

Capstone Project 4 E-Commerce

Comprehensive Analysis of Sales, Shipping, Customers, and Products

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Problem Statement

- Assume that the company is looking to create a customer base, enhancing the customer experience and recommend relevant products to the customers and increase revenue as per the information present.



Research Objective

- To generate a report with some important insights which can be helpful for the company to better understand their customers.

Data & Methodology

- Data Sources:
 - **purchase** table: (orders, prices, discounts, tax, shipping)
 - **customer** table: (demographics, loyalty metrics)
- Methodology:
 - Built KPIs with DAX measures (e.g., Revenue, Delay, Segments).
 - Segmented customers using percentile analysis (High/Med/Low).
 - Visualized results in 7 themed Power BI pages.

Sample DAX Measures used for Analysis in Power BI

Total Revenue	Average Shipping Delay	Customer Segment (Percentile Based)
<pre>Total Revenue = SUMX (purchase, purchase[price] * (1 - purchase[discount]) * purchase[quantity] * (1 + purchase[tax]))</pre>	<pre>Average Shipping Delay (Days) = AVERAGEX (FILTER (purchase, NOT ISBLANK (purchase[shipping_date]) && NOT ISBLANK (purchase[order_date])), DATEDIFF (purchase[order_date], purchase[shipping_date], DAY))</pre>	<pre>Customer_Segment = VAR CustRevenue = CALCULATE ([Total Revenue], FILTER (purchase, purchase[customer_id] = EARLIER (purchase[customer_id]))) VAR P80 = PERCENTILEX.INC (SUMMARIZE (purchase, purchase[customer_id], "Revenue", [Total Revenue]), [Revenue], 0.8) VAR P50 = PERCENTILEX.INC (SUMMARIZE (purchase, purchase[customer_id], "Revenue", [Total Revenue]), [Revenue], 0.5) RETURN SWITCH (TRUE(), CustRevenue >= P80, "High Value", CustRevenue >= P50, "Medium Value", "Low Value")</pre>

Dashboard Structure

- **Dashboard Pages (Power BI):**
 - 1 Executive Overview
 - 2 Customer Demographics
 - 3 Regional Performance
 - 4 Customer Value & Loyalty
 - 5 Shipping & Operations
 - 6 Product & Category Performance
 - 7 Recommendations & Strategy

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Executive Overview

Executive Overview

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276.95M

Total Revenue

50K

Total Orders

1000

Unique Customers

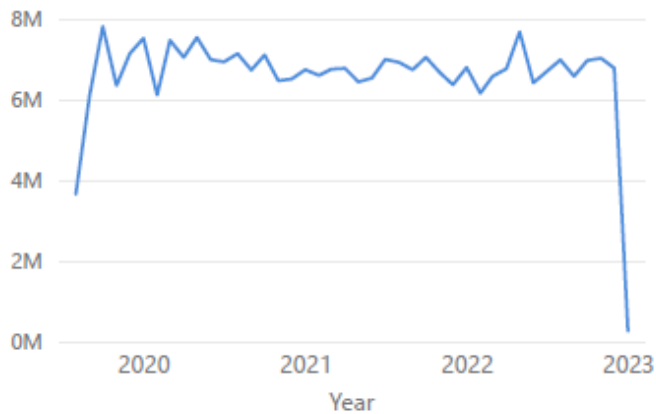
5.54K

Average Order Value

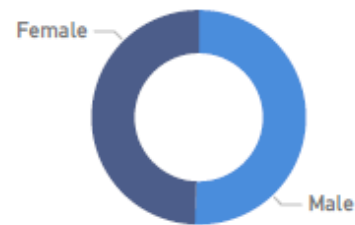
7.49

Average Shipping Delay (Days)

