



Inventory and Supply Chain Management Analysis

Author: Annu Tiwari

July 2025

• Project Overview •

This project analyzes inventory and supply chain management performance using key metrics and dashboards. The data includes regions, product categories, inventory levels, order status, units sold, transportation costs, lead times, and warehouse utilization.

To analyze inventory movement, order fulfillment, transportation cost, and operational efficiency across product categories and geographic regions.

• Dataset Overview •



Key Columns in the Dataset:

- Region – Geographical zone (e.g., North, South, East, West) for logistics and sales operations.
- Category – Type of product (Accessories, Clothing, Electronics, Furniture).
- Units Sold – Total number of units sold per year or entry.
- Inventory Level – Current stock available.
- Transportation Cost – Logistics expense incurred per region and category.
- Warehouse Utilization – Percentage use of available storage space.
- Lead Time – Average time taken (in days or percent) to fulfill orders.
- Order Status – Tracks the fulfillment state: Fulfilled, Pending, or Canceled.

- Backorders – Number of orders delayed due to stock unavailability.
- Sales Year – Year of transaction or record (2020, 2022, 2024).
- Inventory Turnover Ratio – How often inventory is sold and replaced.
- Days Sales of Inventory (DSI) – Average number of days items stay in inventory.

• Software Used •

1. MS OFFICE / EXCEL:



Excel

2. POWER BI:



Power BI

Data Cleaning

= Table.RemoveColumns(#"Inserted Parsed Date", {"Parse"})

| A ^B C Date | A ^B C Region | A ^B C Category | A ^B C Supplier | A ^B C Warehouse | A ^B C Order Status |
|-------------------------------|-------------------------|-------------------------------|---------------------------|-------------------------------|-------------------------------|
| ● Valid ● Error ● Empty | 100% 0% 0% | ● Valid ● Error ● Empty | 100% 0% 0% | ● Valid ● Error ● Empty | 100% 0% 0% |
| 1000 distinct, 1000 unique | Region | 1000 (100%) Valid | 0 (0%) Error | 0 (0%) Empty | 4 distinct, 0 unique |
| 1 14-01-2020 | East | Furniture | Supplier A | Warehouse 1 | Fulfilled |
| 2 15-11-2020 | South | Accessories | Supplier D | Warehouse 2 | Fulfilled |
| 3 16-04-2020 | North | Accessories | Supplier C | Warehouse 2 | Fulfilled |
| 4 17-04-2020 | South | Electronics | Supplier D | Warehouse 2 | Canceled |
| 5 18-04-2020 | North | Accessories | Supplier C | Warehouse 2 | Fulfilled |
| 6 19-04-2020 | South | Electronics | Supplier A | Warehouse 1 | Canceled |
| 7 20-04-2020 | West | Furniture | Supplier A | Warehouse 2 | Pending |
| 8 21-04-2020 | North | Accessories | Supplier C | Warehouse 1 | Canceled |
| 9 22-04-2020 | East | Clothing | Supplier C | Warehouse 3 | Fulfilled |
| 10 23-04-2020 | East | Clothing | Supplier A | Warehouse 1 | Fulfilled |
| 11 24-04-2020 | West | Clothing | Supplier D | Warehouse 3 | Fulfilled |
| 12 25-04-2020 | East | Furniture | Supplier A | Warehouse 1 | Fulfilled |
| 13 26-04-2020 | North | Accessories | Supplier D | Warehouse 1 | Fulfilled |
| 14 27-04-2020 | West | Clothing | Supplier A | Warehouse 3 | Fulfilled |
| 15 28-04-2020 | West | Clothing | Supplier C | Warehouse 3 | Fulfilled |
| 16 29-04-2020 | West | Electronics | Supplier A | Warehouse 2 | Pending |
| 17 | | | | | |

• Key Metrics and Insights •

- Warehouse Utilization: 34.08% (underused capacity)
- Inventory Turnover Ratio: 23.47
- Days Sales of Inventory (DSI): 15.56
- Sales peaked in 2022 with 198K units sold
- Transportation costs highest in North region
- Lead time longest for Accessories
- Orders: 838 Fulfilled, 248 Pending, 114 Canceled

- **Results and Visuals**



Overall Dashboard

Inventory And Supply Chain Management Analysis



34.08

Warehouse Utilization

15.56

Days sales of inventory

23.47

Inventory Turnover R...

