

Descriptive Statistic For data

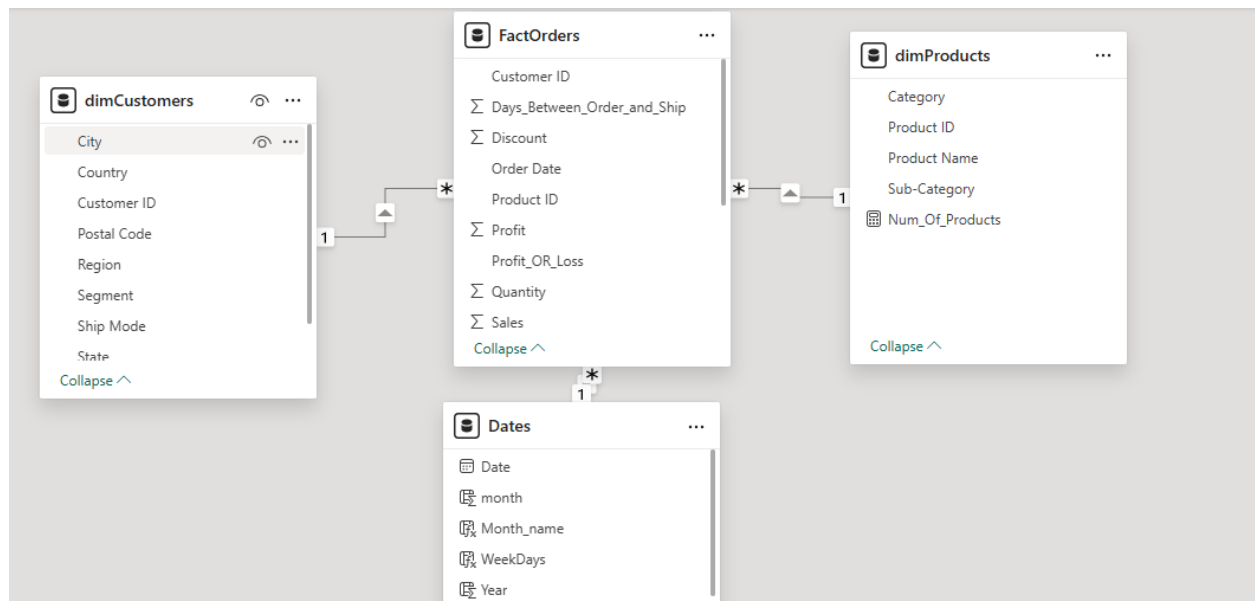
<i>Sales</i>		<i>Quantity</i>	
Mean	229.8580008	Mean	3.789573744
Standard Error	6.234321582	Standard Error	0.022257775
Median	54.49	Median	3
Mode	12.96	Mode	3
Standard Deviation	623.2451005	Standard Deviation	2.225109691
Sample Variance	388434.4553	Sample Variance	4.951113138
Kurtosis	305.3117532	Kurtosis	1.991889366
Skewness	12.97275234	Skewness	1.278544753
Range	22638.036	Range	13
Minimum	0.444	Minimum	1
Maximum	22638.48	Maximum	14
Sum	2297200.86	Sum	37873
Count	9994	Count	9994

<i>Profit</i>		<i>Discount</i>	
Mean	28.65689631	Mean	0.156202722
Standard Error	2.343304174	Standard Error	0.002065139
Median	8.6665	Median	0.2
Mode	0	Mode	0
Standard Deviation	234.2601077	Standard Deviation	0.206451968
Sample Variance	54877.79806	Sample Variance	0.042622415
Kurtosis	397.1885146	Kurtosis	2.409546123
Skewness	7.561431562	Skewness	1.684294747
Range	14999.954	Range	0.8
Minimum	-6599.978	Minimum	0
Maximum	8399.976	Maximum	0.8
Sum	286397.0217	Sum	1561.09
Count	9994	Count	9994

