



Data Analytics Project: Sales Forecasting & Customer Analysis

Presented by Code Crafters. This project uses data analytics for sales forecasting and customer insights. We aim to support strategic decisions and boost business performance.



Project Overview & Key Objectives

1 Predict Future Sales

Leveraging time series and machine learning models for accurate sales predictions.

2 Segment Customers

Understanding purchasing behavior through advanced segmentation techniques.

3 Identify Growth Drivers

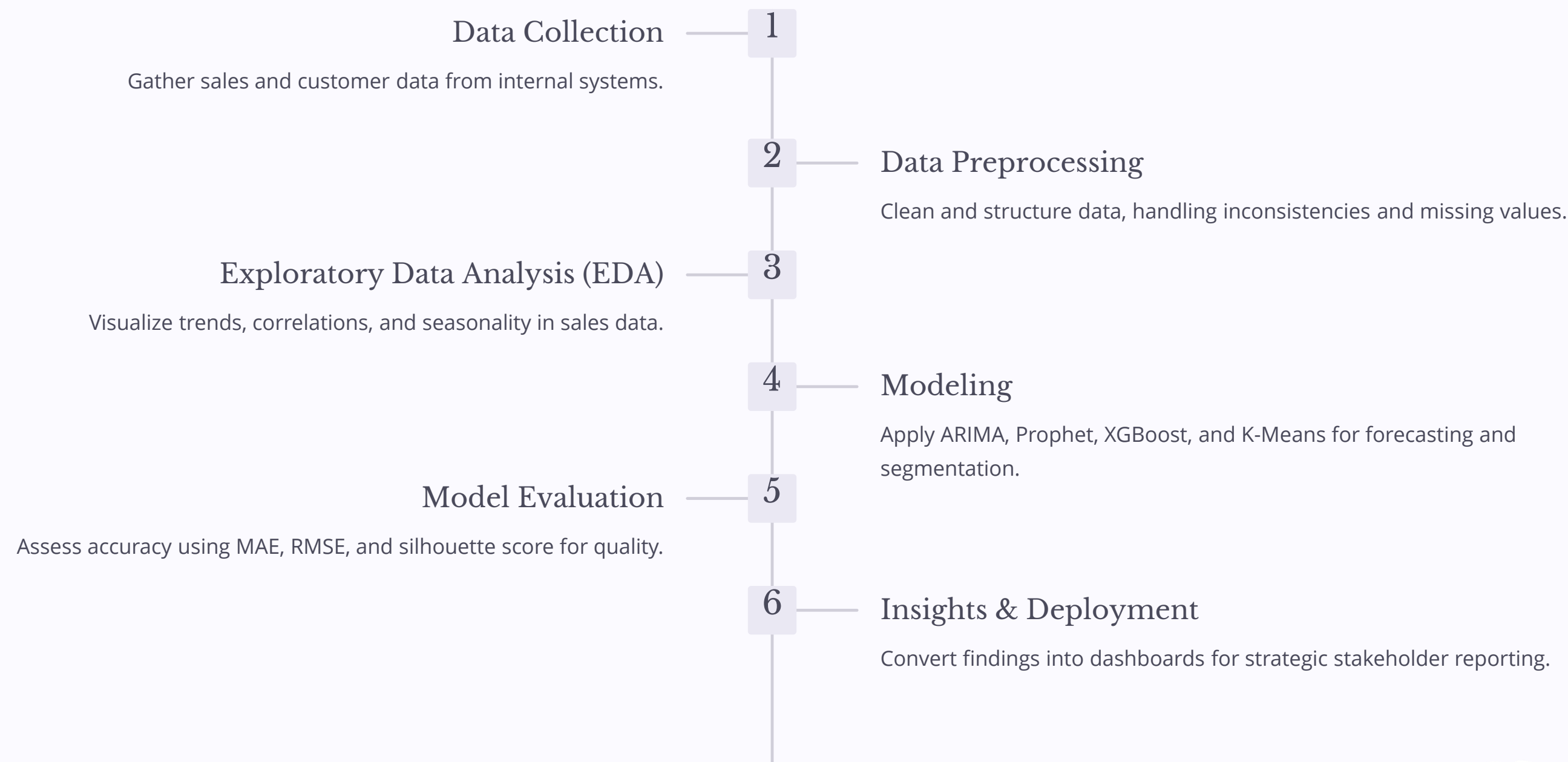
Pinpointing key factors influencing sales and customer retention.

