li>• <b>Tracking return status.</b></li> </ul>
<b>Order History and Tracking</b>	<p>Customers can view past orders and track current shipments by these features:</p> <ul style="list-style-type: none"> <li>• <b>Order history section in user accounts.</b></li> <li>• <b>Real-time tracking updates.</b></li> </ul>
<b>Performance Analytics for Sellers</b>	<p>Insights into sales trends, customer behavior, and product performance by using:</p> <ul style="list-style-type: none"> <li>• <b>Sales Reports:</b> Detailed data on revenue and conversions.</li> <li>• <b>Customer Feedback Analysis:</b> Understanding buyer preferences.</li> </ul>
<b>Seller Dashboard</b>	<p>Centralized management of inventory, orders, and customer interactions.</p> <ul style="list-style-type: none"> <li>• <b>Inventory Tools:</b> Efficient stock management.</li> <li>• <b>Order Processing Interface:</b> Streamlined order fulfillment.</li> <li>• <b>Communication Channels:</b> Direct interaction with buyers.</li> </ul>

### 4.3. Cost and Pricing

#### 4.3.1. Cost Policy

##### 4.3.1.1. Operational Costs

The group will cover basic operational costs such as web hosting, and maintenance.

To minimize costs, the group may utilize open-source software and free tools for website development, management, and analytics.

##### 4.3.1.2. Student Contributions

Each member of the group may volunteer time and expertise to manage different aspects of the website, such as content creation, customer support, and technical maintenance, thereby reducing the need for external hiring and associated costs.

#### 4.3.2. Pricing Policy

##### 4.3.2.1. Free Access for Users

The e-commerce website will remain entirely free for both buyers and sellers. Users can browse, purchase, and sell products without any membership fees, transaction charges, or hidden costs.

#### **4.3.2.2.   *Monetization Through Indirect Channels***

The group may explore indirect monetization channels such as insert advertising space within the website as a small source of income for our development team.

#### **4.3.2.3.   *Donations and Crowdfunding***

To supplement operational costs and support future expansion, the group can accept voluntary donations from users who appreciate the platform's services and wish to contribute to its sustainability.

They can also organize crowdfunding campaigns on platforms like Kickstarter or GoFundMe to raise funds for specific projects or initiatives aimed at improving the website's functionality and user experience.

## **5. Product Features**

The website have some basic features as follows:

### **5.1.   *Register an account***

Create a new user account by providing necessary information such as email, username, and password to access the platform's features and services.

### **5.2.   *Log in to the website***

Sign in to your existing account using your registered email or username and password to access personalized features and settings.

### **5.3.   *Edit account information***

Modify and update personal details like name, address, contact information, and preferences within the user profile settings.

### **5.4.   *For Users/ Customers***

#### **5.4.1.   *View items***

Browse through a wide range of products listed on the platform, accompanied by images, descriptions, and prices.

#### **5.4.2.   *Search items***

Utilize the search functionality to find specific products based on keywords, categories, or filters.

#### **5.4.3.   *Add items to cart***

Select desired items and add them to the shopping cart for later purchase.

#### **5.4.4.   *View cart***

Review the items currently in the shopping cart along with quantities and prices before proceeding to checkout.

#### **5.4.5.   *Change items in cart***

Adjust quantities, remove items, or add new products to the cart as needed.



#### *5.4.6. Proceed to buy items*

Move forward with the purchasing process by proceeding to the checkout page to finalize the transaction.

#### *5.4.7. Delivery and payment*

Choose preferred delivery options and payment methods for completing the purchase securely.

#### *5.4.8. Shipping tracking*

Track the status and location of shipped orders to monitor delivery progress.

#### *5.4.9. Order cancellation*

Cancel placed orders within a specified time frame before they are processed and shipped.

#### *5.4.10. Order return*

Initiate product returns and refunds for items that are defective, damaged, or not as described.

#### *5.4.11. Order confirmation*

Receive confirmation notifications after successfully placing an order on the platform can customers have to click Confirm button to verify that the order is handed on them.

#### *5.4.12. Item reviews*

Share feedback and reviews about purchased products to help other users make informed buying decisions.

### **5.5. For Seller**

#### *5.5.1. Upload listings*

Create and upload listings for products to showcase them on the platform's marketplace.

#### *5.5.2. Edit items*

Modify existing product listings to update information, prices, quantities, or images.

#### *5.5.3. Items classification*

Categorize and classify products into relevant categories and subcategories to improve visibility and discoverability.

#### *5.5.4. Delete items*

Remove listings for products that are no longer available or need to be discontinued from the platform.

#### *5.5.5. View order from customers*

Access and review orders placed by customers, including details like order status, payment information, and shipping addresses.

## **5.6. *Working with the Options menu bar***

Navigate and access various features and functionalities of the website through the options menu bar, including account settings, help and support, notifications, and other relevant tools and resources.

# **6. Constraints**

## **6.1. *Security***

### **6.1.1. *Authentication***

Ensuring that only authenticated users can access the system and perform authorized actions, such as making purchases or managing their accounts.

### **6.1.2. *Access Control***

Limiting access to sensitive data and critical system functionalities to authorized users, roles, or groups while preventing unauthorized access attempts.

### **6.1.3. *Data Privacy***

Safeguarding the privacy and confidentiality of customer information and personal data collected and processed by the e-commerce platform, in compliance with relevant data protection regulations. Transmission should be encrypt for privacy.

## **6.2. *Usability***

Providing a user-friendly interface and intuitive navigation to enhance the shopping experience and minimize user confusion or frustration.

## **6.3. *Responsiveness***

Ensuring the website performs consistently across various devices and screen sizes, delivering a seamless experience for users accessing the platform from desktops, laptops, tablets, and smartphones.

### **6.3.1. *Network Constraint***

Ensuring that the website remains accessible and responsive even under varying network conditions, including low bandwidth, high latency, and intermittent connectivity.

### **6.3.2. *Performance Constraint***

Maintaining optimal website performance to deliver fast page load times, smooth navigation, and seamless interactions, even during periods of high traffic or resource-intensive operations.

## **6.4. *Capacity***

Handling high volumes of website traffic, particularly during peak shopping periods and promotional events, without experiencing performance degradation or downtime.

## **6.5. *Scalability***

Accommodating future growth and expansion of the e-commerce platform, including adding new product features without compromising performance or stability.