Problem Definition & Design Thinking

Title: Supply Chain Management

Problem Statement:

Modern supply chain systems often face challenges such as lack of real-time visibility, inefficient inventory management, delayed deliveries, and poor coordination among stakeholders (suppliers, manufacturers, distributors, and retailers). These issues lead to increased operational costs, reduced customer satisfaction, and loss of competitive advantage.

To address these challenges, there is a need for a robust and user-friendly Supply Chain Management application that enables real-time tracking, automated inventory updates, demand forecasting, and efficient communication across all nodes of the supply chain. The application should support data-driven decision-making, minimize manual processes, and provide end-to-end transparency for improved efficiency and responsiveness.

Target Audience:

- Manufacturers needing real-time insights into production, inventory, and distribution.
- Suppliers and vendors requiring efficient communication and order updates.
- Distributors and logistics companies focused on delivery tracking and route optimization.
- Retailers aiming to improve inventory accuracy and avoid stockouts or overstocking.
- Warehouse managers looking for better stock movement and order fulfillment tools.

Objectives:

- To improve coordination and communication among suppliers,manufacturers,distributors, and retailers.
- To provide real-time visibility and tracking across all stages of the supply chain.
- To automate inventory management and reduce manual errors.
- To ensure transparency and traceability of goods throughout the supply chain.

Design Thinking Analysis:

Emphasize:

The main objective is to enhance real-time visibility, streamline communication, and automate key processes across the supply chain. The application aims to reduce operational costs, improve demand forecasting, and ensure transparency from procurement to delivery. It also supports data-driven decision-making, faster order fulfillment, and seamless integration with existing enterprise systems, while providing scalability for business growth.

Key User Concerns:

- Data accuracy and reliability – Users need real-time, error-free data for effective decision-making.
- System usability – The interface should be user-friendly and intuitive for all roles.
- Integration capabilities – Compatibility with existing systems like ERP, CRM, and accounting tools is essential.
- Data security and privacy – Protection of sensitive business information is a top priority.
- Scalability – The system should handle growing data volumes and business expansion smoothly.

Define:

A Supply Chain Management (SCM) application is a digital tool that helps businesses manage and optimize the flow of goods, information, and resources across the supply chain. It enables real-time tracking, efficient coordination, and better decision-making among all involved parties—from suppliers to customers.

Key Features Required:

- Real-time tracking of inventory, shipments, and orders.
- Automated inventory management to track stock levels and reorder supplies.
- Demand forecasting using data analytics and predictive models.
- Order processing and fulfillment for streamlined and faster operations.
- Mobile access for on-the-go tracking and updates.
- Security features for data protection and user privacy.

Ideate:

1. AI-powered Demand Forecasting to improve inventory planning.
2. Blockchain for Transparency ensuring traceability and reducing fraud.
3. IoT-enabled Real-time Monitoring for tracking shipments and conditions.
4. AI Chatbot for customer support and order tracking.

Brainstorming Results:

1. Centralized Data Hub for easy access to all supply chain data.
2. Automated Alerts & Notifications for critical events.
3. Route Optimization with AI to improve delivery efficiency.
4. Supplier Rating & Review System for reliable partner selection.
5. Blockchain Integration for secure, transparent transactions.

Prototype:

- Dashboard Overview for key metrics and performance visuals.
- Inventory Management to track stock levels and reorder automatically.
- Order Management for creating, tracking, and managing orders.
- Supplier & Vendor Management with profiles and performance tracking.
- Mobile-Friendly Interface for on-the-go access.

Key components of prototype:

1. User Interface (UI) for intuitive navigation.
2. Dashboard displaying real-time metrics and KPIs.
3. Inventory Management for tracking stock and automating reorders.
4. Order Management for creating and tracking orders.
5. Collaboration Tools for communication and task management.

Test:

A test of the SCM prototype would involve verifying that the interface is intuitive and users can easily navigate between modules like inventory, orders, and reports. It would also check if inventory levels update correctly, automatic reorder triggers work, and stock status is accurate in real time. Testing would ensure orders can be created, tracked, and updated with real-time status changes, and that shipment tracking shows accurate updates. Additionally, it would confirm that supplier profiles and performance tracking functions correctly, reports are generated based on real-time data, and the mobile version works smoothly. Finally, it would test user access control to ensure admins can securely manage roles and settings.

Testing Goals:

1. Ensuring the application provides an intuitive user experience for easy navigation across modules.
2. Ensuring logistics tracking provides real-time updates and accurate delivery estimates.
3. Verifying that the mobile version functions well and all features are accessible on mobile devices.
4. Ensuring the application performs under different conditions with reliable response times and minimal downtime.
5. Verifying that inventory management features (e.g., real-time updates, automated reorders) function accurately.