## **Introduction**

E-commerce platforms are a convenient and secure way to search, select and purchase products online. They provide detailed product information, easier transactions and a variety of products.

## **Requirement analysis**

1. Traditional way is inconvenient because you have to physically visit the store to get the products.
2. Transparency : The listing of products is not proper on the sites. False ratings and reviews are added by the sellers.
3. The number of products available in store is limited and restocking takes time. Also tracing orders in traditional methods is tedious because of manual paperwork.
4. Customer support : The process for return or refund is lengthy and leaves a bad impact on the customer.
5. Page load speeds : Users simply move to other e-commerce sites to find the same product if a page takes time to load.

## **Functional Specifications**

**Client Side :**

1. User Registration : The Sign-in and Sign-up should be quick. (Sign-up through third parties such as google etc. should be added). Password recovery should be added.
2. Searching : Users should be able search products according to different categories and filters such as price, category, ratings.
3. Cart Options : Options to add, remove, view product from the cart should be provided. Detailed price breakdown of products added in the cart should be displayed.
4. Order tracking : Users should be able to track their order at each stage.
5. Providing customer support in multiple ways such as emails and helplines. These requests must be addressed. (AI bots can be integrated to make sure all requests are responded to.)
6. Payment : Multiple payment options should be provided (UPI, Cards, COD).

Use cases for client side (Users) :

* Browsing and Searching
* Product Details and Reviews
* Adding to Cart and Wishlist
* Checkout and Payment
* Order Tracking and History
* Customer Support

**Administrator :**

1. Products : Administrators should be able to monitor details of every product and add, remove, edit them and allocate them to their respective categories.
2. Manage Orders : Administrators should be able to view and process orders.
3. Monitor : They should be able to monitor orders and history as well as should be able to view required details of clients.
4. To increase transparency - Sellers verification must be done so that fake products are not added to the website.

Use cases for administrator (Seller) :

* Product Management
* Order Management
* Inventory Management
* Sales Analytics
* Customer Communication
* Returns and Refunds

## **External Interface Specifications**

1. User Interface : The website must be responsive for all types of devices (Laptop, Phone, Tablets). And the navigation should be intuitive.
2. Protocols : HTTP with SSL to provide secure data transfer and authentication. Also REST can be used for client-server communication. Proper documentation of endpoints and request response formats must be maintained.
3. The website should be compatible with all types of popular browsers.
4. Databases : SQL and NoSQL databases should be used in a way that retrieving product information is fast as well as at times of high traffic they should easily scale.

## **Technical Specifications**

1. Performance Constraints :

* Server Side Rendering should be implemented to reduce load times.
* Product Images should be encoded such that they take less time to load.
* Optimization of CDN.

1. Heavy Traffic : At times of sales or heavy traffic the infrastructure (database, api, server) should be able to handle ~2000 concurrent users.

* Load balancing and caching must be implemented,

1. All the products and related information shown to the customer needs to be authentic

* Reviews added to the products must be moderated beforehand.

1. Deployment :

* Deployment on cloud platforms as they handle scaling.
* S3 for static content and Lambda, DynamoDB for dynamic layers.
* Optional : Authentication and emailing services provided by these CSP’s can be used as well.