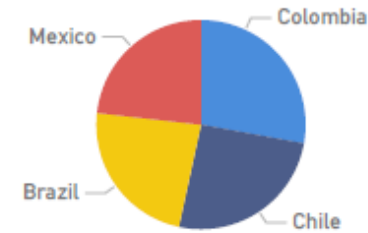
Total Revenue by Year and Month



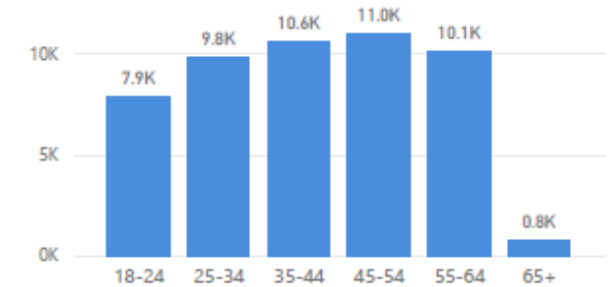
Total Orders by gender



Total Orders by country



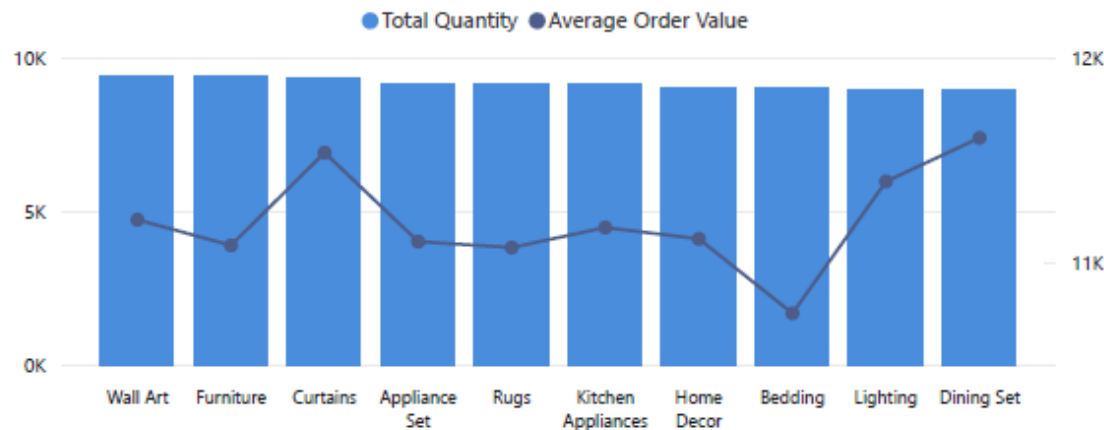
Total Orders by Age Band



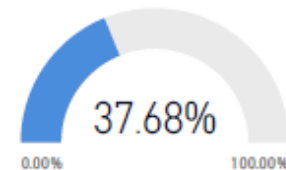
New Customers by Order Date



Total Quantity and Average Order Value by Product



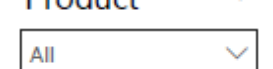
On-Time Delivery Rate



Date



Product



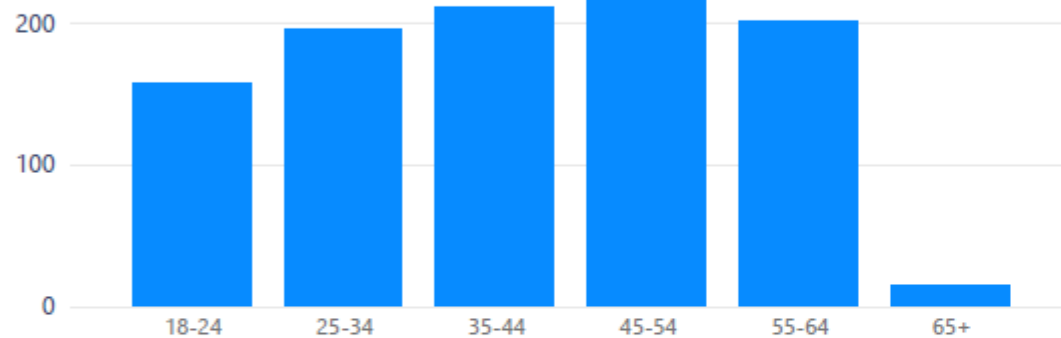
1 Executive Overview

- ✓ Steady revenue growth across the timeline.
- ✓ Seasonal spikes highlight peak demand periods.
- ⚠ Discounts reduce margins during high-sales months.