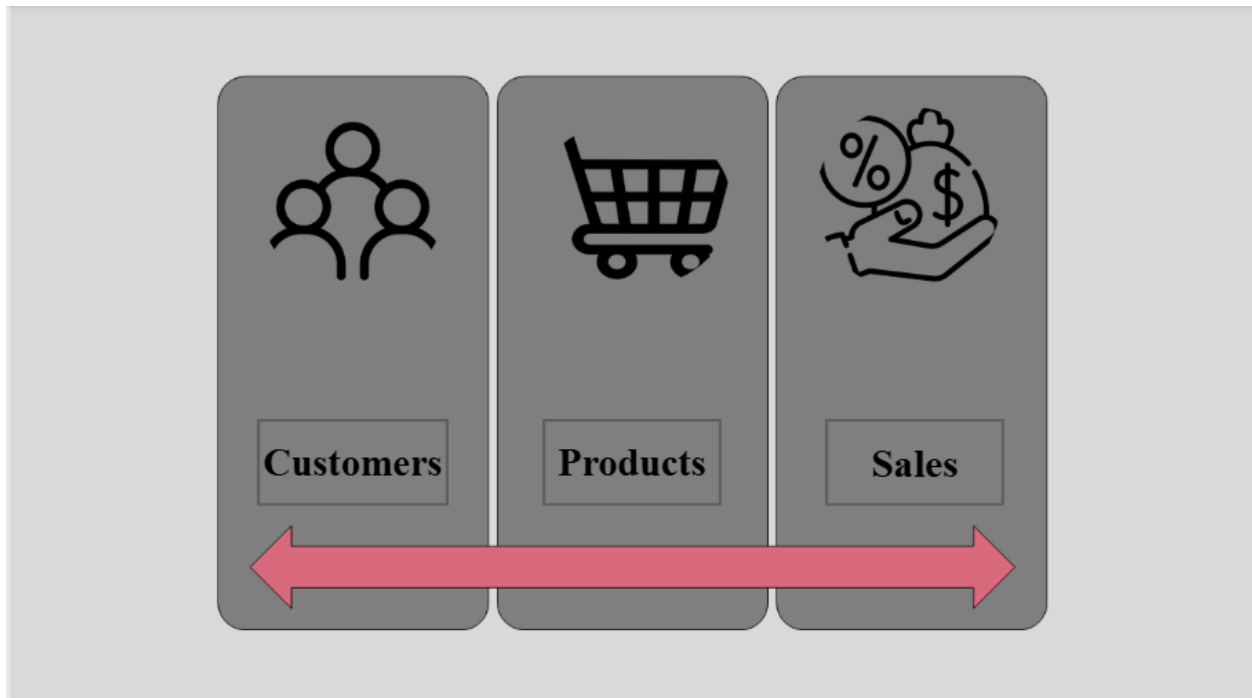
Data Preparation and Modeling

- The dataset contained **no missing values** and **no duplicate records**.
- The source data was initially stored on a **single table** containing both order and customer information.
- A **Dim Customers** table was created containing only **distinct** values of:
Customer ID, Customer Name, Segment, Country, Region
- A **Dim Products** table was created containing only **distinct** values of:
Product ID, Category, Sub-Category, Product Name
- A **Dates** table was generated to manage date-related analysis.
- Relationships were established between the **Fact Orders** table and the dimension tables (**Dim Customers**, **Dim Products**, and **Dates**) to create a **star schema** for efficient analysis.