4 Actionable Recommendations

Optimizing marketing and sales strategies with data-driven insights.



Project Framework: Our Analytical Approach



Comprehensive Data Sources

Internal Data Sources

- Sales records & transaction history
- Customer profiles & purchase history
- Marketing & campaign data
- Inventory & supply chain info
- Website/app analytics
- Customer service logs

External Data Sources

- Market trends & competitor data
- Economic indicators (e.g., inflation, GDP)
- Social media & online reviews
- Weather data (seasonal products)
- Demographic & geographic data
- Holidays & local events



Key Challenges Faced

Data Collection Issues

Incomplete or inconsistent data posed integration challenges. Multiple sources made unified data difficult.

Data Quality & Cleaning

Noise, duplicates, and missing values required extensive preprocessing. This ensured reliable forecasting and analysis.

Model Selection & Accuracy

Choosing optimal models was critical for accurate predictions. Ensuring high forecasting and clustering quality was a challenge.





Achieved Project Outcomes



Improved Forecast Accuracy

Reliable sales forecasts achieved with advanced ML models. Enhanced inventory and demand planning results.



Customer Segmentation Achieved

Key segments identified using K-Means and DBSCAN. Tailored marketing strategies now possible.




Business Insights Generated

Enabled predictive and prescriptive analytics for operations. Reduced guesswork, improving ROI significantly.



Effective Customer Segmentation

Buying patterns, peak sales, and churn triggers recognized. Empowered pricing, promotion, and stock management.



Tools and Technologies Utilized



Programming

Python and SQL for data handling and modeling.



Libraries

Pandas, NumPy, Scikit-learn, Statsmodels, Prophet for analysis.



