

Supply Chain Risk Dashboard – Analytical Report

****Project Title:**** Supply Chain Risk Dashboard using Python and Power BI

****Author:**** Pankhuri Kumari

****Date:**** July 2025

1. Objective

This project aims to identify and visualize supply chain risks by analyzing delivery performance across suppliers and regions. The key objective is to uncover patterns in delays, risk scores, and regional inefficiencies, enabling stakeholders to make data-driven decisions for optimizing the supply chain.

2. Dataset Overview

- Data Source: Synthetic dataset generated using Python and Faker library
- Data Size: 5,000+ rows of order-level records
- Key Features:
 - Order_ID
 - Supplier_Name
 - Region
 - Order_Date, Delivery_Date
 - Delay_Days
 - Delay_Status (On Time / Delayed)
 - Risk_Score (1–100 scale)

3. Tools & Stack Used

- Data Preparation: Python (Pandas, NumPy, Faker)
- Data Visualization & Modeling: Power BI
- Measures Created: DAX-based calculations for Delay %, On-Time %, Average Delay, etc.

4. Methodology

1. Data Simulation:

- Python was used to create synthetic yet realistic supply chain order data.
- Delay days and risk scores were generated with random distribution logic.

2. Data Import & Cleaning:

- Data was loaded into Power BI via CSV.
- Data types were corrected (dates, categories, numerical).

3. Metric Development:

- DAX Measures created:
 - Total Orders
 - On-Time Orders
 - Delayed Orders
 - On-Time Delivery %
 - Avg Delay Days
 - Delay %

4. Dashboard Pages Created:

- Page 1: Delivery Performance Overview
- Page 2: Supplier Risk Dashboard
- Page 3: Regional Risk Insights

5. Key Insights

Page 1 – Delivery Performance Overview

- Around 23–30% of orders are delayed.
- Pie chart shows the ratio of On-Time vs Delayed deliveries.
- Avg delay hovers between 2–6 days, depending on supplier/region.

Page 2 – Supplier Risk Dashboard

- Top 5 suppliers with highest delay % and risk scores identified.
- Conditional formatting highlights red-flag suppliers.
- Some suppliers have consistent delays and high average delay days.

Page 3 – Region-wise Analysis

- Eastern and Southern regions face more delays.
- Map shows geographic hotspots for supply chain inefficiencies.
- Risk scores vary significantly across zones.

6. Recommendations

1. Supplier Evaluation:

- Initiate performance reviews with high-risk suppliers.
- Consider alternatives for those with consistent delays.

2. Regional Optimization:

- Investigate logistic issues in high-delay regions.

- Improve last-mile delivery tracking in East & South zones.

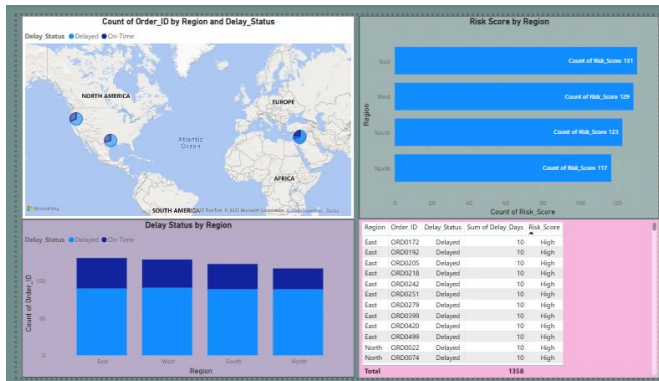
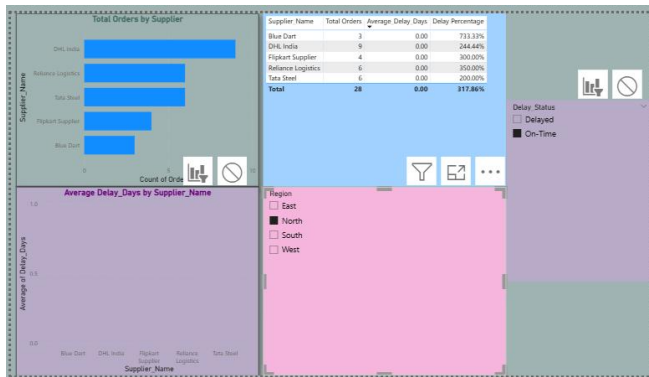
3. Predictive Alerting:

- Implement early warning system using average delay trends and risk scores.

7. Conclusion

This dashboard enables end-to-end visibility into supply chain performance by leveraging custom metrics and clean visual insights. It supports proactive decision-making for risk mitigation and operational efficiency.

8. Screenshots (PowerBI Page)





9. Future Scope

- Integrate real-time supplier data via APIs
- Forecast delivery delays using ML regression models
- Add dynamic filters and slicers for interactivity
- Deploy on Power BI Cloud for stakeholder access