**Requirements Gathering**

**1. Stakeholder Analysis**

Identifying key stakeholders and understanding their needs is essential for ensuring that the project meets expectations. The main stakeholders include:

* **Supply Chain Managers**: Require insights to optimize logistics and inventory management.
* **Operations Teams**: Need real-time data to improve efficiency and reduce delays.
* **Finance Department**: Interested in cost reduction and profitability improvements.
* **IT & Data Teams**: Responsible for data collection, integration, and security.

**2. User Stories & Use Cases**

User stories and use cases illustrate how different users will interact with the system:

* **User Story 1**: As a supply chain manager, I want to track inventory levels in real-time so that I can prevent stockouts and overstocking.
* **User Story 2**: As a logistics coordinator, I need predictive insights into lead times to optimize shipping routes.
* **User Story 3**: As a financial analyst, I want to analyze cost trends to improve budgeting and resource allocation.
* **User Story 4**: As a data analyst, I need access to cleaned and structured supply chain data to generate actionable insights.
* **User Story 5**: As a decision-maker, I want to visualize key supply chain metrics through interactive dashboards for strategic planning.

**3. Functional Requirements**

The system should include the following features and functionalities:

* **Data Collection & Integration**: Automated gathering and preprocessing of supply chain data from multiple sources.
* **Inventory Management**: Tracking stock levels, replenishments, shortages, and availability.
* **Demand Forecasting**: Machine learning-based predictions for future product demand.
* **Performance Dashboards**: Real-time visualization of key supply chain metrics using Power BI or Tableau.
* **Risk Assessment & Alerts**: Automated alerts for low stock, delayed shipments, and cost deviations.
* **Optimization Strategy Module**: Recommendations for improving supply chain efficiency and reducing operational costs.

**4. Non-functional Requirements**

The project must also meet certain performance, security, and usability standards:

* **Performance**: The system should process large datasets efficiently and provide insights in real time.
* **Security**: Data encryption and role-based access control to protect sensitive supply chain information.
* **Usability**: User-friendly interface with intuitive dashboards and reports.
* **Reliability**: The system should ensure high availability with minimal downtime.
* **Scalability**: The ability to handle increasing amounts of supply chain data as business operations expand.