**Requirement Analysis**

**Solution Requirements (Functional & Non-functional)**

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| --- | --- |
| Date | 19 June 2025 |
| Team ID | LTVIP2025TMID53033 |
| Project Name | ShopSmart: Your Digital Grocery Store Experience |

**Functional and Non-Functional Requirements:**

To ensure the successful design and implementation of the ShopSmart platform, both functional and non-functional requirements were carefully analyzed and defined. These requirements serve as the foundation for the system's features, behavior, and overall performance.

**Functional Requirements**

Functional Requirements describe the core features and actions the system must perform to satisfy the end-users' needs. These include user registration, product browsing, order placement, role-based dashboards, and more. Each functional requirement is further divided into epics and user stories/sub-tasks to represent the expected behavior and user interactions with the system.

**Non- Functional Requirements**

Non-Functional Requirements define the quality attributes and operational capabilities of the system, such as security, usability, performance, scalability, and reliability. These characteristics are crucial to ensure a smooth, efficient, and secure user experience across various usage scenarios and growing user bases.

The following tables outline both the functional and non-functional requirements for the ShopSmart platform.

**Functional Requirements:**

| **FR No.** | **Functional Requirement (Epic)** | **Sub Requirement (Story / Sub-Task)** |
| --- | --- | --- |
| FR-1 | User Registration | Registration through Form |
|  |  | Registration through Gmail |
|  |  | Registration through LinkedIn |
| FR-2 | User Confirmation | Confirmation via Email |
|  |  | Confirmation via OTP |
| FR-3 | Product Browsing & Search | Filter by Category (Fruits, Vegetables, Dairy, etc.) |
|  |  | Sort by Price, Name, Rating |
|  |  | Keyword-based Search |
| FR-4 | Cart Management | Add to Cart |
|  |  | Update Quantity |
|  |  | Remove from Cart |
| FR-5 | Order Placement | Address Input |
|  |  | Choose Payment Method (COD) |
|  |  | Place Order |
| FR-6 | Order Tracking | View Order Status |
|  |  | Estimated Delivery Time |
| FR-7 | User Account Management | View Past Orders |
|  |  | Edit Profile Information |
|  |  | Change Password |
| FR-8 | Seller Product Management | Add New Product |
|  |  | Update/Delete Product |
|  |  | View Sales & Orders |
| FR-9 | Admin Management | Approve Seller Requests |
|  |  | Add/Remove Product Listings |
|  |  | Manage Users and Sellers |
| FR-10 | Authentication & Authorization | JWT-based Secure Login |
|  |  | Role-Based Access Control (Customer/Seller/Admin) |

**Non-Functional Requirements:**

| **FR No.** | **Non-Functional Requirement** | **Description** |
| --- | --- | --- |
| NFR-1 | Usability | Intuitive UI with user-friendly navigation for all user roles |
| NFR-2 | Security | Data protection using JWT, password hashing, and HTTPS protocols |
| NFR-3 | Reliability | Ensures reliable operation even during high traffic or partial server failure |
| NFR-4 | Performance | Fast API responses; optimized images and data for low-latency browsing |
| NFR-5 | Availability | 24/7 access to services with minimal downtime and failover support |
| NFR-6 | Scalability | Easily scalable architecture (MERN) to handle future growth and feature load |