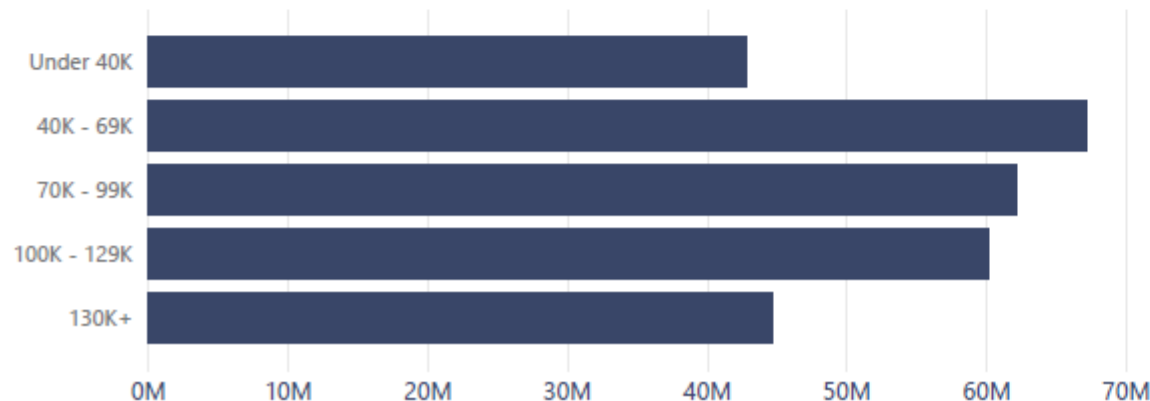
Customer Demographics

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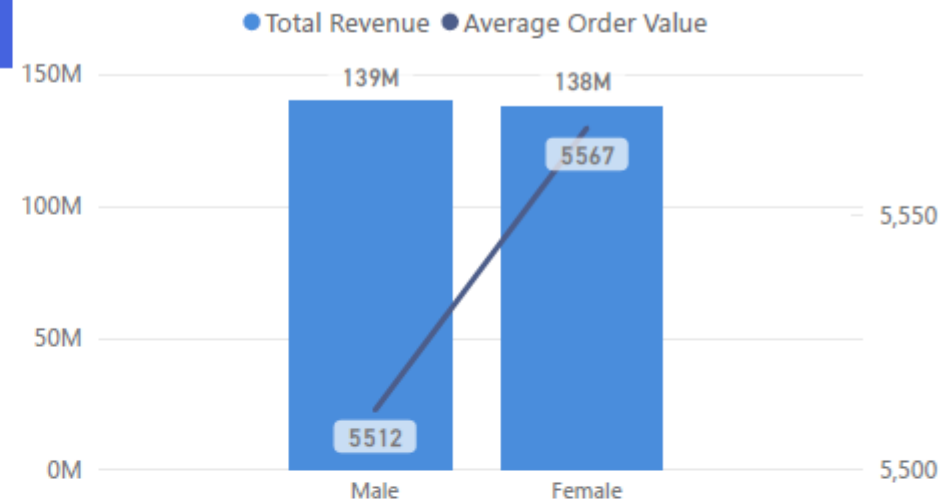
Unique Customers by Age Band



