

Customer Sales Analysis Report

1. Project Description

This project focuses on advanced data manipulation and analysis using Python Pandas. The objective is to analyze customer purchasing behavior, identify sales trends, evaluate regional and product performance, and understand the impact of customer churn. The analysis is designed to be industry-oriented and suitable for academic and internship evaluation.

2. Setup Instructions

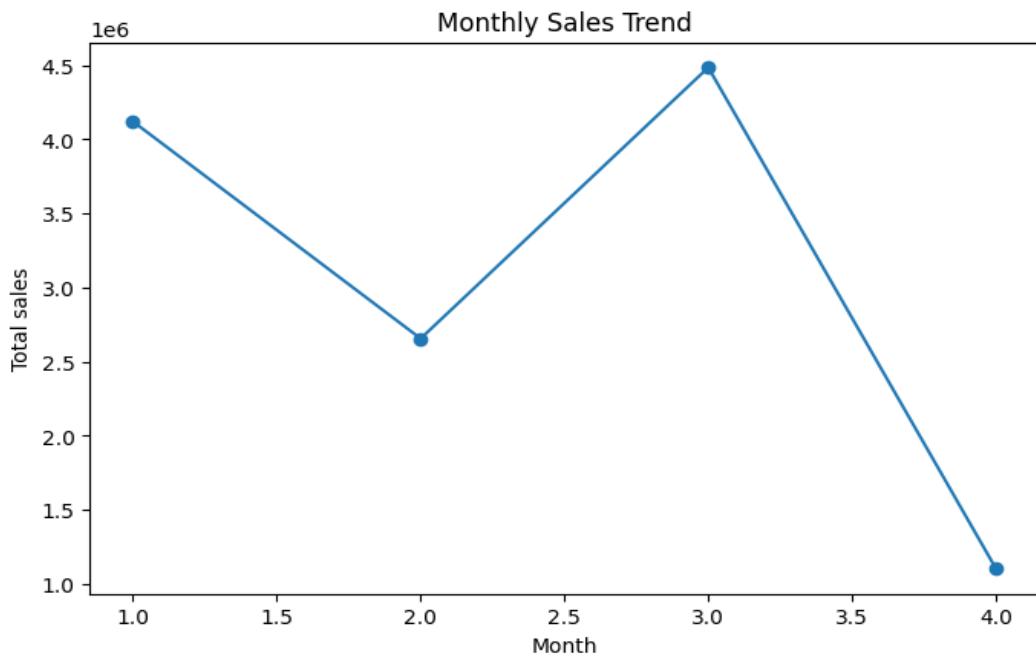
Step 1: Clone the project repository or upload the files to Google Colab.

Step 2: Install required libraries using **pip install pandas numpy matplotlib**.

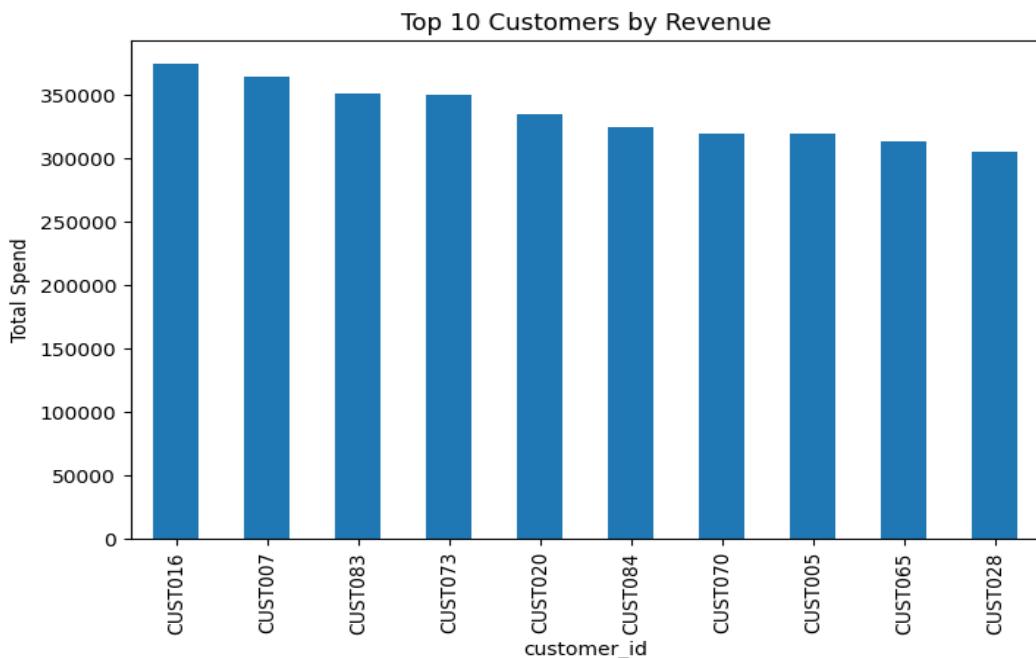
Step 3: Open and run the **customer_analysis.ipynb** notebook sequentially.