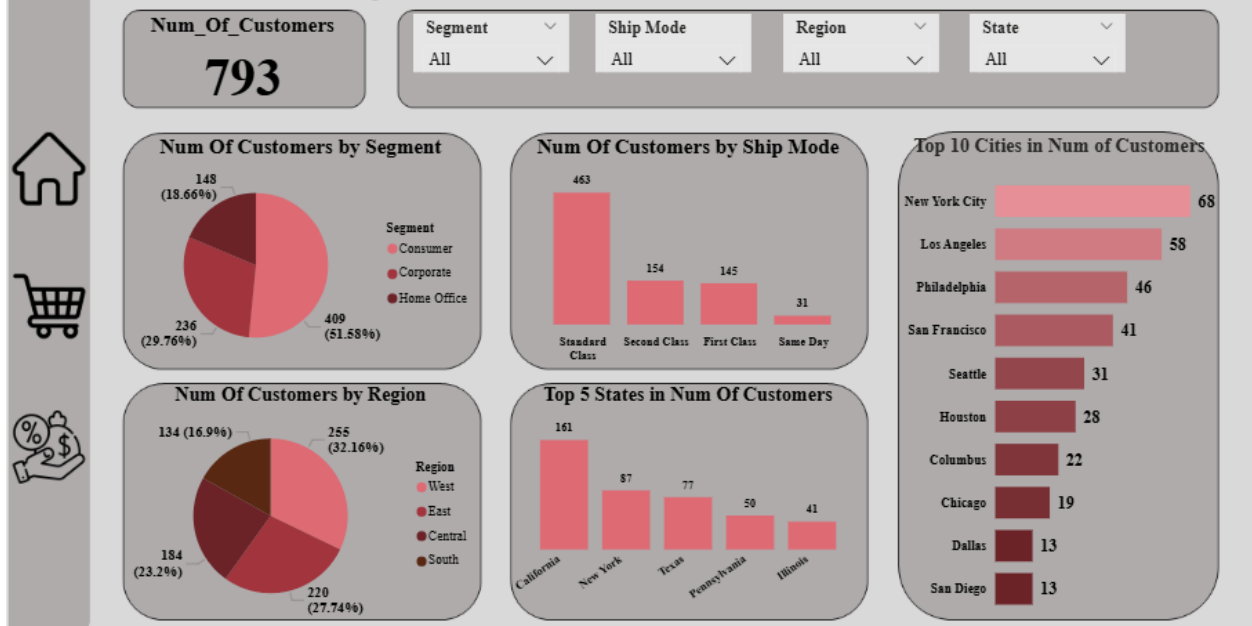
Star Schema



Dashboard



Customers Analysis



Products Analysis



Num Of Products

1862

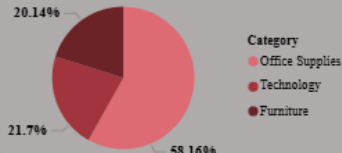
Category

All

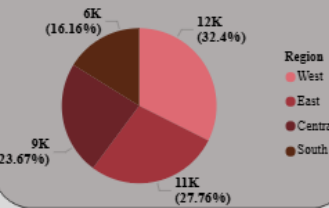
Sub-Category

All

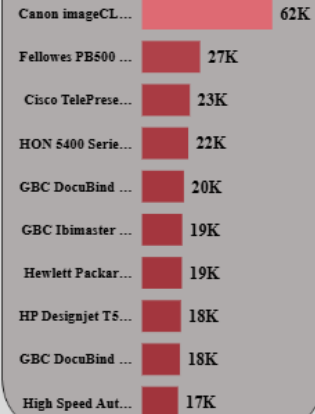
Num Of Products by Category



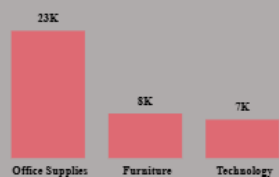
Total Quantity Of Products by Region



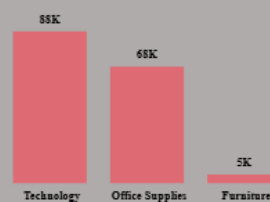
Top 10 Products in Total Sales



Total Quantity Of Products by Category



Total Profit By Category



Sales Analysis

Year

All

Month_name

All

Total Sales

2.30M

Total Profit

286.40K

Total Quantity

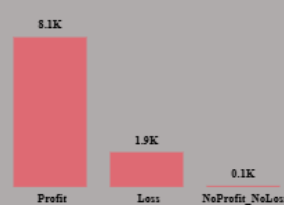
38K

AVG Discount

0.16



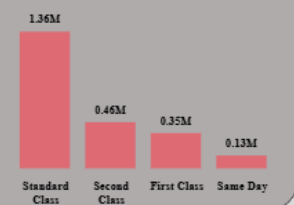
Count of Profit OR Loss on sales



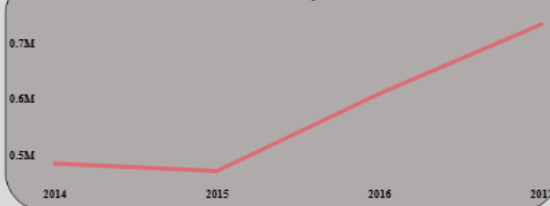
Count of Days Between Order and Ship



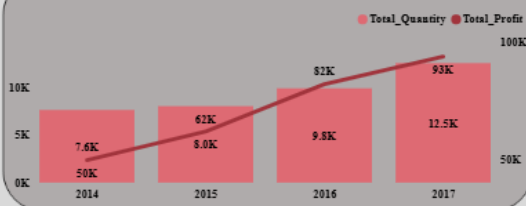
Total Sales by Ship Mode



Total Sales by Year



Total Quantity and Total Profit by Year



Insights

Customers Analysis

1. Customer Segmentation

- Consumer segment dominates with **61.8%** of customers, followed by Corporate (**29.7%**) and Home Office (**8.6%**).

