Power BI Skill Test for Supply Chain Risk Management

Company Background

GlobalLogiX is a multinational logistics and supply chain management company handling procurement, warehousing, and distribution for various industries. As the company expands, it faces increasing challenges related to supplier risks, shipping delays, and inventory management. The data analytics team at **GlobalLogiX** is responsible for providing actionable insights to mitigate supply chain risks and enhance operational efficiency.

To evaluate the team's proficiency in **Power BI**, GlobalLogiX has designed a **Skill Test** based on real-world supply chain challenges.

Case Study Objectives

The goal is to assess the ability to:

1. **Build interactive dashboards** to visualize supply chain performance.
2. **Analyze risk factors** affecting procurement and logistics.
3. **Use DAX and Power Query** to manipulate data for decision-making.
4. **Apply advanced Power BI concepts** such as drill-through, dynamic filters, and KPI tracking.

Data Context

GlobalLogiX maintains the following key datasets:

1. **Suppliers Table** – Contains supplier information, risk scores, and reliability ratings.
2. **Shipments Table** – Tracks all shipments, including delays and damages.
3. **Warehouses Table** – Details about stock levels, demand forecasts, and replenishment schedules.
4. **Orders Table** – Logs all purchase orders and delivery status.
5. **Returns Table** – Includes details about returned shipments, reasons, and costs incurred.

Beginner-Level Scenarios (Attempt all)

1. Identifying High-Risk Suppliers

The procurement team needs a report highlighting suppliers with a **risk score > 80** and a **reliability rating < 3** (on a scale of 1 to 5).

- **Task:** Create a **Power BI table visualization** to display high-risk suppliers with their risk scores and reliability ratings.

2. Delayed Shipments Analysis

GlobalLogiX wants to analyze shipment delays over the last **6 months** to identify trends.

- **Task:** Create a **line chart** showing the **monthly count of delayed shipments** over the last 6 months.

3. Inventory Stock Monitoring

The warehouse management team wants a **dashboard to track stock levels** of essential products.

- **Task:** Design a **bar chart** showing stock availability per warehouse. **Apply conditional formatting** to highlight warehouses where stock is below **minimum threshold levels**.

Intermediate-Level Scenarios (Attempt any 4)

4. Most Frequent Return Reasons

Returns impact supply chain efficiency and cost. The company wants insights into the top reasons for returned shipments.

- **Task:** Create a **Power BI pie chart** displaying the percentage distribution of return reasons.

5. On-Time Delivery Performance

A logistics analyst wants to compare **on-time vs. delayed shipments** across different regions.

- **Task:** Create a **stacked column chart** showing the percentage of on-time and delayed shipments for each region.

6. Supplier Performance Dashboard

Management wants a dashboard displaying supplier performance based on **delivery time, defect rates, and risk score**.

- **Task:** Build an **interactive supplier performance dashboard** in Power BI, allowing users to filter by region, risk score, and reliability rating.

7. Dynamic KPI Metrics for Supply Chain Efficiency

- **Task:** Use **DAX measures** to calculate and display **dynamic KPIs**, including:
  - **Average delivery time**
  - **Percentage of late shipments**
  - **Average supplier risk score**

8. Predicting Demand Based on Past Order Trends

- **Task:** Create a **forecast visualization** in Power BI to predict demand for the next quarter based on past order trends.

Advanced-Level Scenarios (Attempt any 1)

9. Supply Chain Risk Score Model

GlobalLogiX wants to assess overall supply chain risk by assigning a weighted score based on multiple factors.

- **Task:** Build a **composite risk score formula** in Power BI using DAX, considering:
  - **Supplier risk score (40%)**
  - **Shipment delay frequency (30%)**
  - **Defect rate (20%)**
  - **Inventory shortages (10%)**
- Display the risk score across regions in a **heatmap visualization**.

10. Logistics Cost Optimization Analysis

The finance team wants to analyze logistics costs and suggest **cost-saving measures**.

- **Task:** Create a **Power BI report** identifying trends in **transportation costs, warehouse storage expenses, and return costs**.

Debugging Challenges

1. Incorrect DAX Measure for Late Shipments Calculation

A Power BI report has a **flawed DAX measure** for calculating the percentage of late shipments:

```
LateShipmentPct =COUNTROWS(Shipments[Status] = "Delayed") / COUNTROWS(Shipments)
```

Question:

- Is this formula correct? If not, explain why and provide a corrected version.

2. Incorrect Relationship in Power BI Model

The Power BI model **incorrectly links Orders and Shipments tables** through the **Warehouse ID** instead of **Order ID**.

Question:

- Why is this incorrect? How would you correct the relationship?

Submission Guidelines

1. **Format:**
    - Submit a **Power BI (.pbix) file** containing all reports and dashboards.
    - Include **DAX formulas** in the Power BI file or a separate **.txt file**.
2. **Evaluation Criteria:**
    - **Accuracy** of reports and calculations.
    - **Efficiency** of DAX formulas.
    - **Use of best practices** (data modeling, relationships, and visual formatting).
3. **Presentation:**

- Candidates must **explain their Power BI dashboards** in a short **live demonstration**.
- The **skill test is incomplete without the presentation**.