**Report: Fetching Data from Live Data Source and Visualizing Walmart Sales Data**

**Introduction**

This report documents the process of analyzing Walmart sales data, including data fetching, processing, and visualization. The aim is to provide insights into sales trends and performance across different stores and departments.

#### 1. API Selection and Data Fetching Steps

**Data Source:** The data was fetched from a CSV file hosted on GitHub. The URL used for fetching the data is: [Link](https://raw.githubusercontent.com/LokeshKumarChauhan/DE_with_powerBI/main/Walmart.csv)

**Fetching Data:** Using pandas in Python, the data was read directly from the provided URL into a DataFrame. Below is the python script used for this purpose: [Link](https://github.com/ybk08/Project-2-Fetch-Data-from-a-live-source-and-Build-a-Power-BI-Dashboard/blob/main/Python_Script.py)

#### 2. Data Processing and Cleaning Steps

**Handling Missing Values:** Upon loading the data, the first step involved checking for missing values and handling them appropriately. The dataset used for illustration did not contain missing values.

**Remove Unnecessary Columns:** Removed the unnecessary columns that were not used for visual creation with the help of Power Query feature in Power BI.

#### 3. Explanation of Visualizations Created and Insights Derived

**Visualizations:** The Power BI report includes various visualizations to represent the sales data:

1. **Card:**

* The report consists of four cards to indicate key metrics as single values, such as Total Sales, Total Profit, Total Quantity, and Total Customers.

1. **Slicer:**

* The report includes a State slicer to filter the sales data for each state within the report.

1. **Line Chart:**

* Line chart illustrating profit trends over time, revealing seasonal patterns and trends.

1. **Donut Chart:**

* **Donut Chart Shows the Profit by Category. (i.e. Furniture, Technology & Office Supplies)**

1. **Map:**

* **Map Shows the Sales by State & Segment. (i.e. Consumer, Corporate & Home Office)**

1. **Pie Chart:**

* **Pie Chart Shows Profit by Segment. (i.e. Consumer, Corporate & Home Office)**

1. **Stacked Bar Chart:**

* **Stacked Bar Chart Shows Profit by Sub-Category.**

1. **Matrix:**

* **Matrix Shows Sales by Sub-Category & Segment data** in a grid format, similar to a pivot table in Excel.

**Insights:**

1. **Key Metrics Overview:**

* The cards provide a quick overview of crucial metrics such as total sales, profit, quantity sold, and the number of customers, offering a snapshot of overall performance.

1. **State-Level Analysis:**

* The State slicer allows users to filter the data by state, enabling a detailed analysis of sales performance in different regions and helping identify areas with higher or lower sales.

1. **Profit Trends:**

* The line chart reveals profit trends over time, highlighting seasonal patterns and trends. This insight is vital for planning marketing strategies and inventory management.

1. **Category Profit Analysis:**

* The donut chart shows the distribution of profit across different categories like Furniture, Technology, and Office Supplies, helping identify the most profitable product categories.

1. **Sales Distribution:**

* The map visualization shows sales distribution across different states and segments, providing a geographical perspective on sales performance and identifying regions with high and low sales.

1. **Segment Profit Analysis:**

* The pie chart illustrates the profit distribution by segment (Consumer, Corporate, and Home Office), offering insights into which customer segments are the most profitable.

1. **Sub-Category Profit Insights:**

* The stacked bar chart provides a detailed view of profit by sub-category, helping to identify which sub-categories contribute the most to overall profit.

1. **Detailed Sales Data:**

* The matrix visualization displays sales data by sub-category and segment in a grid format, similar to an Excel pivot table, allowing for a detailed and comprehensive analysis of sales performance.

**Conclusion:**

The analysis and visualization of Walmart sales data provided valuable insights into sales performance across different stores, departments, and customer segments. Key metrics offered an overview of total sales, profit, quantity sold, and customer count. The state slicer enabled detailed regional analysis, revealing variations in sales performance. Profit trends and seasonal patterns identified through the line chart are crucial for strategic planning. The donut chart highlighted the most profitable product categories, while the map visualization showed sales distribution across states and segments. Segment profitability was further detailed in the pie chart, and the stacked bar chart revealed profit contributions by sub-category. The matrix provided a comprehensive view of sales data in a grid format. These insights, derived from Power BI visualizations and Python data processing, support informed decision-making, strategic improvements, and enhanced operational efficiency for Walmart.