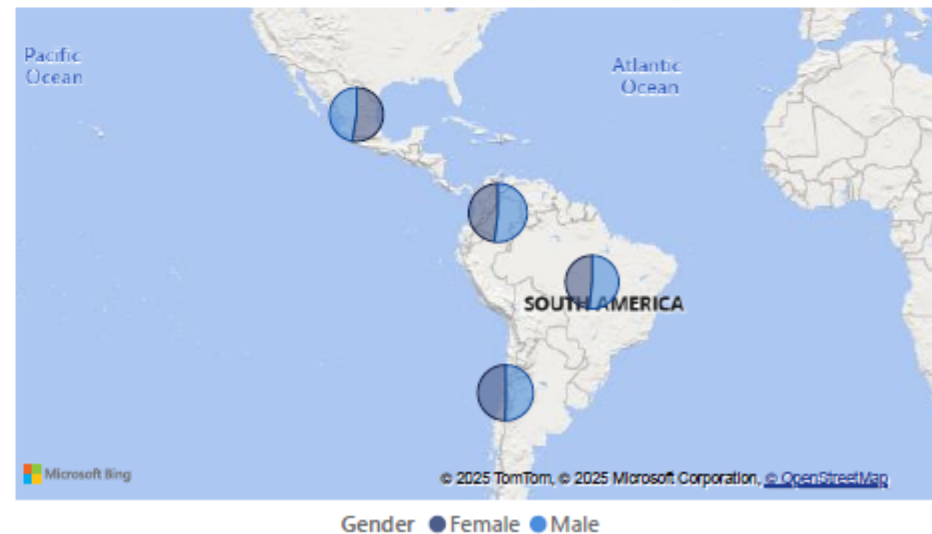
Total Revenue by Income Band



Total Revenue and Average Order Value by Gender



Total Revenue by Country



2 Customer Demographics

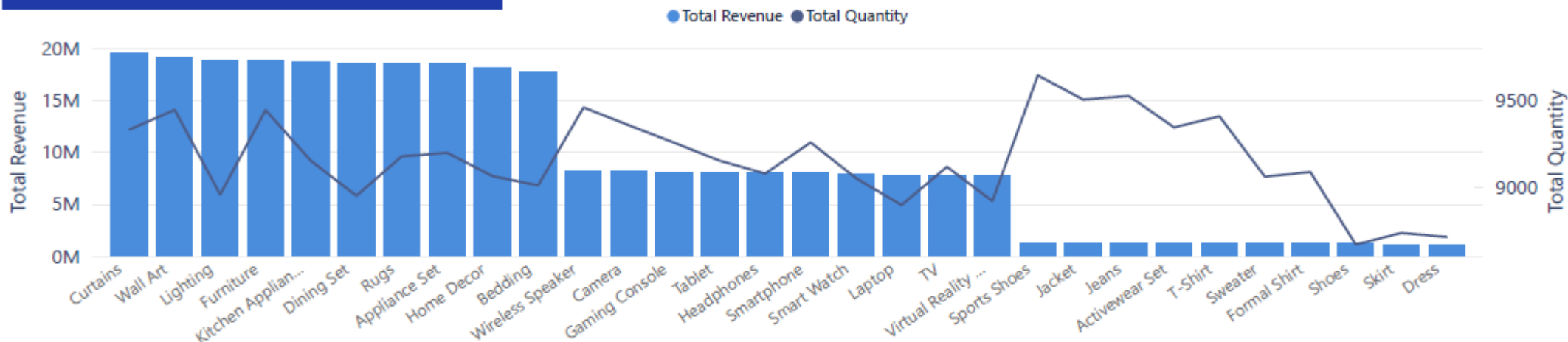
- ✓ Majority of customers are in the **25–40 age group**.
- ✓ Income distribution skewed towards **mid-income brackets**.
- ⚠ High-value customers cluster in specific segments → need focused loyalty efforts.

3 Regional Performance

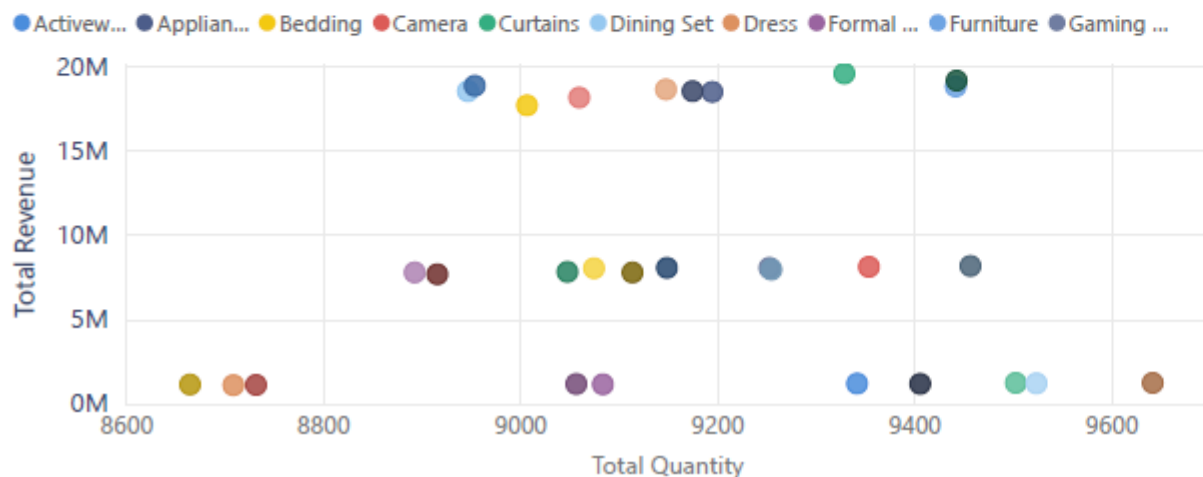
Sales & Order Behavior

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Total Revenue and Total Quantity by Product



Total Quantity and Total Revenue by Product



order_id	customer_id	product_name	Sum of quantity	Total Revenue
ODSHP00035	CS00035	Activewear Set	4	122.04
ODSHP00070	CS00070	Activewear Set	7	691.93
ODSHP00123	CS00123	Activewear Set	5	839.84
ODSHP00138	CS00138	Activewear Set	8	558.56
ODSHP00146	CS00146	Activewear Set	8	170.96
ODSHP00182	CS00182	Activewear Set	1	46.84
ODSHP00194	CS00194	Activewear Set	2	172.06
ODSHP00232	CS00232	Activewear Set	6	1,306.00
Total			274878	276,954,770.67

3 Regional Performance

- ✓ Certain regions (e.g., North/Metro) drive **majority of revenue**.
- ⚠ Some regions have **high order counts but low revenue** → possible low pricing or weaker product mix.
- ⚠ Opportunity to expand marketing in **underpenetrated regions**.

