

Vendor Performance Data Analytics

Business Problem & Case Study

1. Business Context

In modern organizations, procurement and operations depend heavily on multiple vendors to supply goods and services. Vendor performance directly influences operational efficiency, customer satisfaction, and overall profitability. However, many organizations lack a structured, data-driven approach to continuously evaluate vendor performance.

2. Problem Statement

The organization faces challenges in identifying high-performing and underperforming vendors due to fragmented data, manual reporting, and the absence of standardized performance metrics. This results in poor vendor negotiations, higher operational costs, inventory inefficiencies, and increased dependency on a limited set of vendors.

3. Business Objectives

- 1 Establish a standardized framework to measure vendor performance
- 2 Analyze sales, profitability, and inventory trends across vendors
- 3 Identify concentration risk caused by over-reliance on a few vendors
- 4 Enable management to take data-driven procurement decisions

4. Solution Overview

An end-to-end data analytics solution is designed using SQL, Python, and Power BI. Raw vendor transaction data is cleaned and transformed using SQL. Exploratory Data Analysis (EDA) and statistical evaluation are performed using Python. Interactive dashboards are created in Power BI to visualize key performance indicators and trends.

5. Analytics Workflow

Stage	Description
Data Ingestion	Load raw vendor sales and inventory data into database
Data Transformation	Clean, join, and aggregate data using SQL
Data Analysis	Perform EDA and trend analysis using Python
Visualization	Build interactive dashboards using Power BI
Reporting	Summarize insights and recommendations for stakeholders

6. Key Performance Metrics

- 1 Total Sales by Vendor
- 2 Profit Margin Percentage
- 3 Inventory Turnover Ratio

4 Vendor Contribution and Dependency Analysis

7. Business Insights

- 1 A small group of vendors contributes a disproportionately high share of revenue
- 2 Certain vendors show strong sales volumes but weak profitability
- 3 Slow inventory turnover highlights operational inefficiencies

8. Recommendations

- 1 Renegotiate contracts with low-margin vendors
- 2 Diversify vendor base to reduce concentration risk
- 3 Adopt dashboards for continuous performance monitoring

9. Conclusion

This case study demonstrates how structured data analytics enables organizations to move from reactive vendor management to proactive, insight-driven decision-making. By leveraging SQL, Python, and Power BI, businesses can significantly improve procurement efficiency and vendor accountability.