2. Shipping Preferences

- **Standard Class** is the most used shipping mode (**463 customers**), while Same Day shipping is least used (**31 customers**).

3. Regional Distribution

- The West region holds the largest share (**33.4%**), followed by East (**27.7%**), Central (**22.3%**), and South (**16.9%**).

4. Geographic Concentration

- New York City (**68 customers**), Los Angeles (**58**), and Philadelphia (**46**) are the top cities.
- California, New York, Texas, Pennsylvania, and Illinois are the top five states by customer count.

Products Analysis

1. Category Distribution

- Office Supplies dominate with **58.16%** of products, followed by Technology (**21.7%**) and Furniture (**20.14%**).

2. Regional Quantity Distribution

- The East and Central regions each account for **27.7%** of product quantities, while the West and South account for 23.67% and 16.16%, respectively.

3. Sales & Profit Drivers

- Technology category leads in profit (**85K**), followed by Office Supplies (**65K**).
- Top-selling product: **Canon image CLASS** (62K in sales).
- Several products from brands like GBC, Cisco, and HP are among the top 10 by sales.

Sales Analysis

• **Overall Performance:** The company is profitable, with a total profit of \$286.40K on sales of \$2.30M. The average discount is 16%.

• **Profit vs. Loss:** The business has a high number of profitable transactions (8.1K), with a significantly smaller number of loss-making transactions (1.9K).

- **Shipping & Order Fulfillment:** The majority of orders are shipped within 3-4 days, which is a good indicator of efficient logistics. However, there's a significant number of orders (27.76%) that take 4 days to ship, which could be an area for improvement.
- **Sales by Shipping Mode:** The "Standard Class" shipping mode accounts for the largest share of total sales, followed by "Second Class" and "First Class." "Same Day" shipping has the lowest sales volume.
- **Sales Trend:** There was a dip in sales from 2014 to 2015, but sales have been on a strong upward trend since 2015, with a significant jump in 2016 and 2017.
- **Profit & Quantity Trend:** Total profit and total quantity sold have both consistently increased year-over-year, indicating healthy business growth.

Recommendations

1. **Leverage High-Value Customer Segments**
 - Focus marketing campaigns on the **Consumer segment**, which forms the largest customer base, but also explore upselling opportunities in Corporate accounts.
2. **Optimize Shipping Options**
 - Promote **Standard Class** as a cost-effective default but explore incentives for Second Class and First Class to reduce delivery times for certain regions.
3. **Expand in High-Potential Regions**
 - Invest in targeted promotions in **West** and **East** regions to reinforce market share.
 - For **South** region (lowest share), consider local partnerships or region-specific discounts to boost engagement.
4. **Product Portfolio Strategy**
 - Given the high profits from Technology products, expand the range and promote bundles with Office Supplies.
 - Review the Furniture category's performance to identify underperforming items and optimize inventory.
5. **Geo-Targeted Promotions**
 - Target top cities (New York, Los Angeles, Philadelphia) with loyalty programs or exclusive offers.
 - Develop localized marketing strategies for top states to deepen customer loyalty.

6. **Optimize Shipping Strategy:** Since "Standard Class" is the most popular shipping mode, consider offering a slight discount or promotion for it to encourage even more usage. At the same time, investigate why "Same Day" shipping has such low sales. It could be due to a high cost, or it's not well-promoted.
7. **Analyze Profit vs. Loss:** While the majority of transactions are profitable, it is crucial to analyze the reasons behind the 1.9K loss-making transactions. Understanding factors like high discounts, high shipping costs, or returns on these transactions can help reduce future losses.
8. **Streamline Shipping Time:** The data shows that 27.76% of orders take 4 days to ship. Investigate the bottlenecks causing this delay. Optimizing this could improve customer satisfaction and potentially increase sales.
9. **Capitalize on Growth:** The dashboard shows a consistent increase in both sales and profit from 2015 to 2017. A detailed analysis of the strategies implemented during this period could help replicate the success in future years.
10. **Segment Analysis:** The dashboard provides a high-level view. To get deeper insights, you could analyze these trends by specific product categories, regions, or customer segments. This could reveal new opportunities for growth and help tailor marketing campaigns more effectively.
11. **Discount Management:** The average discount is 16%. It is recommended to analyze if this discount percentage is too high and if it is eating into profit margins. You could also analyze if there is a correlation between high discounts and loss-making transactions.