# Superstore Sales Performance Analysis

### Project Overview

This report details the analysis of the Superstore sales data, visualized through an interactive Power BI dashboard. The primary objective of this project is to analyze sales patterns, identify key drivers of profit, and uncover insights across different product categories, regions, and customer segments to inform strategic business decisions.

### Data Source and Methodology

The analysis is based on the "Superstore Sales Dataset," which contains transactional data for a retail superstore. The dataset includes the following key dimensions and measures:

* **Order & Shipping**: Order ID, Order Date, Ship Date, Ship Mode
* **Customer Information**: Customer ID, Customer Name, Segment
* **Geographical Data**: Country, City, State, Region
* **Product Details**: Product ID, Category, Sub-Category, Product Name
* **Sales Metrics**: Sales, Quantity, Profit, Returns
* **Payment**: Payment Mode

The data was loaded into Power BI, where it was cleaned, modelled, and visualized to create a comprehensive sales dashboard.

### Steps to Create the Dashboard

This section outlines the process followed to transform the raw data into the final interactive dashboard.

#### 1. Data Cleaning and Preparation (Using Power Query)

Before loading the data into the Power BI model, it was crucial to clean and prepare it to ensure accuracy and consistency. This was done using the Power Query Editor in Power BI.

* **Connecting to Data**: The first step was to connect to the Excel data source.
* **Initial Inspection**: The dataset was reviewed to identify any immediate issues. It was noted that there were extra, unnecessary columns (like ind1, ind2) that appeared to be artifacts from the data export process.
* **Removing Columns**: The unnecessary columns (ind1, ind2) were removed to keep the dataset clean and relevant.
* **Checking Data Types**: Each column's data type was verified. For example, Order Date and Ship Date were set to the 'Date' type, while Sales and Profit were set to 'Fixed decimal number' to ensure accurate calculations. Row ID and Product ID were kept as text.
* **Handling Missing Values**: The dataset was checked for any blank or null values. For this analysis, any rows with critical missing information (like Sales or Order ID) would have been filtered out, but the dataset was relatively clean in this regard.
* **Removing Duplicates**: A check for duplicate rows was performed based on the Order ID and Product ID to ensure that each transaction was unique. No significant duplicates were found.
* **Applying Changes**: Once all the cleaning steps were completed, the changes were "Closed & Applied" to load the clean data into the Power BI Desktop model.

#### 2. Dashboard Creation (Using Power BI Desktop)

**Building Visualizations**: The dashboard was constructed by adding and formatting various visuals:

* + **KPI Cards**: Four card visuals were used to display the main KPIs: Total Sales, Total Profit, Total Quantity, and Total Returns.
  + **Sales and Profit by Month**: A line chart was created with Order Date on the X-axis (drilled down to the month level) and Total Sales and Total Profit as the Y-axis values.
  + **Sales by Category**: A donut chart was used to show the distribution of sales across the three main product Category groups.
  + **Sales by Sub-Category**: A bar chart was added to show a more granular view of sales by Sub-Category, which helps in identifying top and bottom performers.
  + **Profit by Sub-Category**: Another bar chart was created to visualize the Profit for each Sub-Category, highlighting the most and least profitable items.
  + **Sales by Region Map**: A map visual was used to plot Total Sales by State, providing a geographical perspective on performance.
  + **Slicers**: Interactive slicers were added for Region and Payment Mode to allow users to filter the entire dashboard and drill down into the data.
* **Formatting and Design**: The final step involved formatting the dashboard for a clean and professional look. This included aligning visuals, adding a title, ensuring consistent colours and fonts, and making sure all labels were clear and readable.

### Key Performance Indicators (KPIs)

The dashboard highlights several critical KPIs that provide a high-level overview of the business performance:

* **Total Sales**: The total revenue generated from all transactions. The dashboard shows a total of **$1.57Million**.
* **Total Profit**: The net profit earned after accounting for all costs. The total profit stands at **$175K**.
* **Total Quantity Sold**: The total number of individual items sold, which is **22K**.
* **Average delivery time**: The average delivery time is 4 days.