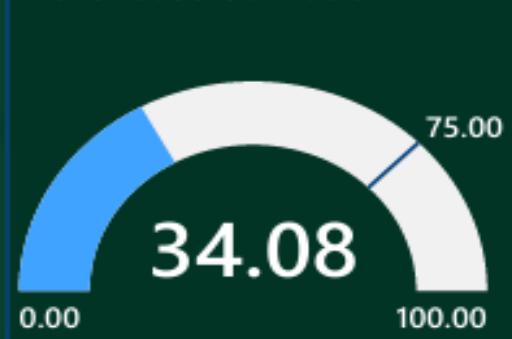
Region

All

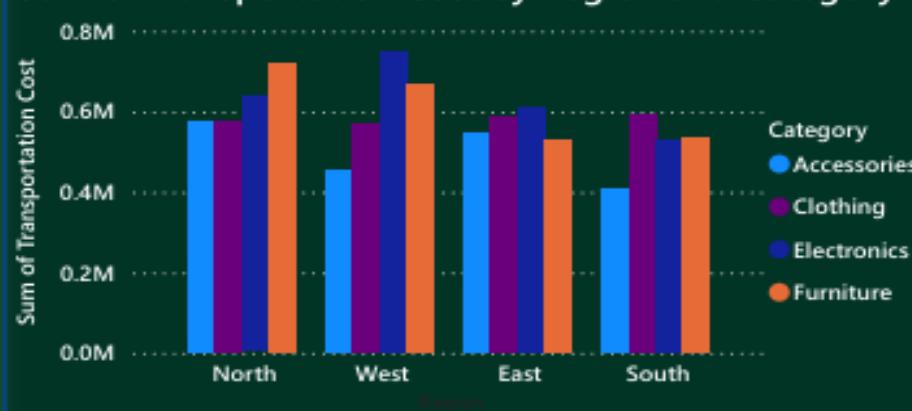
Category

All

Warehouse Utilization



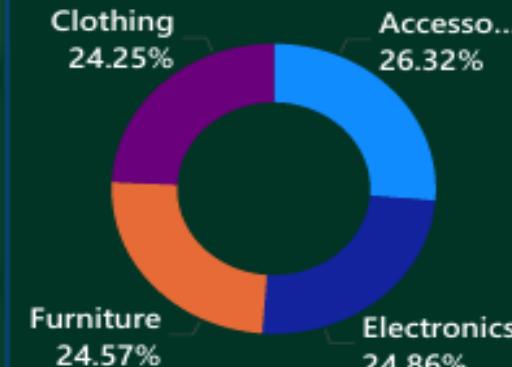
Sum of Transportation Cost by Region and Category



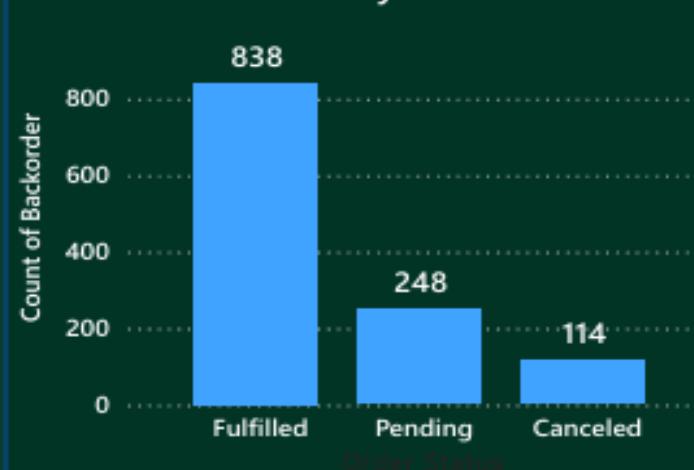
Sum of Units Sold by Year



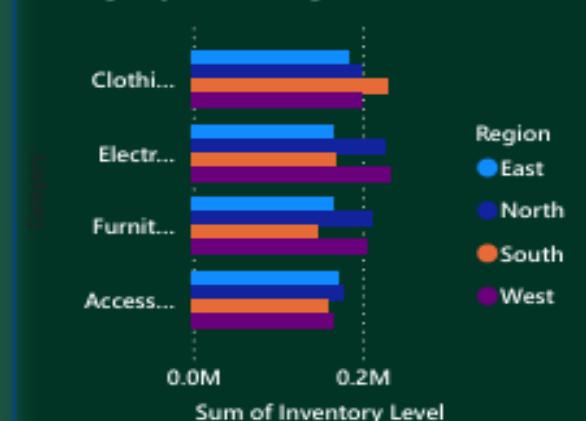
Average of Lead Time by Category



Count of Backorder by Order Status



Sum of Inventory Level by Category and Region



• Conclusion •

The analysis reveals that while the supply chain is performing efficiently in areas like inventory turnover and sales fulfillment, there are notable gaps that need addressing. The low warehouse utilization rate suggests potential inefficiencies in space planning and logistics. High transportation costs in the North region and longer lead times for accessories point to the need for more streamlined and responsive supply chain operations. Additionally, the presence of a significant number of pending and canceled orders indicates room for improvement in inventory availability and order processing. Optimizing warehouse space, balancing inventory across regions, and reducing lead times—especially for specific product categories—can significantly enhance overall supply chain effectiveness and customer satisfaction.

Thank You

Dashboard:

<https://app.powerbi.com/view?r=eyJrljoiZmllyYTkyYjEtMGQ4My00MTQ4LWIyYTEtYzIxYmU4Mjh0OTUxIiwidCI6IjFiOGQ5MjVhLTA3ZDQtNDdlNi1hODRILTJmYWNIiNjRIOdTdhOSJ9>



<https://www.linkedin.com/in/annu-tiwari-1343b0312>