### **Customer Sales Analysis**

#### **Introduction:**

For this project, I analyzed the Customer Sales dataset from Tableau's Superstore dataset to uncover valuable insights into sales performance, customer behavior, and product trends. My goal was to identify patterns that could help businesses make better informed decisions, optimize sales strategies, and enhance customer targeting. This project was an opportunity to apply data cleaning techniques and visualization skills while using SQL and Tableau to provide actionable insights for a company.

#### **Data Cleaning and Preparation:**

One of the key challenges of this project was to clean the dataset and ensure it was properly structured for analysis. While I had previously done data cleaning in Excel, I decided to switch it up and perform the cleaning in MySQL for this project. This allowed me to explore more advanced SQL techniques and work with a larger, relational dataset. I wanted to build hands on experience cleaning and structuring data directly through SQL, so I imported the raw Superstore dataset into MySQL Workbench.

Initially, I ran into a technical issue where I was unable to import all 9800 rows of the dataset using the standard import method in MySQL Workbench. To solve this, I used the MySQL command line tool to manually load the data. As part of the solution, I first created a superstore\_raw table where all columns were set as VARCHAR data types to ensure that all the raw data could be successfully imported without formatting conflicts.

Once the full dataset was loaded into superstore\_raw, I then created a cleaned version of the table called superstore\_clean. In superstore\_clean, I properly reformatted important columns: I converted the Order Date and Ship Date columns from text into proper DATE formats, changed the Sales column into a DECIMAL data type to ensure numerical accuracy, and reviewed the data for any inconsistencies. I also verified that there were no duplicate entries or invalid values that would affect the analysis.

After cleaning and restructuring the data in MySQL, I exported the cleaned table into Excel and connected it to Tableau Public for the visualization and analysis phase.

**Analysis and Visualizations in Tableau**

After cleaning and preparing the data, I imported it into Tableau for visualization. My goal was to create a series of visualizations that would allow me to answer several key business questions, such as identifying the most profitable customer segments, understanding trends in sales over time, and determining which products and regions performed best.

Before diving into the visualizations, I spent some time considering which questions were most important for the analysis. I wanted to understand not only which customers generated the most revenue but also which segments were the most efficient in terms of profit. Additionally, I was interested in uncovering sales trends across different time periods, and understanding how factors like region, product category, and shipping method influenced overall performance.

In Tableau, I applied filters to focus on specific aspects of the data. For example, I used date filters to break down sales by year and month, which helped reveal seasonality trends. I also filtered the data by different customer segments and regions to gain insights into performance across various demographic groups and geographic locations.

The visualizations I created were designed to uncover relationships between key variables. I used a mixture of bar charts and line graphs to highlight trends and performance metrics, such as sales by region, product category, and shipping method. One of the key visualizations was a stacked bar chart showing sales performance across regions, which helped to quickly identify which areas were underperforming or outshining others.

I also created a time series line graph to illustrate how sales evolved over the past few years, which highlighted seasonal spikes in sales and helped inform potential future strategies for inventory optimization and promotion planning.

**Key Insights**

Sales showed strong seasonal trends, with significant spikes occurring in November and December, likely driven by holiday shopping periods. When breaking down performance by region, the West and East regions emerged as the highest performing areas in terms of total sales, highlighting major geographic markets for the company.

In terms of customer segments, the Consumer segment contributed the most to overall sales compared to the Corporate and Home Office segments, indicating that individual consumers were the company's largest revenue source.

From a product perspective, Technology products, especially Phones and Accessories, were major revenue drivers, with strong contributions also seen from the Office Supplies and Furniture categories.

**Business Implications**

The findings from this analysis suggest several opportunities for businesses looking to drive revenue growth. First, marketing and customer engagement strategies could prioritize the Consumer segment, which contributed the most to overall sales compared to Corporate and Home Office segments. Understanding and catering to the preferences of Consumer customers may help maximize revenue potential.

Additionally, businesses could focus on expanding sales of Technology products, particularly Phones and Accessories, which were identified as major revenue drivers. Emphasizing popular and high performing sub categories in Technology, Office Supplies, and Furniture could further strengthen sales results.

Finally, the clear seasonal spikes in sales during November and December highlight the importance of preparing for the holiday season with targeted promotions, optimized inventory management, and tailored marketing campaigns. Aligning operational strategies around these seasonal patterns could help businesses capitalize on peak demand periods and maximize their overall performance.

**Limitations and Future Steps**

While the analysis provided valuable insights, there were some limitations. For instance, the dataset did not include customer feedback data, which could have helped provide a deeper understanding of customer satisfaction and loyalty. Additionally, I did not have information on marketing campaigns or sales efforts, which might have explained some sales trends and customer behavior patterns observed during the analysis.

In the future, I would expand the analysis by incorporating customer feedback and marketing campaign data, which could offer a more holistic view of the factors influencing customer behavior and sales. Additionally, incorporating data related to external factors such as market trends or economic influences could add more context to the analysis and provide further insights into the fluctuations of sales over time.

**Conclusion**

This project was an excellent opportunity to apply my data analysis skills to a real world business dataset. It allowed me to work with SQL for data cleaning, using MySQL to structure the data properly, and Tableau for visualization to derive actionable insights. The analysis gave me the chance to think critically about which business questions were most relevant, such as understanding seasonal trends, customer segments, and the performance of product categories.

The insights gathered from the project could help businesses make informed, data driven decisions, including where to allocate resources, which customer segments to focus on, and how to optimize product offerings and shipping strategies to improve profitability. Moving forward, I plan to continue developing my analytical skills and explore additional ways to enhance decision making processes with data.