4 Customer Value & Loyalty

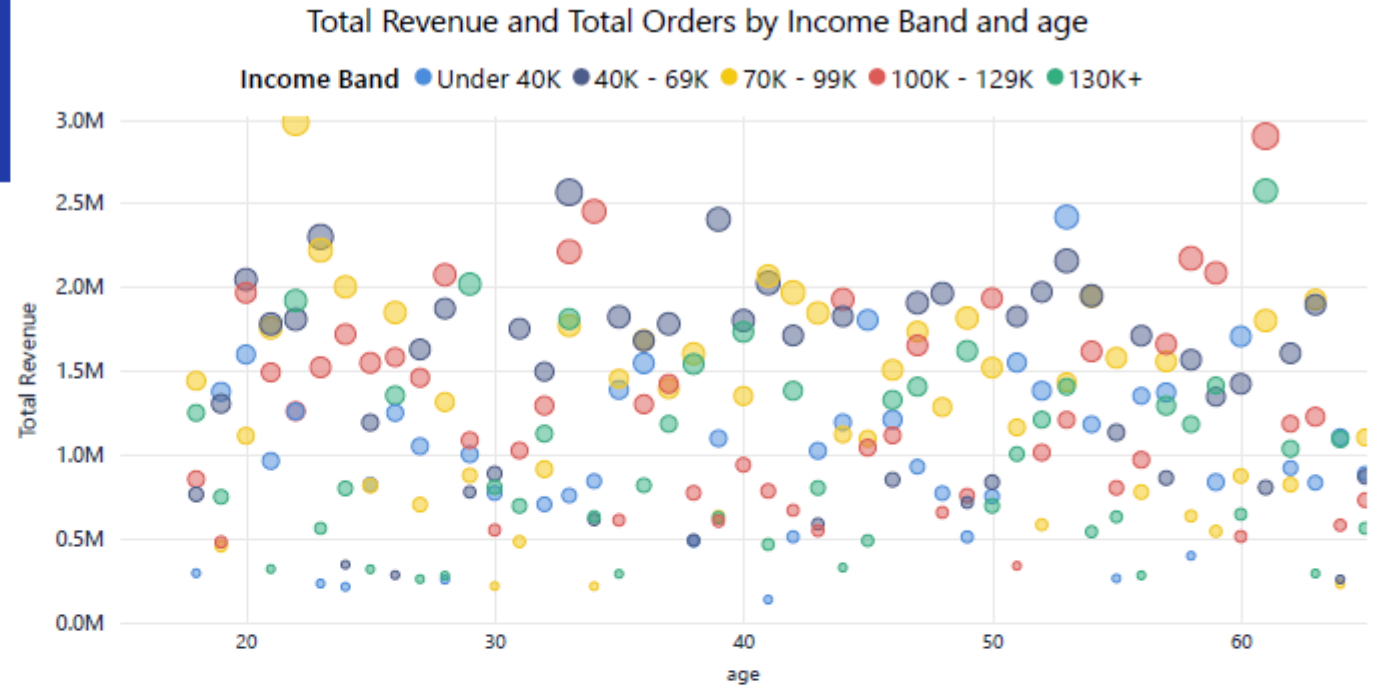
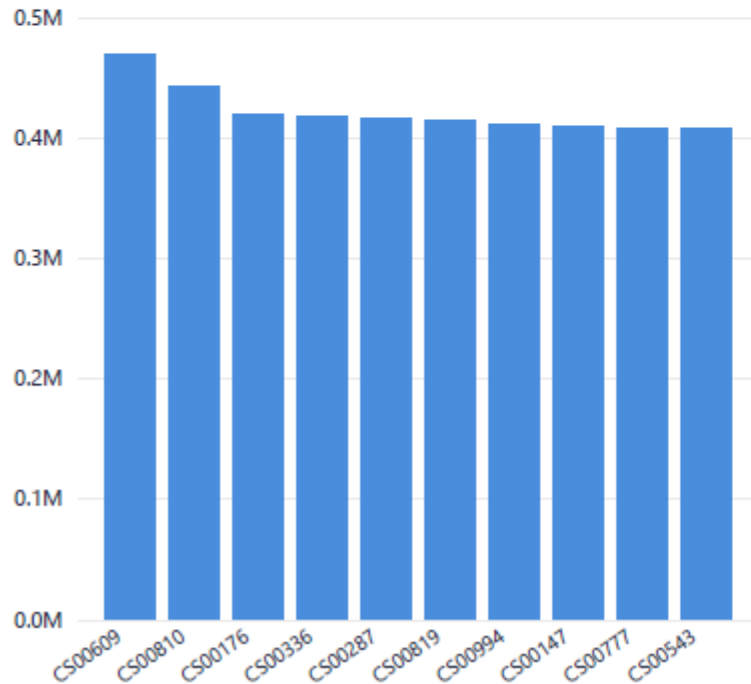
Customer Value & Loyalty

