DATAVISTA: Sales Data Analysis and Visualization

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Abstract

- The DataVista project analyses supermarket sales data to uncover patterns and insights, helping businesses optimize sales strategies. It leverages Python, Pandas, NumPy, Matplotlib, Seaborn, and Scikit-learn for data processing and visualization.

Problem Statement

- Businesses struggle with sales trends, customer behaviour, product performance, and payment preferences, leading to ineffective strategies. Limited predictive analysis hampers sales forecasting and customer satisfaction improvements.

Proposed Solution

- **Data Preprocessing:** Handling missing values, converting data types, and scaling numerical features.

- **Exploratory Data Analysis (EDA):** Using visualizations (bar plots, pie charts, line graphs) to uncover sales trends and customer behavior.

- **Statistical Analysis:** Conducting correlation and regression analysis to predict sales based on unit price and quantity sold.

- **Data Splitting & Scaling:** Standardizing data using Min-Max Scaling, Z-score normalization, and Decimal Scaling.
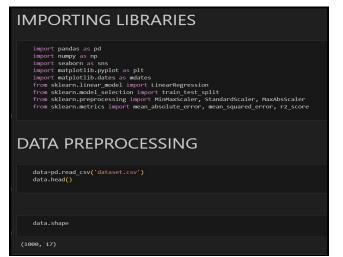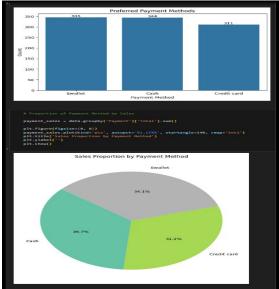
System Architecture

- **Data Collection:** Sales data from supermarket transactions.

- **Preprocessing Module:** Cleansing, handling missing values, and transforming data.

- **EDA Module:** Graphical analysis to visualize sales insights.

- **Statistical Analysis Module:** Correlation, regression, and predictive modeling.

- **Visualization & Insights Dashboard:** Displaying key metrics like sales distribution, customer demographics, and gross income trends.
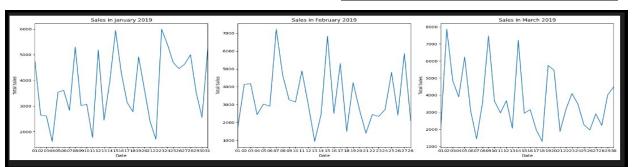
NumPy
Numerical Computing

pandas
Data Analysis
& Manipulation

scikit learn
Machine Learning

Python

Matplotlib
Data Visualization

jupyter

seaborn
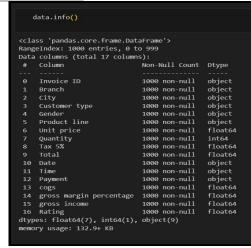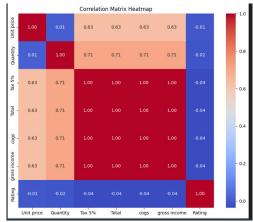Data Visualization
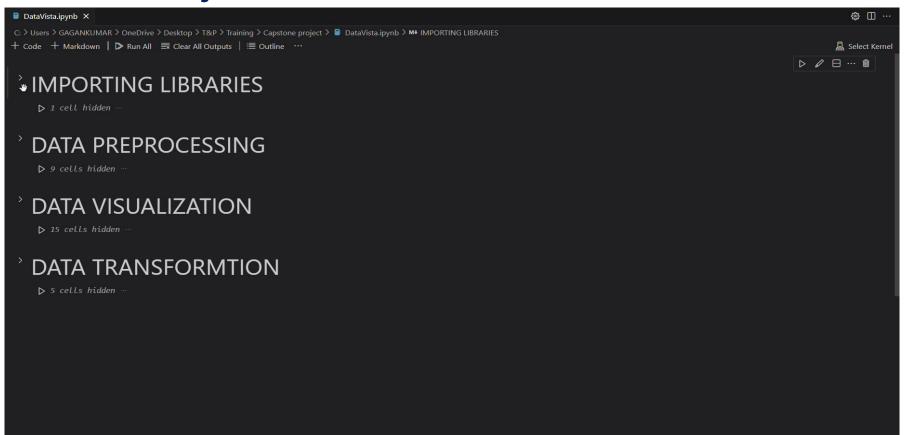& Statistical Plotting

Live Demo of Project

Video of Project Demo

Conclusion

- DataVista provides actionable insights into sales trends, customer behaviour, and revenue factors.

- Businesses can optimize inventory, pricing, and marketing strategies using data-driven decisions.

- The project enhances efficiency, profitability, and customer satisfaction through predictive analysis.

Future Scope

- Implement real-time data analysis for immediate sales trend tracking.

- Develop an interactive dashboard with predictive analytics.

- Integrate AI-based recommendation systems for sales forecasting.

- Expand analysis to include external market factors like competitor pricing and economic trends.

Thank you!