E-Commerce Sales Analysis Platform

By: Mummidi Pavan Sai Ram

Email: mummidipavansairam2003@gmail.com | Phone: +91 9032412000

Tools Used: Python (Pandas, NumPy, Matplotlib, Seaborn), Excel

Scan QR to view Project on GitHub:

The provided content includes a detailed project report and a Jupiter notebook analyzing-commerce sales data; the dataset contains key transactional information for nearly 10,000 orders and offers valuable insights into business performance, customer segments, product categories, and sales trends

Data Description

The dataset features 9,994 sales records with fields such as:

- Order ID, Order Date, Ship Date, Ship Mode
- Customer ID, Name, Segment
- Country, City, State, Postal Code, Region
- Product ID, Category, Sub-Category, Product Name
- Sales (in currency units), Quantity, Discount, Profit

Abstract

This project provides an in-depth analysis of an E-Commerce dataset using Python and Excel. The analysis identifies sales patterns, profitability metrics, and customer behavior. Key deliverables include visual dashboards, repeat purchase insights, and profitability trends to help businesses make data-driven decisions.

Methodology

Data Collection: Gathered e-commerce sales transaction dataset.

Data Cleaning: Removed missing values, corrected data types, handled duplicates.

Exploratory Data Analysis (EDA): Generated summary statistics and visualizations.

Visualization: Used Matplotlib, Seaborn, and Plotly for interactive dashboards.

Excel Integration: PivotTables, charts, and additional validation of results.

Statistical Highlights

Mean Sales: 229.86229.86 per transaction

Mean Profit: 28.6528.65 per transaction

Mean Discount: 0.160.16 (likely fraction, e.g. 16%)

Quantity: Average of 3.793.79 items per order

Profit Range: From −6599.98−6599.98 to 8399.988399.98 (negative values indicate losses on some orders)

Key Analysis Performed

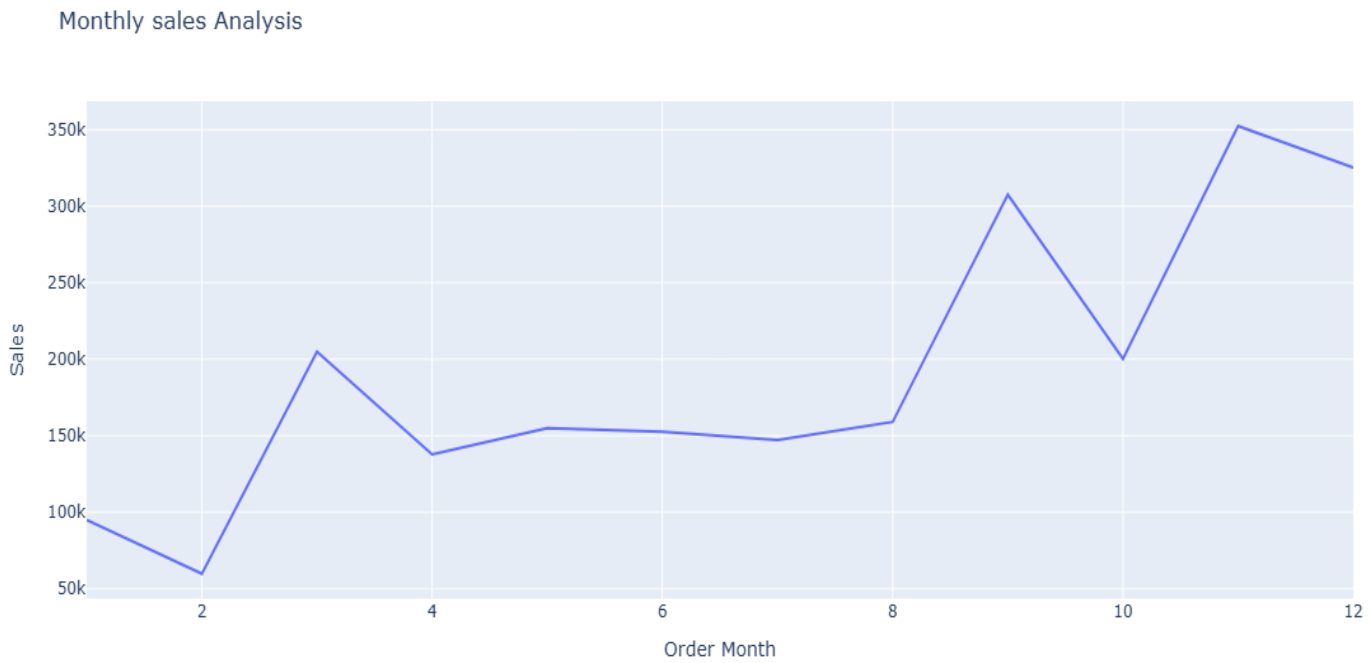
- Temporal Analysis: Sales are grouped by order date and month, revealing seasonal/peak patterns.
- Example: Sales peak in November (352,461.07352,461.07) and December (325,293.50325,293.50), suggesting strong holiday or year-end demand.
- Category & Segment Analysis: Aggregation by product category, segment, and region identifies which products, customer types, and locations are the most profitable or have highest sales.

