



**S. B. JAIN INSTITUTE OF TECHNOLOGY,
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Practical No. 10

Aim: Post Lab (Construct the SRS(Software Requirement Specification) for Supply Chain Management System.

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AIM: Post Lab (Construct the SRS(Software Requirement Specification) for Supply Chain Management System.

OBJECTIVES:

- Automate and improve the efficiency of processes such as procurement, inventory management, order fulfillment, and logistics.
- Safeguard sensitive supply chain data with role-based access control and data encryption while ensuring high system availability.
- Design the system to handle increasing numbers of users, suppliers, and orders as the supply chain grows and evolves.

HARDWARE AND SOFTWARE REQUIREMENTS:

Hardware Requirements:

- **Processor:** Dual Core
- **RAM:** 1GB
- **Hard Disk:** >80

Software Requirements:

- **Operating System:** Windows
- **Word Document**

THEORY:

A **Supply Chain Management System (SCMS)** is a software application designed to manage, automate, and streamline various processes within a supply chain. The goal of the SCMS is to ensure that products move efficiently from suppliers to customers, minimizing delays and optimizing resources.

In today's highly competitive markets, managing a supply chain is complex, involving multiple players such as suppliers, warehouse managers, manufacturers, distributors, and customers. An SCMS addresses this complexity by providing a centralized platform where all parties can collaborate and communicate in real-time.

The system typically involves several key components:

- **Inventory Management:** Tracks inventory levels, sends restocking alerts, and automates reordering processes.
- **Order Fulfillment:** Manages the entire order lifecycle, from customer orders to shipment and delivery.
- **Supplier Management:** Maintains a database of suppliers, tracks their performance, and facilitates order placement and contract management.

- **Logistics and Shipping:** Integrates with logistics providers to manage and track shipments from dispatch to delivery.
- **Analytics and Reporting:** Provides insights into the supply chain's performance through real-time reports on key metrics like order fulfillment rates, stock levels, supplier performance, and transportation efficiency.

The SCMS also ensures:

- **Scalability:** The system can handle an increasing volume of transactions, users, and data as the supply chain grows.
- **Security:** Critical business data such as supplier contracts, inventory levels, and customer orders are encrypted and protected with role-based access control.
- **Reliability:** With high uptime requirements, the SCMS guarantees that operations are never disrupted due to system failures or downtime.

By providing end-to-end visibility across the entire supply chain, the SCMS ensures that businesses can reduce costs, avoid bottlenecks, improve delivery times, and enhance customer satisfaction.

OBSERVATION:

Software Requirement Specification For Supply Chain Management System

1.1 Introduction

1.1.1 Purpose

The purpose of this SRS is to outline the functional and non-functional requirements for a Supply Chain Management System (SCMS). This system will facilitate and optimize supply chain activities such as procurement, inventory management, supplier relationship management, order fulfillment, and logistics. The document serves as a detailed blueprint for developers, project managers, and other stakeholders involved in the development process.

1.1.2 Intended Audience

This SRS is intended for:

- **Project Managers:** Oversee the development and implementation of the SCMS.
- **Developers:** Responsible for the system's implementation.
- **Quality Assurance Team:** Ensures the system functions as expected.
- **End Users:** Supply chain managers, warehouse managers, suppliers, and logistics partners.

1.1.3 Scope

The SCMS will be a web-based platform designed to automate and streamline supply chain processes such as inventory tracking, order processing, supplier management, and real-time reporting. It will

support multiple user roles, including warehouse managers, suppliers, and logistics partners. The system aims to reduce delays, optimize resource utilization, and improve communication across the supply chain.

1.4 Definitions, Acronyms, and Abbreviations

- **SCMS:** Supply Chain Management System
- **ERP:** Enterprise Resource Planning
- **API:** Application Programming Interface

1.2 Overall Description

1.2.1 Product Perspective

The SCMS will be a centralized platform accessible through a web-based interface, offering real-time data and automation of supply chain activities. It will integrate with external systems such as ERP software and shipping APIs to facilitate smooth communication across various supply chain functions.

1.2.2 Product Features

- **Inventory Management:** Real-time tracking of inventory levels, stock alerts, and reorder automation.
- **Order Processing:** Automates order placement, fulfillment, and tracking.
- **Supplier Management:** Allows users to manage supplier relationships, contracts, and performance.
- **Logistics and Shipping:** Integration with logistics providers for real-time shipment tracking and delivery management.
- **Reporting and Analytics:** Generates reports on supply chain performance, inventory levels, order fulfillment, and logistics metrics.

1.2.3 User Characteristics

The system will cater to the following types of users:

- **Supply Chain Managers:** Manage the overall supply chain operations.
- **Warehouse Managers:** Oversee inventory and stock management.
- **Suppliers:** Manage orders and deliveries.
- **Logistics Partners:** Manage shipment and delivery tracking.