### Dashboard Analysis & Key Insights

The dashboard is composed of several visualizations that offer deep dives into different aspects of the sales data.

#### 1. Sales and Profit Trends Over Time

* **Monthly Performance**: The main line chart illustrates the trends of sales and profit on a monthly basis. There is a noticeable seasonal pattern, with sales and profit peaking towards the end of the year, particularly in November and December. This suggests strong holiday season performance. March also shows a significant spike in both sales and profit.
* **Year-over-Year Growth**: The data spans multiple years, allowing for an analysis of annual growth. Consistent growth in sales can be observed, indicating a positive business trajectory.

#### 2. Performance by Product Category & Sub-Category

* **Top Categories**: The **Technology** category is the highest contributor to both sales and profit. **Furniture** follows in sales but has a significantly lower profit margin. **Office Supplies** contributes steadily to both metrics.
* **Sub-Category Insights**:
  + **Most Profitable**: **Copiers** and **Phones** are the most profitable sub-categories, driving the high-profit margins within the Technology category.
  + **Least Profitable**: **Tables** and **Bookcases** under the Furniture category are the least profitable, with Tables even incurring a loss. This is a critical area for concern and requires further investigation into pricing or cost structures.

#### 3. Regional and Geographical Performance

* **Top Regions**: The **West** and **East** regions are the top performers in terms of both sales and profit. The **Central** region shows moderate sales, while the **South** has the lowest performance.
* **State-Level Analysis**: The map visualization highlights that **California** and **New York** are the leading states in sales and profit. Conversely, states like **Texas**, **Pennsylvania**, and **Ohio** show high sales but very low or negative profit, indicating potential issues with pricing, high operating costs, or an unfavourable product mix in these areas.

#### 4. Customer Segment and Shipping Analysis

* **Customer Segments**: The **Consumer** segment is the largest, contributing the most to sales and profit. The **Corporate** segment follows, with the **Home Office** segment being the smallest.
* **Shipping Mode**: **Standard Class** is the most frequently used shipping mode and is associated with the highest sales and profit. This is expected, as it is often the most cost-effective option for customers.

#### 5. Payment Mode Distribution

* The dashboard includes a breakdown of payment methods, with **Online** payments and **Cash on Delivery (COD)** being the primary modes used by customers.

### 15-Day Sales Forecast

Leveraging two years of historical data, we've forecasted sales for the next 15 days. This predictive analysis helps anticipate short-term revenue streams and manage inventory effectively. The forecast suggests a steady start to the new period, providing a valuable baseline for immediate operational planning and resource allocation.

### Conclusion and Recommendations

This Power BI dashboard provides a clear and comprehensive view of the Superstore's sales performance, highlighting both strengths and areas for improvement.

**Key Takeaways:**

* The business is experiencing overall growth, with strong year-end sales.
* The **Technology** category, particularly **Copiers** and **Phones**, is a major profit driver.
* The **Furniture** category, specifically **Tables**, is a significant drain on profitability.
* Geographical performance is highly varied, with key states like **Texas** and **Pennsylvania** generating high sales but low profit.

**Strategic Recommendations:**

1. **Address Unprofitable Products**: Investigate the low profitability of **Tables** and **Bookcases**. Consider strategies such as renegotiating supplier costs, adjusting prices, or discontinuing unprofitable product lines.
2. **Optimize Regional Strategy**: Focus on improving profitability in high-sales, low-profit states. This could involve targeted marketing for higher-margin products or optimizing supply chain and delivery costs in these regions.
3. **Capitalize on Strengths**: Double down on the high-performing **Technology** category. Run targeted marketing campaigns for phones and copiers, especially during peak sales months like November and December.
4. **Segment-Specific Promotions**: Develop marketing strategies tailored to each customer segment. Since the **Consumer** segment is the largest, loyalty programs or targeted promotions could drive repeat business.

This detailed analysis serves as a foundation for data-driven decision-making aimed at boosting profitability and sustaining business growth.