# Non-functional requirements

## Performance

An online shopping service has many levels of organization and its overall performance is a confluence of factors that affect all these different levels:

Information system:

* The infrastructure and organization of the information system can crucially affect performance in the following ways
* **average response time** of web page (2-3secondes)
* failure rate
* average web page creation time
* site maintenance costs

In order to maintain:

an **acceptable speed** at the maximum number of requests allowed from a particular customer, 10.000 of users must be able to access the system at any time.

A **smooth UI/UX** is a necessity for all ecommerce applications. While a visually appealing design is essential, image optimization and other techniques can be implemented to **ensure that the site is not very heavy**.

**Real-time technologies** equip online retailers with tools to keep up with the ever-evolving search ecosystem.

Flexible goal setting, **third-party data integration and real-time** **optimization** offers a systematic solution to many ongoing challenges.

### Logistics:

* product availability
* average delivery time
* quality of delivery
* liability failure rate
* inventory turnover

To overcome issues related to the logistics,

the service has to **ensure that the right product should be available at the right time** and adequate quality. Some services may hire a 3PL to ensure this. A 3PL is a third party logistics service.

Many online shopping services outsource their logistic operations and choose to invest their resources in other areas. However, many e-stores prefer to employ their own resources in logistic planning and implementation for better control over distribution.

* Sales activity:
* acquisition cost
* acquisition cost per first customer
* brand awareness

There are various measures that can be taken to ensure that sales activity is improved.

* Build engagement
* limit spending
* develop partnerships

The above points illustrate some of the important performance criteria in terms of profitability analysis

* Market and customer
* number of unique customers
* average visit frequency
* number of first buyers
* average order value
* Sales process
* fulfilment cost
* personnel cost
* marketing cost
* return on sales
* total turnover

The above points illustrate key performance criteria in terms of structural analysis.

On analyzing the current or immediate state of the service, some important **criteria to consider while evaluating performance is:**

* sales growth
* order number growth
* visit frequency growth
* market share growth
* complaint rate

non-technical front

the **customer satisfaction** with the service itself is intrinsically linked with general satisfaction with products, delivery and website experiences.

All sellers have a **sellers account where they can monitor their account health**. sellers are liable for product quality and are measured based on order of:

* customer feedback rating (target: 3.5 stars or more)
* negative feedback rate (target: 1% or less)
* cancellation rate (target: 5% or less)
* reschedule rate (target: 5% or less)

It is essential for sellers to maintain acceptable service levels to be able to continue their market on the online service.

## Safety

There are a wide range of concerns that arise wherever online transactions are performed especially with money transactions and address records. One of the most

**common risks of online shopping:**

Stealing one’s personal information to make illegitimate purchases, phishing and keylogging are common ways used to steal identity.

Another common risk is credit card frauds. Customer’s may be redirected to the malicious user’s site during payment- that is made to look similar to the legitimate payment gateway and cost them money and may even have their credit card numbers stolen.

Malwares and Adware’s commonly plague many websites. The risk is even higher with online shopping websites as scammers may easily acquire sensitive information entered by the user. Simply visiting the website makes the malware attack the user system.

**To ensure user safety**, measures must be taken from both the user side as well as the shopping system’s side.

From the user side, the user must never divulge any personal information except during bill payment. Users must be careful not to fall prey to phishing by verifying that mails being sent from the service are in fact, authentic. Users must be wary of ads and ensure that appropriate antivirus software’s has been installed in one’s system.

The shopping system itself has to take concrete measures to ensure that customers can trust the service being provided to them. Site seals on web sites are visual indicators that the website is safe and secure. Acquiring SSLs certificates are mandatory as this ensures the user that the communication channel is encrypted.

## Security

**To ensure secure transfer of data**,

* the system must use secure sockets in all transactions that include any confidential customer information.
* The system may choose to automatically log out all customers after a period of inactivity and verify by confirmation all the transactions with the customer’s web browser.
* The system will ensure that cookies and all temporary storage do not hold any sensitive information.
* The customer’s web browser must never display a customer’s password or credit card details.
* The system’s back-end servers must never display a customer’s password and these servers must only be accessible to authenticated administrators. These databases must be encrypted and within the company's perimeter.
* The service can ensure user identity authentication using two-step verification procedures. Further, the system can ensure that any additional security risks experienced by the users can be reported to the system immediately.

# Software Quality Attributes

**Adaptability** is of primary importance to both types of users of the system. It should be able to easily cater to the needs of sellers and customers and be able to add additional features and provide support as demanded- especially in case of system vulnerability.

As an online shopping system, it must define product availability by defining the targeted audience be it global users or a more restricted user space. It is also important to ensure that sellers are able to deliver products to the regions promised by the service.

Due to user sensitive information being required, ensuring that money transactions are not error prone is vital. Utmost correctness is to be expected in ensuring that money is refund money in case of returns, offers on products are appropriately deducted from the selling price, delivery services have minimal error and that warehouses function properly.

The system should also be **highly flexible** with servers that are equipped to be able to accommodate large flow of traffic. The system must be interoperable and must work without any compromise in performance and quality in both mobile applications as well as web applications. should be built with modularity so that additional features can be added and removed easily without changing too much of the original structure- this also allows reusability.

**The reliability** of the overall program depends on the reliability of the separate components. The main pillar of reliability of the system is the backup of the database which needs to be continuously maintained and updated to reflect the most recent changes.

**Testing** the system can be done on various fronts. Unit testing can be done by taking atomic components of the system, isolating it from the remainder of the code, and determining whether it behaves as expected. Program units are combined and tested as groups in multiple ways. Integration testing can expose problems with the interfaces among program components before trouble occurs in real- world program execution. Validation testing focuses on user visible actions and user recognizable output from the system and is said to be successful when software functions in a manner that can be reasonably expected by the customer

## Business Rules

Given the presence of two subsystems for the customers and sellers, the two types of users have different levels of privileges - including functionalities. Some of the functionalities common to the two subsystems are- registration, login, viewing account details and editing account details.

Some functionalities specific to **Seller subsystems**: are seller’s sales details, and uploading items to the inventory, Set shipping preferences ,collaborate with delivery services for logistics**. Customers** also have browsing features, cart features, delivery details, payment options, cancellation, review options and many more.

## Other requirements

A robust commercial backend that delineates customer and seller information is necessary. A general management backend with inventory and general system requirements is also required.

Authorization from payment services is needed for customers to be able to make payments through payment gateways. A defined privacy policy, SSL certification and two-step verification through external mail or phone number is also necessary to ensure no breach in both user data and system data.