1.2.4 Operating Environment

The system will run on standard web browsers (Chrome, Firefox, Safari) and support both desktop and mobile devices. It will be hosted on a cloud-based infrastructure for scalability and reliability.

3. Specific Requirements

3.1 Functional Requirements

User Registration and Roles

- **FR1:** The system shall allow users to register with different roles such as supply chain manager, warehouse manager, supplier, and logistics partner.
- **FR2:** The system shall provide role-based access to different functionalities.

Inventory Management

- **FR3:** The system shall allow users to track real-time inventory levels.
- **FR4:** The system shall send alerts when stock levels are low.
- **FR5:** The system shall automate the process of reordering products when inventory is below a predefined threshold.

Order Management

- **FR6:** The system shall allow users to create, track, and fulfill orders.
- **FR7:** The system shall generate purchase orders automatically based on stock levels and demand.

Supplier Management

- **FR8:** The system shall maintain a database of suppliers, their contracts, and performance ratings.
- **FR9:** The system shall allow users to send orders and receive notifications about order status from suppliers.

Logistics and Shipping

- **FR10:** The system shall integrate with logistics APIs to track shipments and deliveries in real-time.
- **FR11:** The system shall notify users of shipment status changes and expected delivery times.

Reporting

- **FR12:** The system shall generate reports on inventory status, order fulfillment rates, and supplier performance.

3.2. External Interface Requirements

- **User Interface**

The system should provide an intuitive and responsive interface optimized for both desktop and mobile devices, allowing users to access their dashboard, reports, and notifications easily.

- **Hardware Interfaces**

The system will be hosted on cloud servers and will support access via internet-connected devices with standard configurations.

- **Software Interfaces**

The system shall integrate with external ERP systems, shipping APIs, and supplier databases to streamline supply chain operations.

- **Communication Interfaces**

The system shall support email and SMS notifications for critical updates such as low inventory alerts, order confirmations, and shipment tracking.

3.2 Non-Functional Requirements

Performance

- **NFR1:** The system shall respond within 2 seconds for typical user interactions.

Security

- **NFR2:** All user data, including inventory details, order information, and supplier contracts, shall be encrypted during transmission and storage.
- **NFR3:** The system shall implement role-based access control to protect sensitive data.

Reliability

- **NFR4:** The system shall provide 99.9% uptime to ensure the availability of critical supply chain functionalities.

Usability

- **NFR5:** The system shall have an easy-to-navigate interface, ensuring users can perform tasks such as placing orders or tracking shipments with minimal effort.

Scalability

- **NFR6:** The system should scale to accommodate an increasing number of users, orders, and inventory items without a degradation in performance.

4. System Models and Diagrams

4.1 Use Case Diagram

- **Actors:** Supply Chain Manager, Warehouse Manager, Supplier, Logistics Partner, Customer.
- **Use Cases:** Manage Inventory, Place Orders, Track Shipments, Approve Orders, Generate Reports, Review Supplier Performance.

4.2 Data Flow Diagram (DFD)

- **Entities:** Customer, Supplier, Logistics Partner, Warehouse Manager.
- **Processes:** Inventory Management, Order Processing, Shipment Tracking, Reporting.

4.3 Sequence Diagram (Order Fulfillment)

- **Actors:** Supply Chain Manager, Supplier, Warehouse Manager, Logistics Partner.
- **Steps:** Place order → Send to supplier → Inventory update → Shipment → Notify Manager.

4.4 Activity Diagram (Supply Chain Workflow)

- **Activities:** Place Order → Approve → Notify Supplier → Update Inventory → Monitor Shipment → Receive Goods.

4.5 State Diagram (Order Lifecycle)

- **States:** Created → Approved → Sent to Supplier → Processed → Shipped → Delivered.

4.6 Class Diagram (Inventory & Order Management)

- **Classes:** Order, Inventory, Supplier, Shipment.
- **Relationships:** Order interacts with Inventory and Supplier, Shipment tracks delivery.

4.7 ER Diagram

- **Entities:** Order, Inventory, Supplier, Customer, Shipment.
- **Relationships:** Orders contain Inventory items, processed by Suppliers, tracked via Shipments.

5. Assumptions and Dependencies

- The system relies on third-party logistics and shipping APIs for real-time tracking.
- The system assumes that users have internet access and compatible devices.
- Compliance with industry standards (such as data protection laws) is assumed.

CONCLUSION:

This SRS outlines the key functional and non-functional requirements for a Supply Chain Management System (SCMS). The system will streamline supply chain operations, improve efficiency, and ensure real-time visibility into all critical processes. By adhering to these specifications, the development team can ensure that the system meets user expectations and facilitates seamless supply chain management.

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