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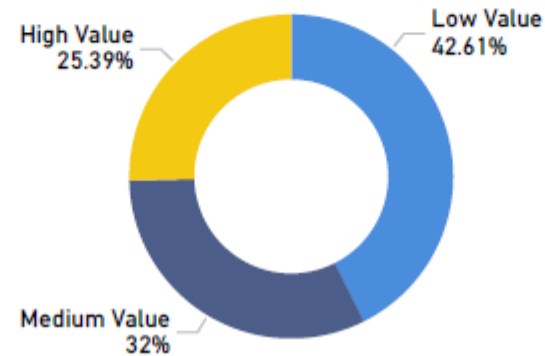
1.52%

% Revenue from Top 10 Customers

Total Revenue by Customer ID



Total Revenue by Customer_Segment



Segment	Definition
High Value	Top 20%: Revenue ≥ [P80]
Medium Value	50–80%: Revenue between [P50] and [P80]
Low Value	Bottom 50%: Revenue < [P50]

4 Customer Value & Loyalty

- ✓ Top 20% of customers contribute ~**80% of revenue**.
- ✓ High-value customers (gold segment) show consistent repeat purchases.
- ⚠ Most customers still fall in **low-value segment** (<50th percentile).
- ⚠ Loyalty rate lower than expected (few repeat buyers drive most revenue).

5 Shipping & Operations

Shipping and Operations

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7.49

Average Shipping Delay (Days)

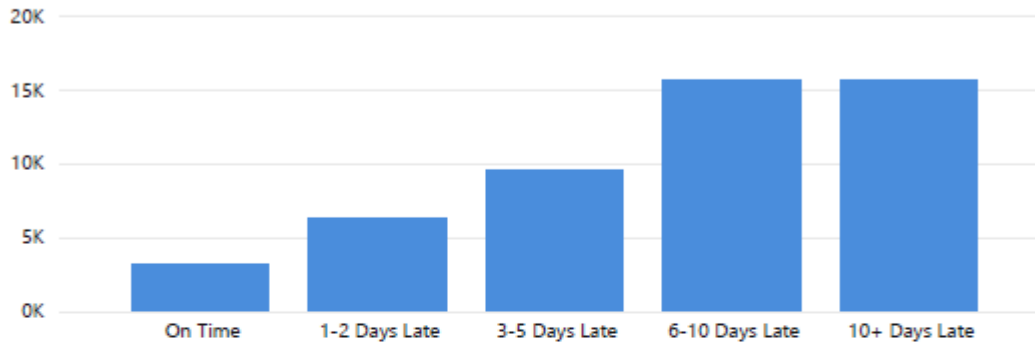
37.68%

On-Time Delivery Rate

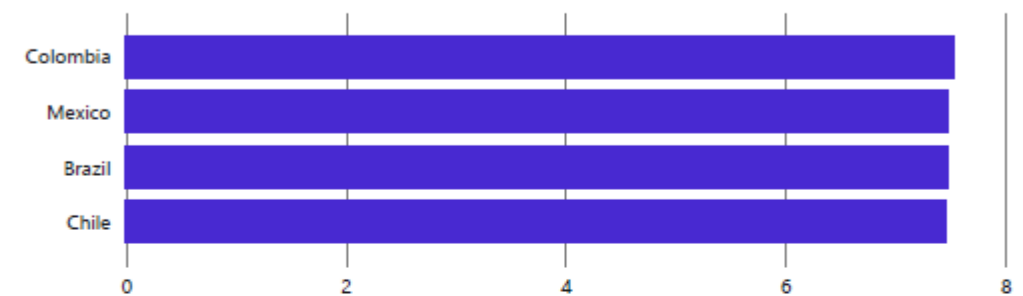
27.51

Average of Shipping Cost

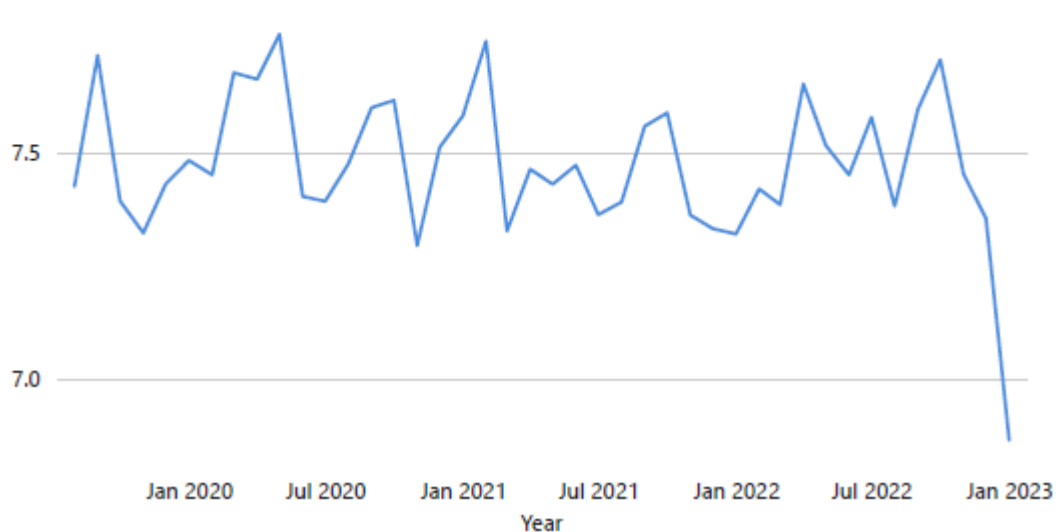
Total Orders by Delay Duration



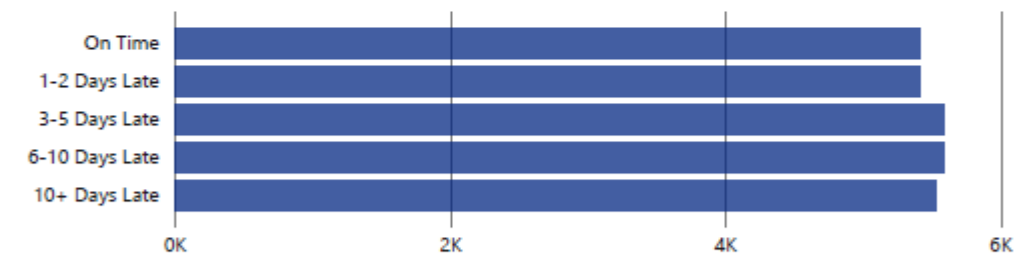
Average Shipping Delay (Days) by country



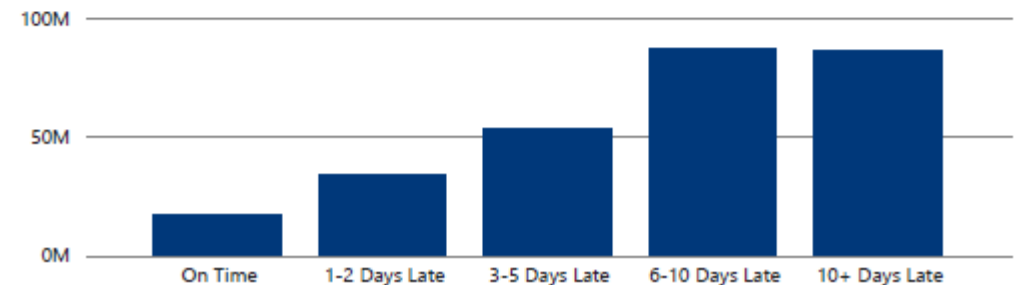
Average Shipping Delay (Days) by Year and Month



Average Revenue per Order by Delay Duration



Total Revenue by Delay Duration



5 Shipping & Operations

- ✓ Average shipping delay ~**2–3 days**.
- ✓ On-time delivery rate is **strong (>85%)**.
- ⚠ Shipping delays linked to **higher costs** in some cases.
- ⚠ No differentiation by shipping method → harder to optimize operations.

6 Product & Category Performance

Product & Category Performance

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78.05%

Top 3 Categories Revenue %

Electronics: 64K units

Top Category by Quantity

Home & Furniture: \$95M

Top Category by Revenue

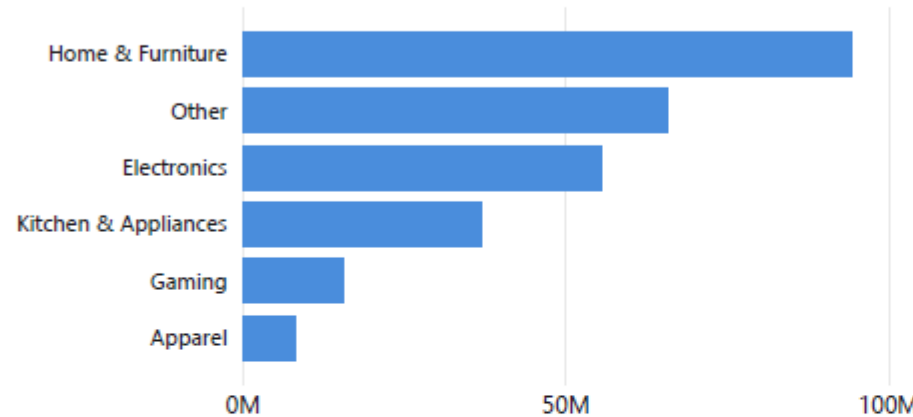
Top N

6

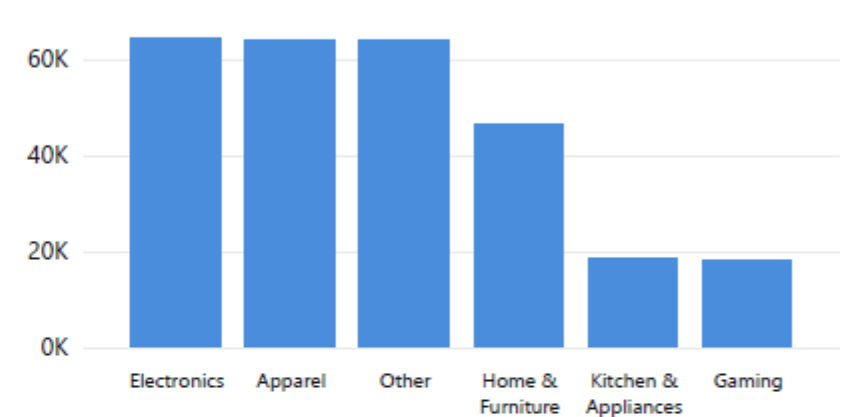
100.00%

TopN Revenue %

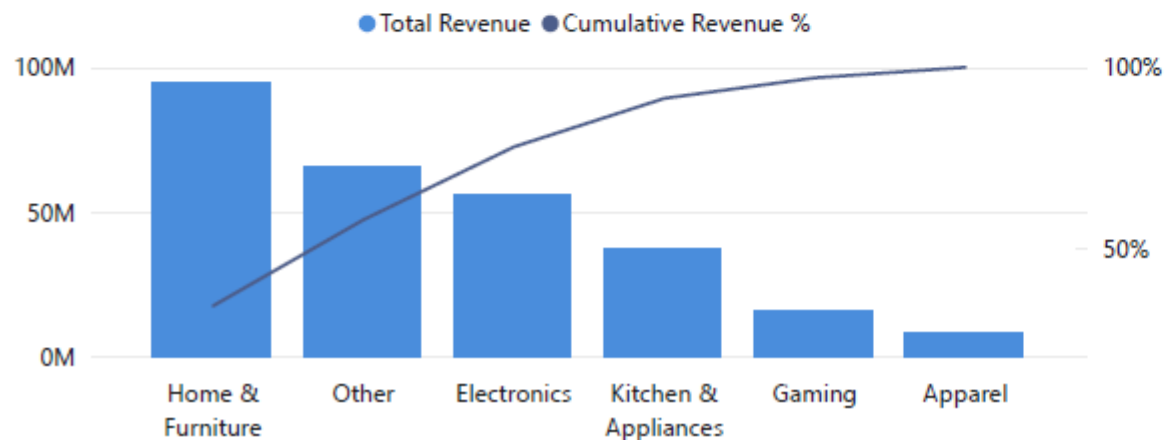
Total Revenue by Product Category



Total Quantity by Product Category



Total Revenue and Cumulative Revenue % by Product Category



Recommendations

- ✓ Top 3 categories (Home & Furniture, Other, Electronics) drive ~78% of revenue → focus marketing & inventory.
- ⚠ Apparel, Kitchen & Appliances, Gaming underperform → consider repositioning or phasing out.
- ✓ Diversify product mix to reduce dependency on top 3 categories.

6 Product & Category Performance

- ✓ Top 3 categories contribute **~70–80% of revenue**.
- ✓ High demand categories (e.g., Electronics, Home & Furniture).
- ⚠ Some categories consistently underperform (low revenue & low quantity).
- ⚠ Product mix heavily skewed → over-reliance on few categories.

7 Recommendations & Strategy

- **✓ Revenue Focus:** Top 3 categories (Home & Furniture, Other, Electronics) contribute ~78% of revenue → focus marketing & inventory on these.
- **⚠ Operations Risk:** Ontime delivery rate only ~38%, average delay ~7.5 days → need process improvements & faster shipping.
- **⚠ Customer Value:** Top 10 customers = ~1.5% of revenue → expand loyalty & retention programs to grow high-value customers.
- **✓ Growth Opportunity:** Mid-income (40-99K) segments & age bands 25-44 show strong revenue → target promotions here
- **✓ Diversification:** Underperforming categories (Apparel, Gaming, Kitchen & Appliances) need repositioning, bundle offers, or phase-out.
- **⚠ Regional Weak Spots:** Address regions with low sales conversion.



Thank you