

Problem Definition & Design Thinking

Title: Supply Chain Management

Problem Statement:

- Supply chains today are under increasing pressure due to globalization, market volatility, and customer demands for speed and transparency. Businesses face frequent disruptions—from demand fluctuations to logistical delays—resulting in lost revenue and inefficiencies. Many small to mid-sized enterprises lack the advanced tools or expertise to optimize their supply chain in real time.
- The problem is how to enable companies, especially those without large budgets or specialized teams, to proactively manage and optimize their supply chain operations through an intelligent, responsive system that enhances efficiency, reduces waste, and improves decision-making.

Target Audience:

- Small and mid-sized manufacturing businesses
- Retailers and e-commerce businesses
- Logistics companies
- Supply chain managers and procurement teams

Objectives:

- To design an AI-driven system that provides real-time insights and optimizations for supply chain operations.
- To minimize disruptions by identifying risks and recommending preventative actions.
- To forecast demand more accurately using historical and real-time data.
- To streamline procurement, inventory, and logistics decisions.
- To provide a dashboard/interface that's accessible and easy to use.

Design Thinking Approach:

Empathize:

- Businesses often rely on outdated software or manual processes, leading to slow decision-making and reactive responses. Key user concerns include visibility into the supply chain, the ability to adapt quickly to changes, and making cost-effective decisions without needing an expert team.

Key User Concerns:

- Lack of real-time visibility into inventory and shipments
- Inaccurate demand forecasting
- Difficulty in coordinating with suppliers and logistics partners
- Complexity of using traditional ERP systems
- Fear of over-dependence on automated decisions without understanding the logic

Define:

- The solution should provide an AI-powered assistant that gathers and analyzes supply chain data—inventory levels, demand patterns, supplier lead times, and transportation data—to offer timely and actionable insights. The assistant should be able to alert users to potential risks (e.g., stockouts, delivery delays) and recommend optimizations in sourcing, stock management, and logistics routing.

Key Features Required:

- Real-time inventory and shipment tracking
- AI-based demand forecasting using historical and market data
- Supplier performance tracking and alternative sourcing suggestions
- Automated reorder and procurement suggestions
- User-friendly dashboard with visual analytics
- Secure data integration with ERP and logistics systems

Ideate:Potential ideas for the solution include:

- A supply chain assistant chatbot that alerts users to potential disruptions and suggests solutions.
- An integrated platform that connects with inventory systems, marketplaces, and shipping providers.
- A forecasting tool that uses machine learning to suggest order quantities and timelines.

Brainstorming Results:

- An interactive dashboard with key KPIs and predictive alerts
- Integration with IoT sensors or GPS trackers for real-time shipment monitoring

- Scenario simulation tools (e.g., “What if demand spikes 20%?”)
- Voice-command support for warehouse or field managers
- Automated email or WhatsApp alerts for critical supply chain events

Prototype:

A working model of a dashboard and chatbot that provides:

- Demand forecast graphs and reorder suggestions
- Real-time status of stock, shipments, and supplier performance
- Alerts and recommendations (e.g., “Supplier X delay detected. Recommend switching to Supplier Y.”)
- Interactive assistant to answer user queries (“What’s the ETA on shipment #123?”)

Key Components of Prototype:

- AI/ML model for forecasting and anomaly detection
- Integrated database with supply chain data (inventory, procurement, logistics)
- Natural language interface for ease of use
- APIs for integration with existing ERP or inventory systems

Test:

- The prototype will be tested with small and medium business users from logistics, retail, and manufacturing sectors. Their interaction with the assistant will be monitored to understand usability, trust in recommendations, and the effectiveness of AI-generated suggestions.

Testing Goals:

- Measure the system’s accuracy in forecasting and optimization
- Assess usability for non-technical users
- Gather feedback on trust, visual clarity, and recommended actions
- Identify improvements needed before full deployment