Step 4: Ensure datasets (sales_data.csv, customer_churn.csv) are present in the working directory.

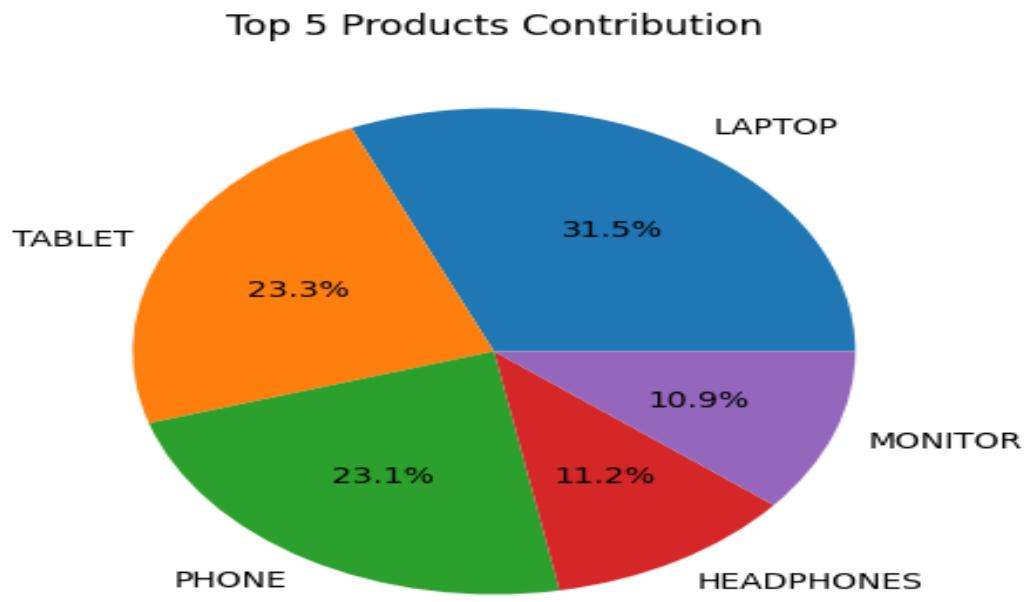
3. Analysis Results & Visualizations



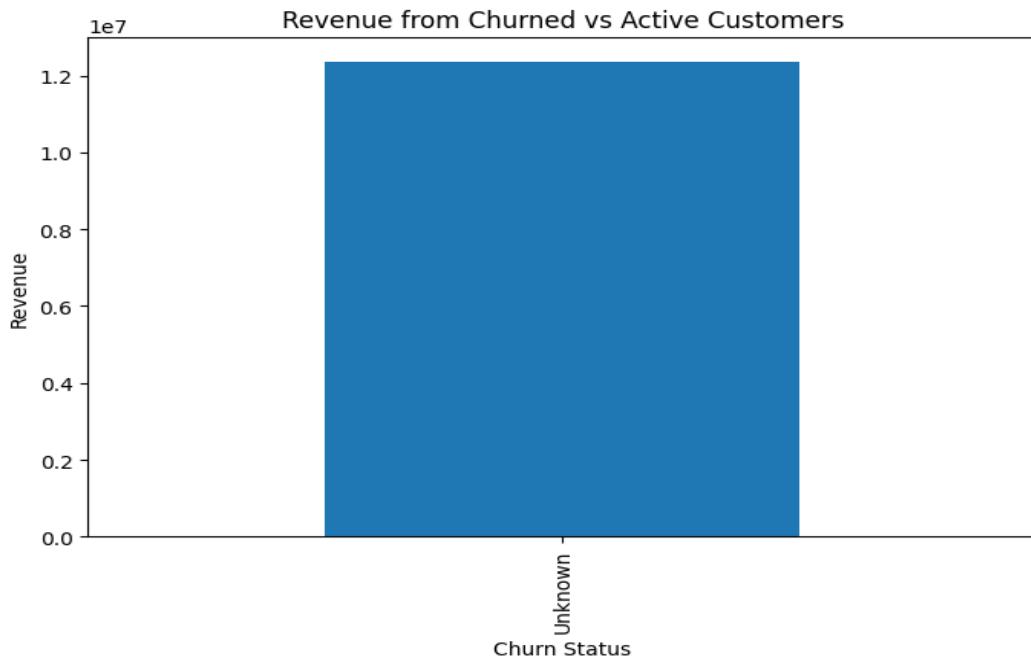
Monthly Sales Trend: This line chart shows month-wise revenue performance. Sales peak in Month 3 (~4.5M) and drop significantly in Month 4, indicating seasonality.



