Requirement Analysis

Solution Requirements (Functional & Non-functional)

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| Date | 19 June 2025 |
| Team ID | LTVIP2025TMID51764 |
| 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:

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| --- | --- | --- |
| 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  No. | Functional Requirement (Epic) | Sub Requirement (Story / Sub-Task) |
| 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:

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| --- | --- | --- |
| 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 lowlatency 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 |