Power BI Project: Supply Chain Analysis Dashboard

1. Project Planning & Management

• Project Proposal:
Objective: Build an interactive Power BI dashboard to analyze supply chain performance, optimize inventory management, and improve supplier efficiency.

• Scope:
Supply Chain Performance: Track inventory turnover, supplier reliability, and logistics efficiency.
Supplier Insights: Evaluate on-time delivery rates and order accuracy.
Shipping Analysis: Assess transportation costs and delivery lead times.
Demand Forecasting: Analyze trends to improve stock planning.

• Project Plan:

Phase	Tasks	Duration	Milestone
1- Data Collection	Gather supplier, inventory, and logistics data	Week 1	Dataset finalized
2- Data Cleaning & Transformation	Handle missing supplier & shipping data	Week 2	Cleaned dataset ready
3- Data Analysis & Metrics	Analyze supplier performance, forecast accuracy	Week 3	Key insights identified
4- Dashboard Development	Build Power BI dashboards with supply chain KPIs	Week 4	First version of dashboard
5- Review & Refinement	Improve visuals, verify accuracy	Week 5	Final dashboard ready
6- Presentation & Documentation	Prepare findings, document analysis	Week 6	Project completed

• Dataset Overview:

Column Name	Description
Row ID	A unique identifier for each row in the dataset.
Order ID	A unique identifier for each supply chain order.
Order Date	The date when the order was placed.
Ship Date	The date when the order was shipped.
Ship Mode	The method used for shipping (e.g., Standard, Express).
Supplier ID	A unique identifier for each supplier.
Supplier Name	The name of the supplier.

Inventory Level	The current stock level of the product.
Lead Time	The time taken to fulfill an order from a supplier.
Logistics Cost	The total cost of transportation for the shipment.
Demand Forecast	Predicted demand based on historical trends.
On-Time Delivery Rate	Percentage of shipments delivered on time.
Order Fulfillment Time	The total time taken to fulfill an order.

- **TEAM Member**

Data collection : Mostafa , Ahmed

Data cleaning & transformation : Yasmin , Mostafa

Dashboard and development : Norhan , Mostafa

Data analysis and metrics : ahmed , Yasmin

Presentation & Decomentation : Norhan , ahmed

- **KPIs:**
- Inventory Turnover Rate
- Supplier On-Time Delivery Performance
- Demand Forecast Accuracy
- Order Fulfillment Time
- Transportation Cost Efficiency

- **Risk Assessment & Mitigation Plan:**
Risk: Data inconsistency → Solution: Implement data validation techniques.
Risk: Forecasting errors → Solution: Use advanced predictive analytics models.
Risk: Delays in supplier shipments → Solution: Monitor supplier KPIs and optimize l

2. Literature Review

- Feedback & Evaluation: Gather insights from supply chain managers, logistics experts, and procurement officers .

- Suggested Improvements: Optimize dashboard layout for supply chain KPIs, enhance filtering for supplier and inventory data.

- Final Grading Criteria: Evaluation will be based on data accuracy, visualization effectiveness, user interaction, and decision-making insights.

3. Requirements Gathering

- Stakeholder Analysis : Supply chain managers, inventory planners, logistics teams, and executives.

- User Stories:

  - "As a supply chain manager, I want to monitor inventory levels and supplier performance to optimize order fulfillment."

- Functional Requirements:

  - Inventory level tracking.

  - Supplier performance analysis.

  - Logistics and shipping efficiency tracking with filters for time, supplier, and region.

  - Interactive drill-down into stock levels and demand trends.

- Non-functional Requirements:

  - Dashboard must load within 5 seconds and ensure clear data visualization.

4. System Analysis & Design

- Problem Statement

  The goal is to create an automated Power BI dashboard to analyze supply chain operations. This will replace manual tracking, reduce delays, and provide actionable insights for optimizing inventory, supplier performance, and logistics.

- Use Case Diagram:

  - Admin: Manage data and update dashboards.

  - Business Users : View and interact with supply chain analytics.

  - Data Analysts: Perform detailed supply chain analysis and generate reports.

- Software Architecture:

  - Power BI dashboard for visualizing and interacting with supply chain data.

  - Data will be stored in a file-based system (CSV) and flow into Power BI for analysis, where it will be processed and displayed as interactive visuals.

- Database Design & Data Modeling

  - ER Diagram: Shows relationships between key entities (Suppliers, Orders, Inventory, Logistics).

  - Logical Schema: Defines tables (Orders, Suppliers, Inventory) and their relationships (e.g., linking Order ID and Supplier ID).

UI/UX Design & Prototyping

• Wireframes: Basic sketches showing the layout of the Power BI dashboard.

• UI/UX Guidelines: Use a professional color palette, interactive slicers, and readable

fonts.