Power BI | End-to-End Supply Chain Performance Analysis

Project Objective

Developed a comprehensive Power BI dashboard to analyze demand performance, inventory efficiency, logistics reliability, and supplier performance.
The solution enables data-driven decisions to optimize working capital, improve service levels, and reduce operational risk.

Business Problems Addressed

- Suboptimal Fill Rate (below industry benchmark of 95%)
- Excess inventory and working capital lock-up
- Demand volatility across product categories
- Supplier performance inconsistency
- Logistics delay risk and SLA monitoring gaps

Solution Approach

Data Modeling

- Designed Star Schema architecture
- Created dedicated Date Table for time intelligence
- Managed many-to-many relationships via bridge tables
- Optimized cross-filter direction to ensure correct aggregation

Advanced DAX Implementation

- Fill Rate % (Weighted aggregation)
- Order Cycle Time (AVERAGEX + context transition)
- Inventory Turnover & DIO
- Stockout Rate %
- Contribution % using ALL
- Month-over-Month performance using DATEADD
- ABC Classification logic

Key KPIs Delivered

Area	KPI
Demand	Total Orders, Order Quantity
Service Level	Fill Rate %, OTIF
Inventory	Inventory Value, Turnover, DIO

Area	KPI
Availability	Stockout Rate
Logistics	Average Delay, On-Time %
Supplier	Spend %, Supplier Performance

Key Insights Generated

- Fill Rate stabilized at ~88%, indicating improvement scope.
- Inventory Turnover (0.47) is significantly below industry benchmark (6–10).
- DIO (~397 days) reveals high working capital lock-up.
- Low Stockout Rate (0.4%) suggests potential overstocking.
- A-class SKUs contribute disproportionately to total inventory value.
- Semiconductor demand shows higher volatility than electronics.
- Supplier performance variability identified.

Business Impact

- Identified excess inventory reduction opportunity.
- Highlighted working capital optimization potential.
- Improved visibility into service level performance.
- Enabled SKU prioritization using ABC classification.
- Provided actionable insights for logistics and supplier improvement.

Tools & Technologies

Power BI | DAX | Power Query | Star Schema Modeling | Excel

Skills Demonstrated

- Data Modeling & Relationship Management
- Advanced DAX & Context Handling
- Time Intelligence Calculations
- KPI Design & Business Metric Interpretation
- Supply Chain Analytics
- Insight Storytelling