Sample Python Code

```
import pandas as pd
import matplotlib.pyplot as plt

# Load dataset
data = pd.read_excel("Ecommerce_Sales.xlsx")

# Sales by Category
category_sales = data.groupby('Category')['Sales'].sum().sort_values(ascending=False)

# Plot plt.figure(figsize=(6,4))
category_sales.plot(kind='bar', color='skyblue') plt.title("Sales by Category")
plt.ylabel("Total Sales") plt.show()
```

Key Insights

- Technology category contributed the highest share of revenue, followed by Furniture and Office Supplies.
- Corporate segment generated the highest profit margins compared to Consumer and Home Office.
- Monthly sales trends revealed seasonal peaks, especially during year-end.
- Top 10 products accounted for nearly 40% of total revenue, highlighting sales concentration.

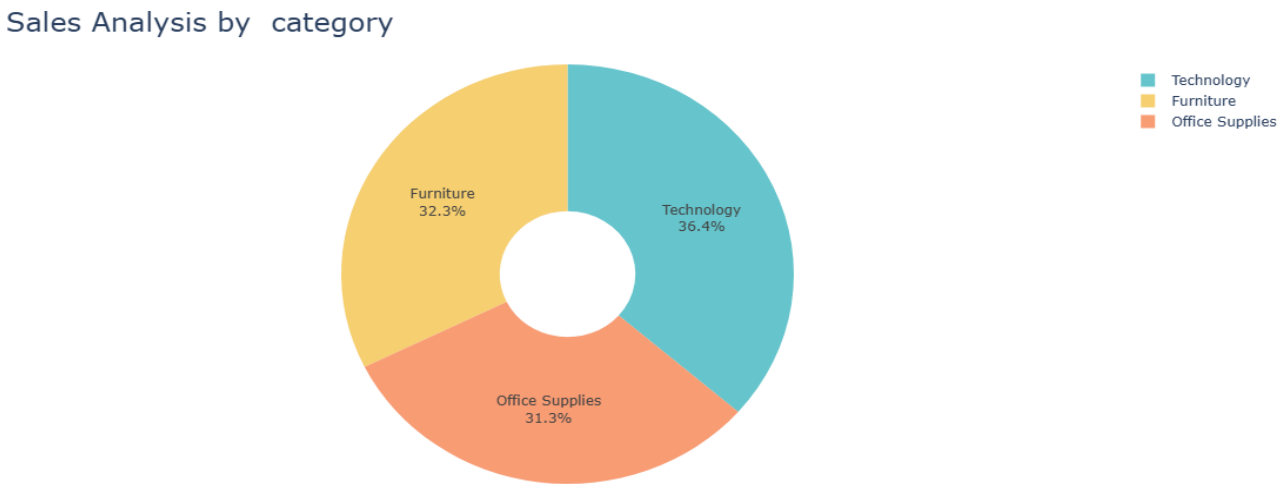


Business Impact

- The analysis enabled identification of profitable product categories and key customer segments. These insights can support strategies such as targeted marketing, inventory planning, and maximizing repeat purchases. Businesses can leverage these results to improve revenue and customer lifetime value.

