A company operates in the retail industry and sources products from various suppliers to stock its inventory. The company aims to optimize its supply chain management process to ensure efficient order fulfillment, minimize stockouts, and reduce carrying costs. The database contains information about suppliers, products, orders, and shipments, which can be leveraged to improve supply chain operations.

**Objectives:**

● Analyze supplier performance and identify opportunities for collaboration.

● Optimize inventory levels to reduce stockouts and improve customer satisfaction.

● Streamline order fulfillment processes to enhance efficiency and reduce costs.

● Identify key trends and patterns in order and shipment data for strategic

decision-making.

**Database Schema:**

The database schema includes the following tables:

● **Suppliers Tables:** Stores information about suppliers, including supplier ID, name,

contact person, phone number, and email.\_number

email

● Products: Contains details about products, such as product ID, name, description, unit price, and quantity in stock.

product\_id (Primary Kroduct\_namescription

● Orders: Captures data related to customer orders, including order ID, product ID,

supplier ID, order date, quantity ordered, and order status.

\_status

● Shipments: Stores information about shipments, including shipment ID, order ID,

shipment date, delivery date, shipping company, and tracking number.

shipment\_id (Primary Key)

**Analysis and Recommendations:**

**1. Supplier Performance Analysis:**

● Analyze the total revenue generated by each supplier to identify top-performing

suppliers.

● Evaluate the average delivery time for shipments from different suppliers to assess

logistics efficiency.

● Identify suppliers with declining order trends or inconsistent performance over time for

further investigation and potential collaboration opportunities.

**2. Inventory Optimization:**

● Review inventory levels for each product and identify items with low stock levels (e.g.,

less than 50 units).

● Implement inventory forecasting models to predict demand and ensure optimal stock

levels to meet customer demand without excessive inventory holding costs.

● Establish reordering thresholds and automate replenishment processes to maintain

adequate inventory levels while minimizing stockouts.

**3. Order Fulfillment Process Improvement:**

● Analyze order status data to identify bottlenecks in the order fulfillment process.

● Evaluate the average shipment duration for each supplier and shipping company to

identify opportunities for streamlining logistics operations.

● Implement performance metrics to track order processing times and enhance operational

efficiency.

**4. Trend Analysis and Strategic Insights:**

● Conduct trend analysis to identify seasonal demand patterns and product popularity

trends.

● Identify correlations between order frequency, product categories, and customer

demographics to tailor inventory management strategies.order\_id (Foreign Key)

shipment\_date

delivery\_date

shipping\_company

tracking\_number