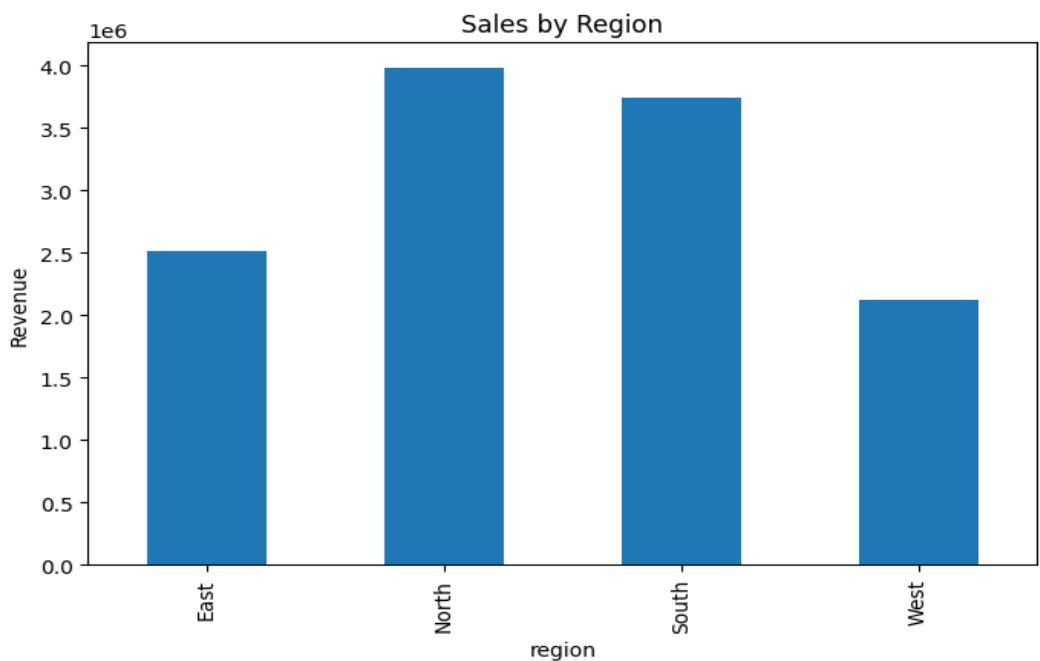
Top 10 Customers by Revenue: This bar chart highlights the top revenue-generating customers. Each contributes approximately 3–3.8 lakh, showing revenue concentration among few customers.



Top 5 Products Contribution: The pie chart illustrates product-wise revenue contribution. Laptops (~31.5%) and Tablets (~23.3%) together generate more than half of total revenue.



Revenue from Churned vs Active Customers: Most revenue falls under customers with unknown churn status, indicating incomplete churn tracking.



Sales by Region: This bar chart shows regional performance. North (~4.0M) and South (~3.7M) regions outperform East and West, suggesting stronger demand in these regions.

4. Conclusion & Business Insights

The analysis reveals clear seasonal trends, strong regional performance differences, high revenue concentration among top customers, and the importance of key product categories. Business recommendations include focusing on customer retention programs, strengthening marketing efforts in high-performing regions, prioritizing top-selling products, and improving churn data collection for better customer lifecycle management.