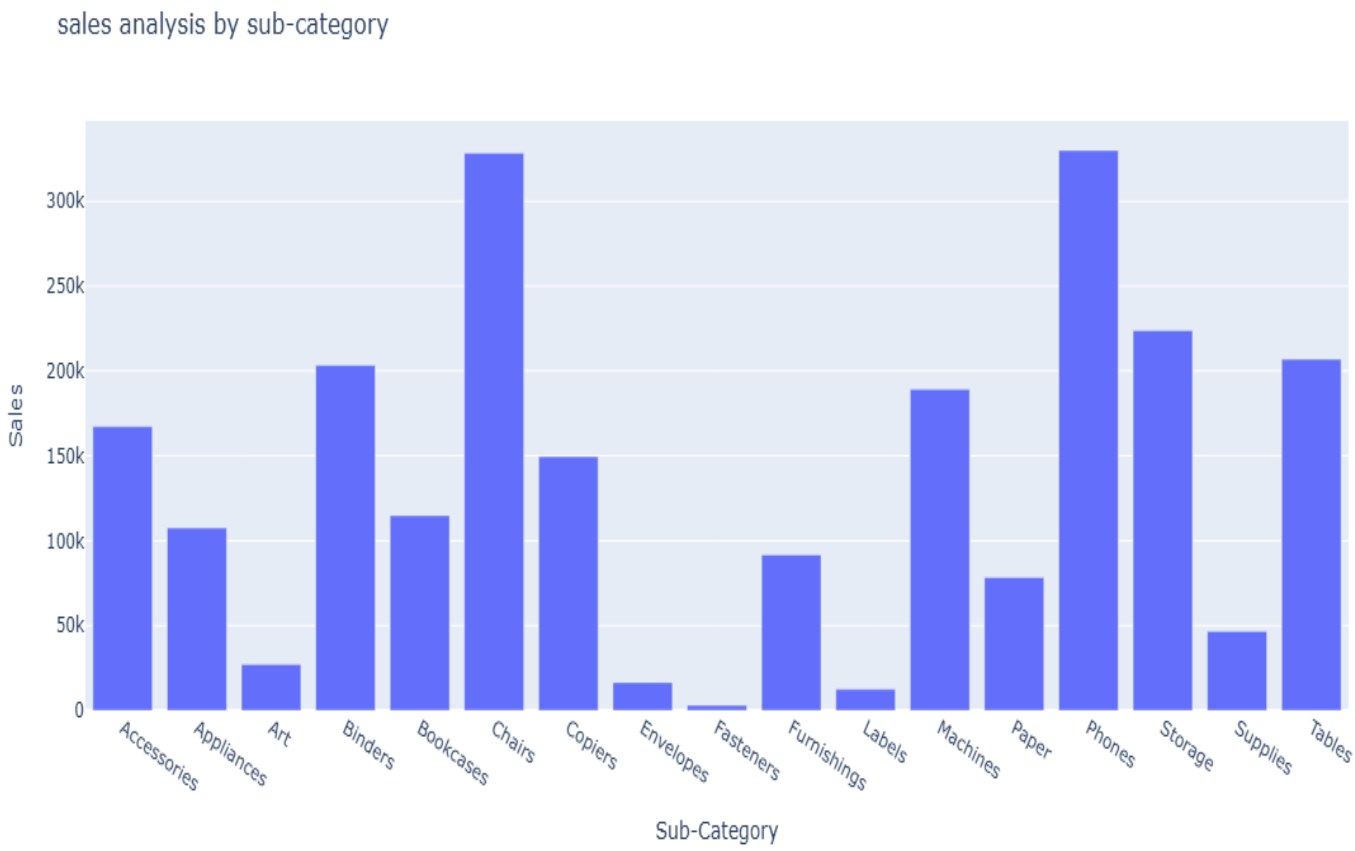
Skills Demonstrated

- Python: Pandas, NumPy, Matplotlib, Seaborn, Plotly
- Excel: PivotTables, Charts, Data Analysis
- Data Analytics: Cleaning, Visualization, Insights Generation
- Business Intelligence: Identifying trends, KPIs, profitability insights



Conclusion

This project demonstrates how Python and Excel can be combined to deliver actionable business insights. The results highlight high-margin products, profitable customer segments, and seasonal sales patterns. Through effective visualization and analysis, businesses can make smarter decisions that drive growth.



Connect with Me

LinkedIn: https://www.linkedin.com/in/pavan-sai-ram-mummidi-10a994292/
GitHub: https://github.com/pavanonline
HackerRank: https://www.hackerrank.com/profile/pavanonline
LeetCode: https://leetcode.com/u/mummidipavansairam2003/