Inventory & Sales Analysis for Multi-Warehouse Retail Operation

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1.Objective

Analyze sales performance, inventory activity, and delivery efficiency for a simulated multi-warehouse retail operation. Identify top-performing product categories, seasonal sales trends, and operational bottlenecks. Recommend actions to optimize inventory allocation and delivery processes.

2. Dataset Description

The dataset consists of 50 simulated orders containing the following fields:

- Order_ID: Unique identifier for each order
- Product_Category: Electronics, Apparel, Home Goods, Pet Supplies
- Order_Date: Date the order was placed
- Units_Ordered: Quantity ordered per transaction
- Unit_Price: Price per unit in USD
- Warehouse_Location: NJ, PA, or NY
- Delivery_Time_Days: Number of days from order to delivery
- Total_Sales: Calculated as Units_Ordered × Unit_Price

3. Methods

The analysis was performed using Microsoft Excel. Key steps included:

1. Importing the CSV dataset into Excel
2. Creating pivot tables to summarize revenue, units sold, and delivery times
3. Grouping dates to analyze monthly and seasonal trends
4. Creating visualizations to present findings
5. Interpreting results and making recommendations

4. Insights

- Home Goods generated $31,640 in sales, representing 29.3% of total revenue, and accounted for 30% of total units sold — the highest across all categories
- Pet Supplies ranked second with $31,589 in revenue and 336 units sold, indicating strong demand similar to Home Goods
- Order volumes peaked in January and September (both 138 units), suggesting potential seasonal demand spikes
- NY warehouse averaged the fastest delivery time at 6 days, while PA averaged 6.8 days, a difference of 12.5% that may affect customer satisfaction

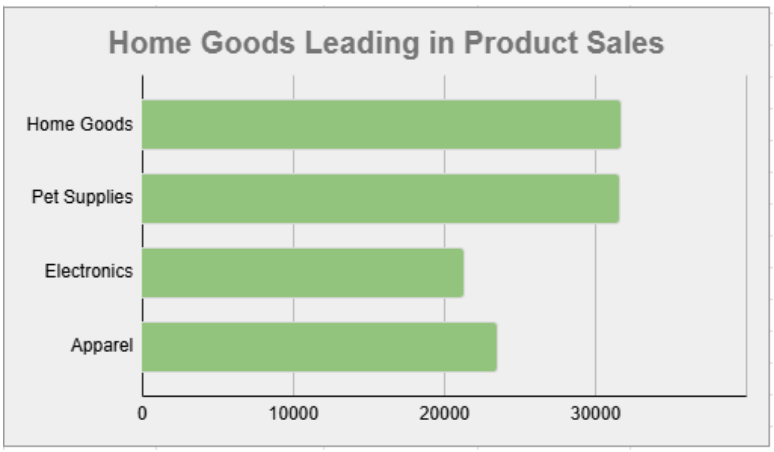
5. Recommendations

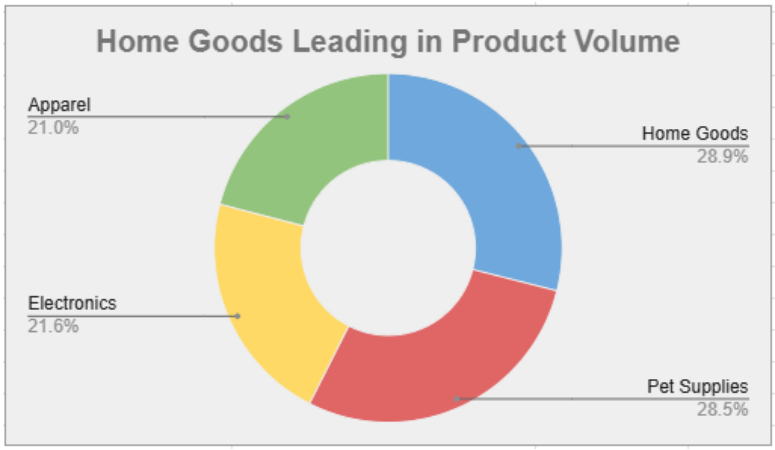
- Maintain optimal stock levels for Home Goods and Pet Supplies, increasing allocation ahead of peak months to meet projected demand
- Investigate drivers behind lower sales in March, focusing on promotional activity, stock availability, and market demand shifts
- Analyze PA warehouse operations to identify delivery bottlenecks, and pilot routing high-priority orders through NJ or NY to reduce delivery time

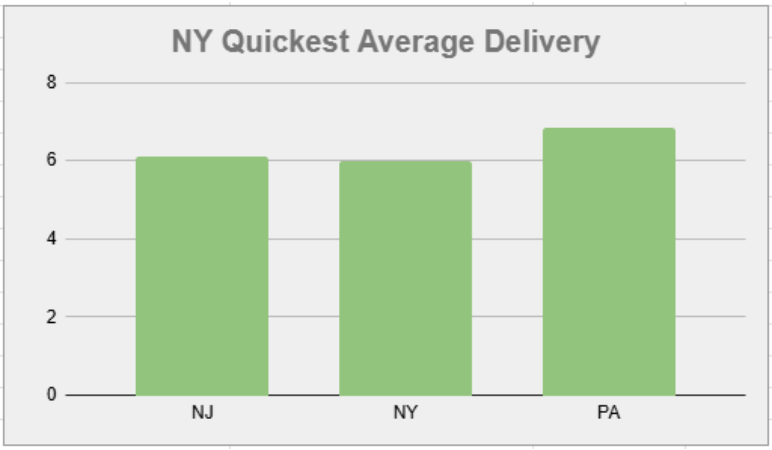
6. Conclusion

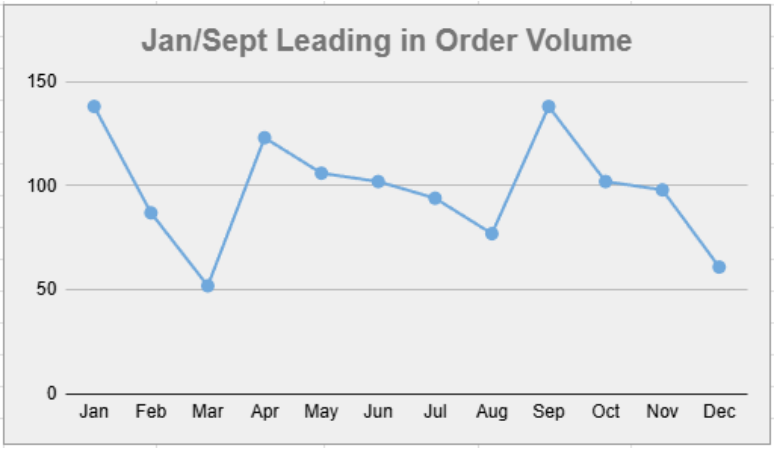
This analysis provides a snapshot of sales performance and operational efficiency across multiple warehouses. By focusing on high-performing categories, optimizing stock levels ahead of peak months, and addressing delivery delays in slower regions, the company can improve both customer satisfaction and revenue performance.

7. Visuals


Home Goods Leading in Product Sales
Home Goods
Pet Supplies
Electronics
Apparel
0
10000
20000
30000


Home Goods Leading in Product Volume
Apparel
21.0%
Home Goods
28.9%
Electronics
21.6%
Pet Supplies
28.5%


NY Quickest Average Delivery
8
6
4
2
0
NJ
NY
PA


Jan/Sept Leading in Order Volume
150
100
50
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec