

SUPERSTORE ANALYSIS

A DEEP DIVE INTO SUPERSTORE SALES, PROFIT,
AND CUSTOMER BEHAVIOR

Prepared by :
Hagar Abdelsalam



OVERVIEW

Superstore is a **retail supermarket chain** that offers a wide range of everyday products, including groceries, household items, electronics, and personal care. It provides customers with a convenient one-stop shopping experience, combining competitive pricing with quality service, both in-store and through its online shopping platform.

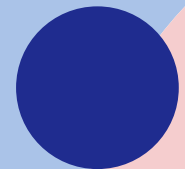
AGENDA

1. Python

Data Analysis and
Cleaning & some
KPI's

2. Power BI

Data Modeling and Key
Measures using DAX &
Data Visualization



PYTHON

- 1- OBJECTIVE
- 2- key performance indicators (KPIs)
- 3-Importing Required Libraries
- 4-Loading the Dataset
- 5-Data Audit
- 6-EXPLORATORY DATA ANALYSIS

PYTHON - OBJECTIVE

- What is the overall sales trend?
- Which are the Top 10 products by sales?
- Which are the Most Selling Products?
- Which is the most preferred Ship Mode?
- Which are the Most Profitable Category and Sub-Category?

PYTHON - KPIS

- Total Sales
- Total Orders
- Number of Unique Customers
- Total Profit
- Average Order Value (AOV)
- Average Profit Margin
- Top 5 Selling Products (by Quantity)
- Sales by Region
- Average Shipping Time
- Discount Impact (Average Discount on Profitable vs. Unprofitable Sales)

PYTHON - IMPORTING REQUIRED LIBRARIES

In Python, importing required libraries means bringing in external tools (modules or packages) that provide additional functionalities to the program. Instead of writing complex code from scratch, I can use these libraries to handle data efficiently.

Explanation of Libraries:

pandas: For loading, cleaning, and analyzing tabular data.

matplotlib & seaborn: For creating detailed visualizations

PYTHON - LOADING THE DATASET

Loading the dataset refers to the process of importing a data file into the Python environment so that I can analyze, clean, and manipulate it.

PYTHON - DATA AUDIT

The process of examining the dataset to understand its structure, quality, and key characteristics before performing analysis

1. Check the structure of the dataset
2. Preview the first few rows
3. concise summary of the dataset
4. Checking missing values
5. Generating descriptive statistics summary

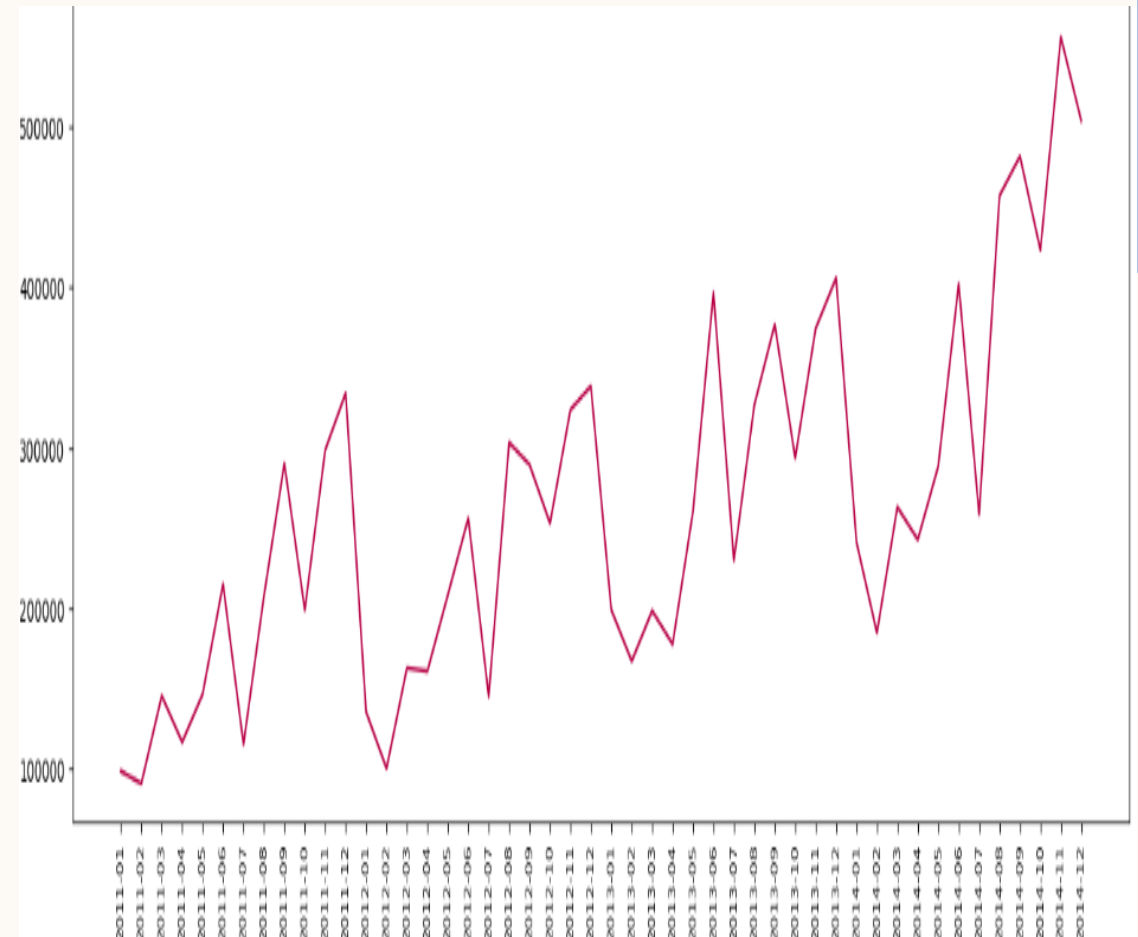
PYTHON - EXPLORATORY DATA ANALYSIS

WHAT IS THE OVERALL SALES TREND?



Insight from the Chart

- 1. Overall Growth Trend:**
From early 2011 to late 2014, there's a clear upward trend in the values (most likely revenue or sales). The store's performance appears to have improved significantly over time.
- 2. Seasonal/Monthly Fluctuations:**
There are regular dips and spikes throughout the years, which may suggest seasonal trends. This could mean the business has peak months (possibly around holidays or special sales periods).
- 3. High Volatility in Some Periods:**
Some months show sharp rises followed by quick drops this might indicate promotional events, product shortages, or external market factors.



PYTHON - EXPLORATORY DATA ANALYSIS

WHICH ARE THE TOP 10 PRODUCTS BY SALES?

Top-Selling Products Insight:

1. Smartphones Dominate Sales

1. Out of the **top 10 products**, **6 are smartphones**, indicating **strong customer demand** for mobile devices.
2. The **Apple Smart Phone, Full Size** is the **highest-selling product**, generating **\$86,935.78** in sales, making it a strong product leader.

2. Full-Size Smartphones Are Preferred

1. Products like **Apple, Cisco, Motorola, Nokia (Full Size)** are outperforming smaller/call-only versions (e.g., **Nokia with Caller ID**).
2. Customers likely prefer **modern, feature-rich phones**.

	sales
product_name	
Apple Smart Phone, Full Size	86935.7786
Cisco Smart Phone, Full Size	76441.5306
Motorola Smart Phone, Full Size	73156.3030
Nokia Smart Phone, Full Size	71904.5555
Canon imageCLASS 2200 Advanced Copier	61599.8240
Hon Executive Leather Armchair, Adjustable	58193.4841
Office Star Executive Leather Armchair, Adjustable	50661.6840
Harbour Creations Executive Leather Armchair, Adjustable	50121.5160
Samsung Smart Phone, Cordless	48653.4600
Nokia Smart Phone, with Caller ID	47877.7857

PYTHON - EXPLORATORY DATA ANALYSIS

WHICH ARE THE MOST SELLING PRODUCTS?

 Insight from the Chart

1-Top Product: Staples are the most abundant item at 876 units, suggesting high demand or overstock.

2-Quantity Range: Quantities range from 242 (Stanley pencil sharpener) to 876 (staples), a significant gap that might reflect inventory imbalances or varying demand.

3-Product Categories: The list includes filing/organization (file carts, index tabs), writing tools (pencil sharpeners), and fasteners (staples, paper clips), showing a focus on basic office functionality.

		quantity
product_name		
Staples		876
Cardinal Index Tab, Clear		337
Eldon File Cart, Single Width		321
Rogers File Cart, Single Width		262
Sanford Pencil Sharpener, Water Color		259
Stockwell Paper Clips, Assorted Sizes		253
Avery Index Tab, Clear		252
Ibico Index Tab, Clear		251
Smead File Cart, Single Width		250
Stanley Pencil Sharpener, Water Color		242

PYTHON - EXPLORATORY DATA ANALYSIS

WHAT IS THE MOST PREFERRED SHIP MODE ?

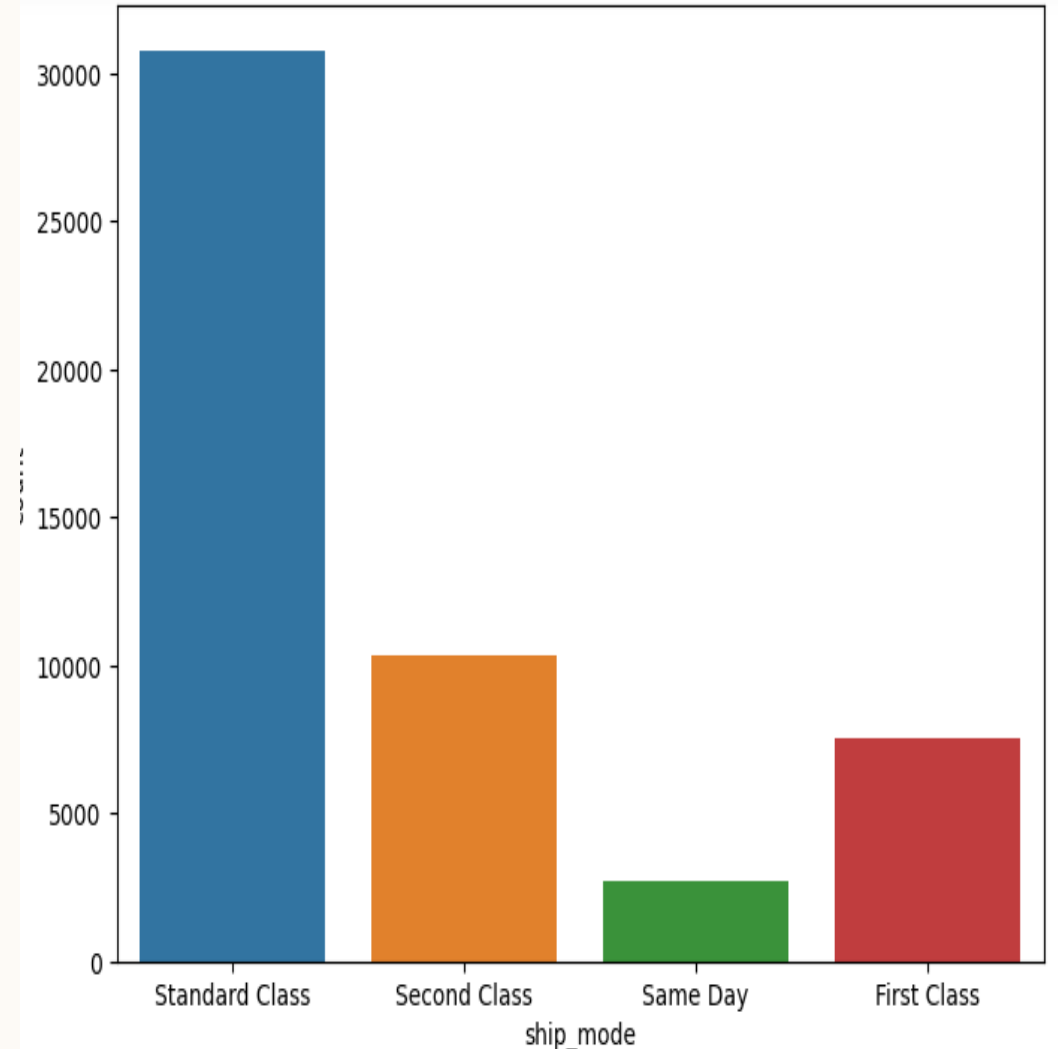


Insight from the Chart

1-Dominant Shipping Mode: Standard Class is the most frequently used shipping mode, with a count approaching 30,000 orders. This suggests customers prefer or default to this cost-effective option.

2-Customer Behavior: The heavy skew toward Standard Class suggests that most customers prioritize cost over speed, or that Standard Class meets their delivery needs adequately.

3-Business Implication: The low usage of Same Day and First Class might indicate either high costs deterring customers or lack of urgency in orders. The business could explore promoting faster shipping options or optimizing Standard Class delivery to maintain customer satisfaction.



PYTHON - EXPLORATORY DATA ANALYSIS

WHICH ARE THE MOST PROFITABLE CATEGORY AND SUB-CATEGORY?



Insight from the Chart

- Focus on expanding the Technology category, especially Copiers and Phones, to maximize profits.
- Investigate the loss in Tables—consider discontinuing unprofitable lines, renegotiating supplier costs, or adjusting pricing.
- Office Supplies like Labels and Fasteners might benefit from cost optimization or bundling with higher-margin items to boost profitability.

category	sub_category	profit
Technology	Copiers	258567.54818
	Phones	216717.00580
	Accessories	129626.30620
	Machines	58867.87300
Office Supplies	Appliances	141680.58940
	Storage	108461.48980
	Binders	72449.84600
	Paper	59207.68270
	Art	57953.91090
	Envelopes	29601.11630
	Supplies	22583.26310
	Labels	15010.51200
	Fasteners	11525.42410
Furniture	Bookcases	161924.41950
	Chairs	141973.79750
	Furnishings	46967.42550
	Tables	-64083.38870

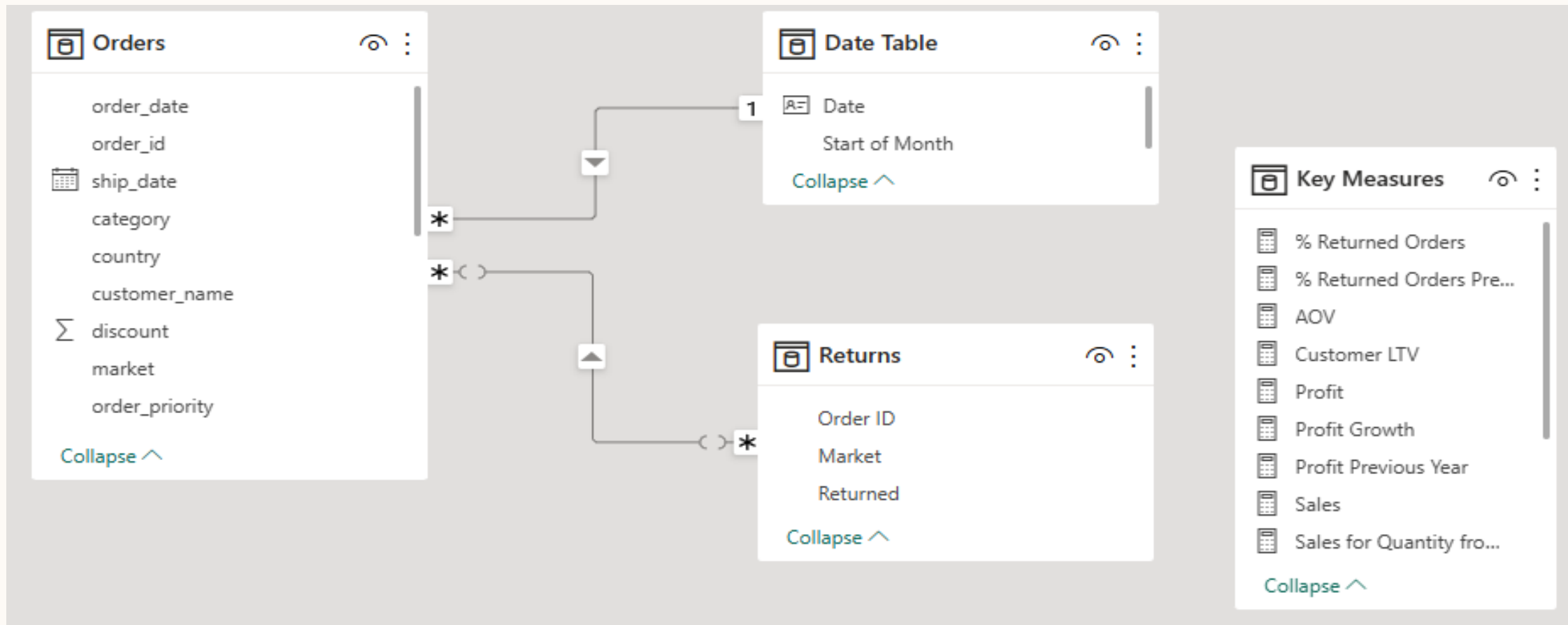
POWER BI

- 1- Data Modeling
- 2- Key Measures using DAX
- 3- Data Visualization

POWER BI - DATA MODELING

16

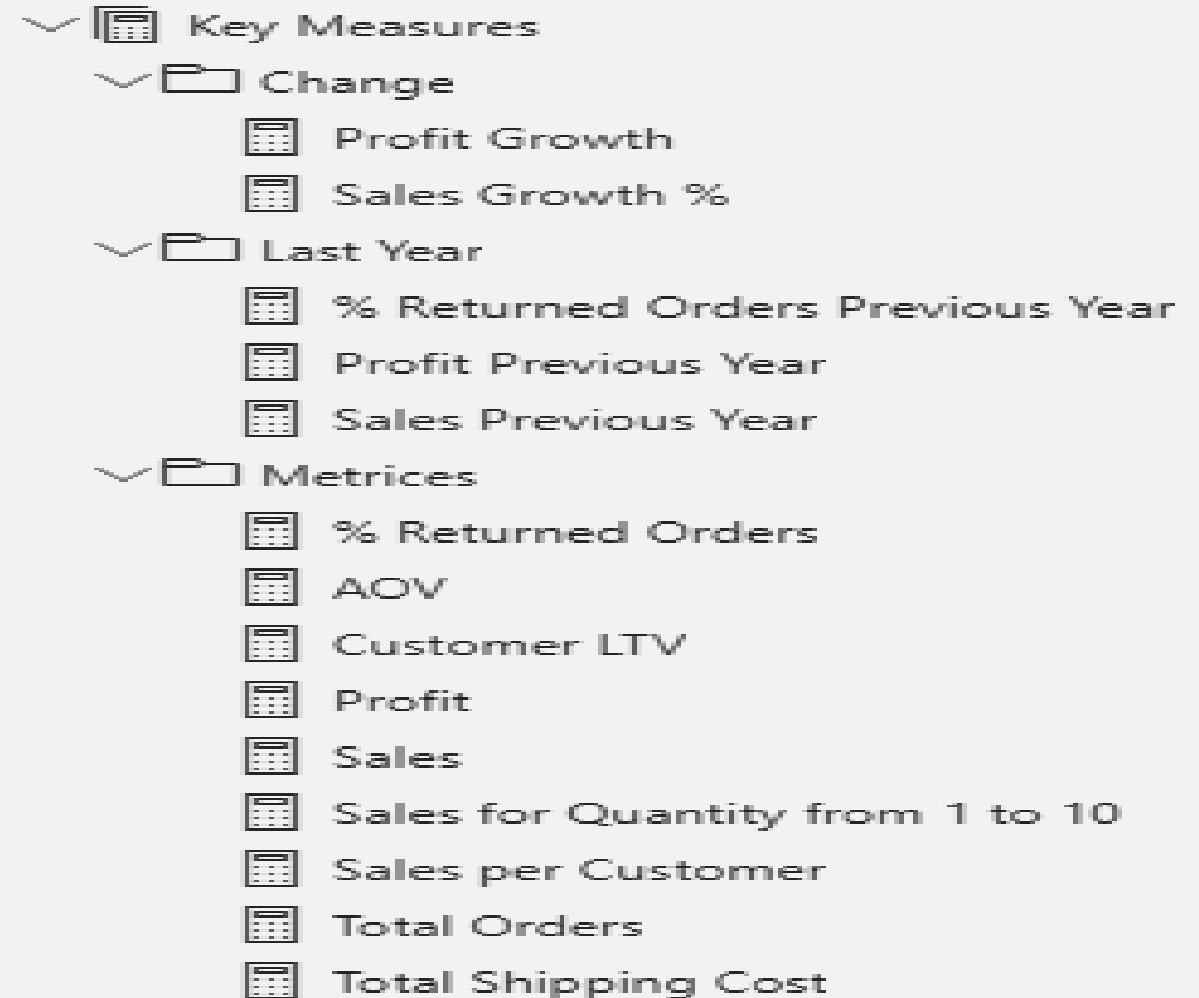
To build the data model, I first imported the datasets into Power BI. I created a star schema by setting up a central fact table for Orders data and linking it to dimension tables for Returns, Date Table which I create in Power BI. I defined relationships, such as linking order_id & order_date, to enable seamless analysis.



POWER BI - KEY MEASURES USING DAX

17

I created a set of measures in Power BI to track Superstore's performance. For instance, 'Profit Growth' and 'Sales Growth %' helped identify year-over-year trends, while 'AOV' and 'Customer LTV' provided insights into customer behavior. These metrics enabled a comprehensive analysis of sales and profitability.



Superstore Analytics Report

18

Superstore

Category

- ☐ Furniture
- ☐ Office Supplies

Market

- ☐ Africa
- ☐ APAC

Country

- ☐ Afghanistan
- ☐ Albania

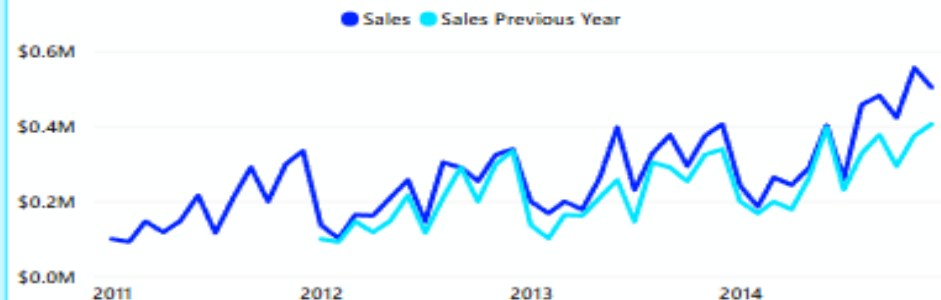
52.25%
Profit Growth

\$1.47M
Profit

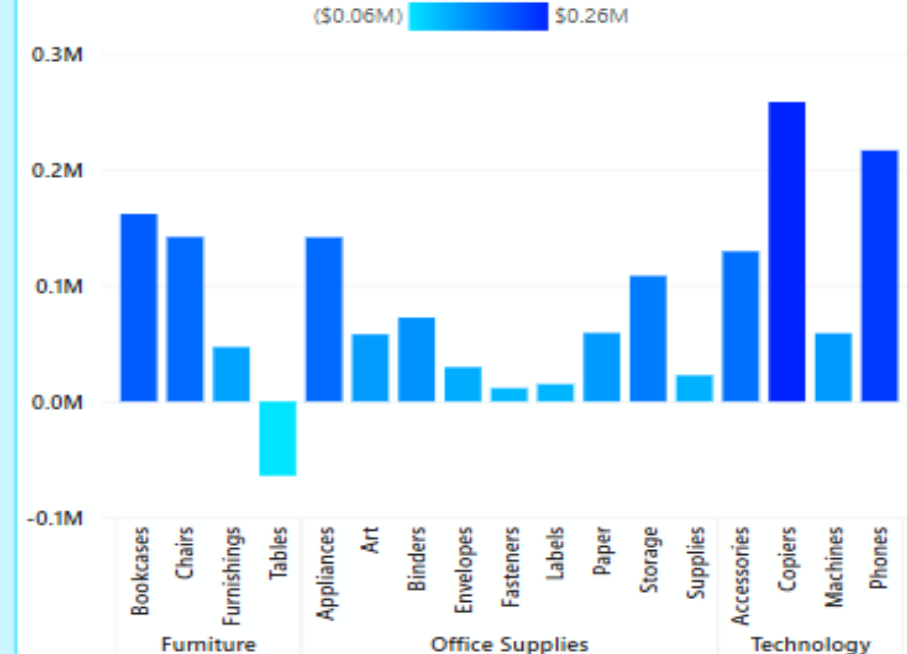
\$12.64M
Sales

0.05
% Returned Orders

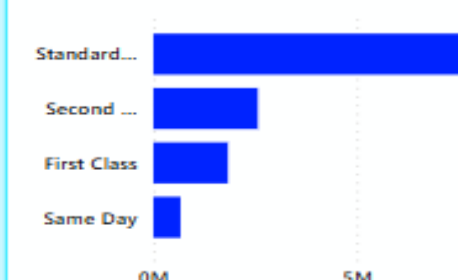
Sales VS Previous Year Over Time



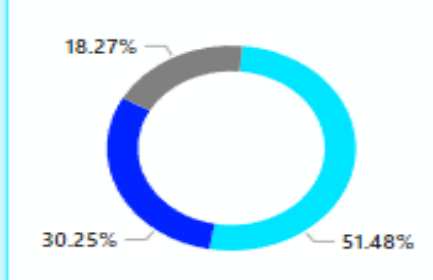
Profit By Product



Sales By Ship_Mode



Sales By Segment

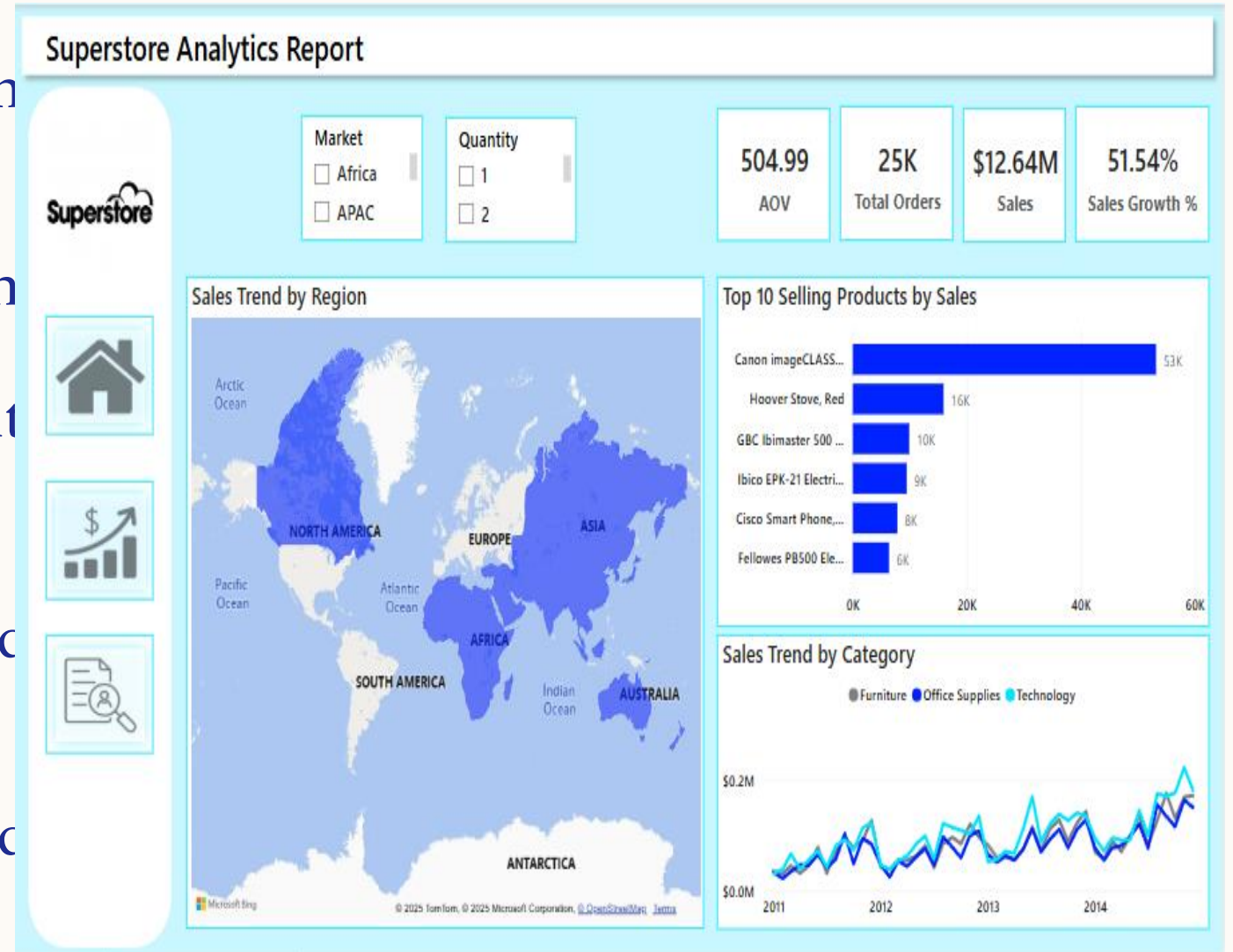


- Based on the dashboard, I recommend focusing on Technology products like Copiers for growth, addressing losses in Tables by optimizing costs, and enhancing Standard Class shipping reliability to align with customer preferences. Additionally, targeting the Consumer segment and replicating 2014's successful sales strategies can drive further growth.

SALES INSIGHTS

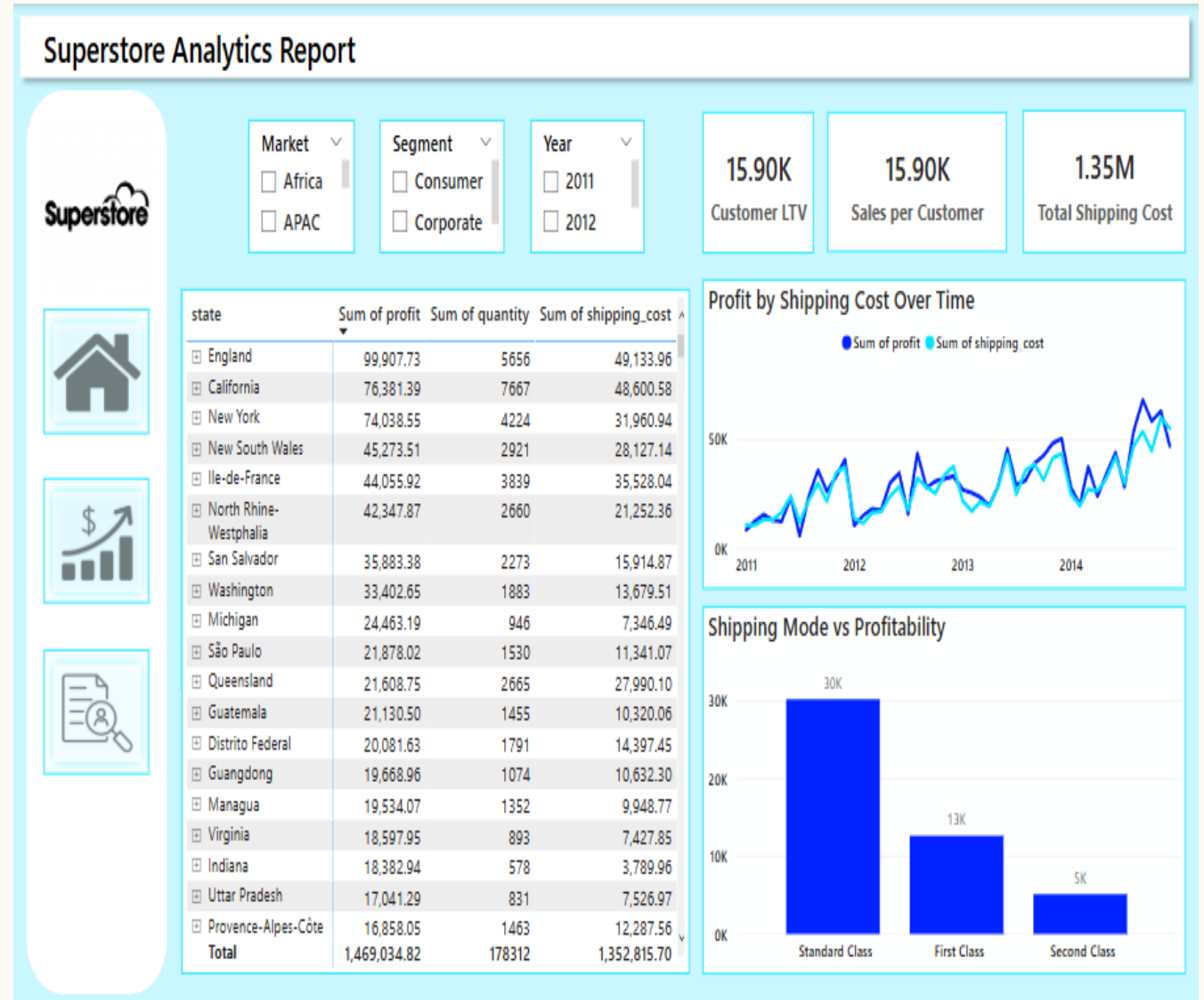
We should focus on high-growth regions like North America and Europe, promote top-selling Technology products like Canon image CLASS, and optimize inventory by reducing low-profit Furniture items.

Leveraging the 51.54% sales growth, we can invest in targeted marketing and upselling strategies to increase our AOV from \$504.99, ensuring sustained growth.



CUSTOMER BEHAVIOR

- we should prioritize expansion in high-profit states like England and California, reduce shipping costs in these regions, and balance shipping costs with profitability over time.
- We can also incentivize First Class shipping for high-value customers, target the Corporate segment in key states, and optimize product quantities in low-profit areas to improve overall performance.





**THANK
YOU**

Hagar Abdelsalam

+201110434578

hagarabdelsalam64@gmail.com

[MY LinkedIN](#)