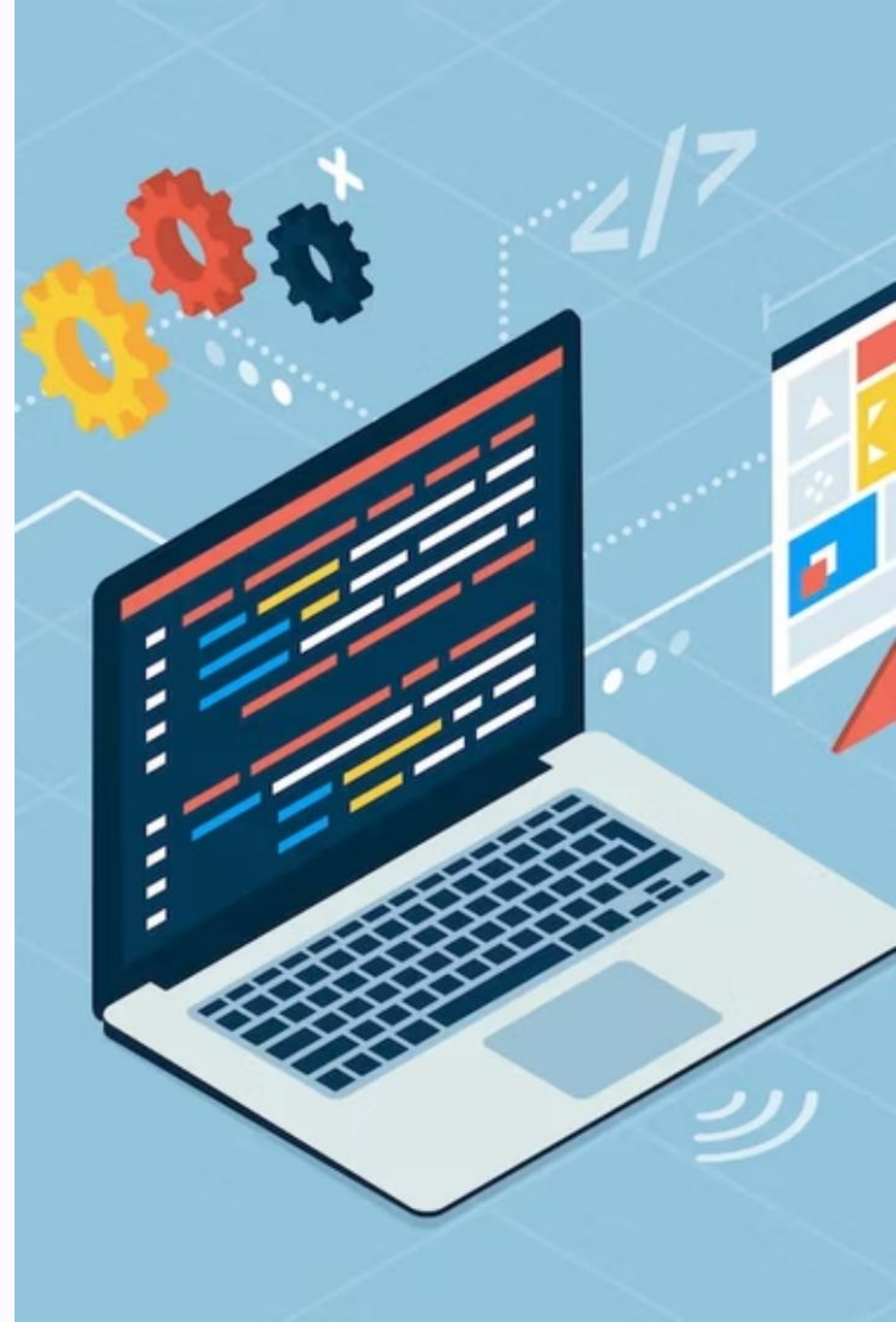
Visualization

Tableau and Power BI for interactive dashboards.



Platforms

Jupyter Notebook, Google Colab, and cloud platforms.

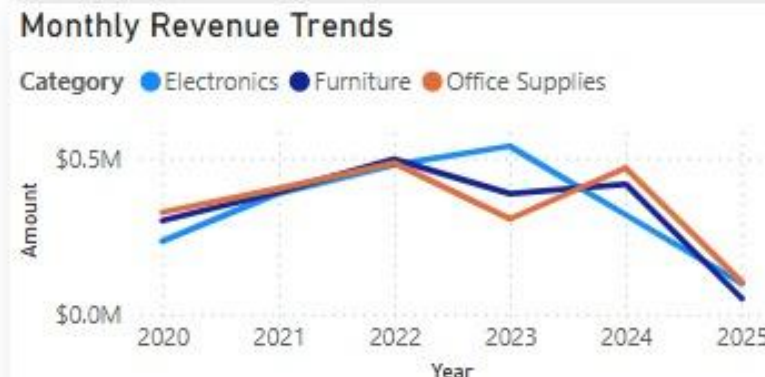
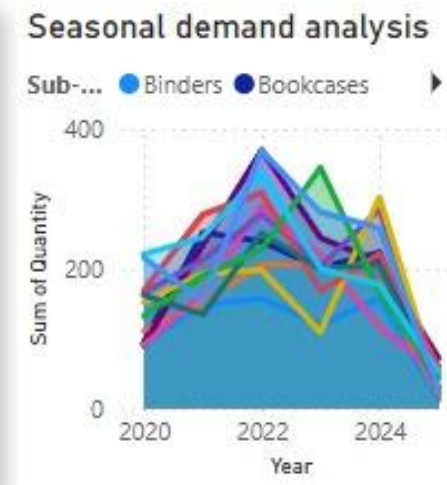
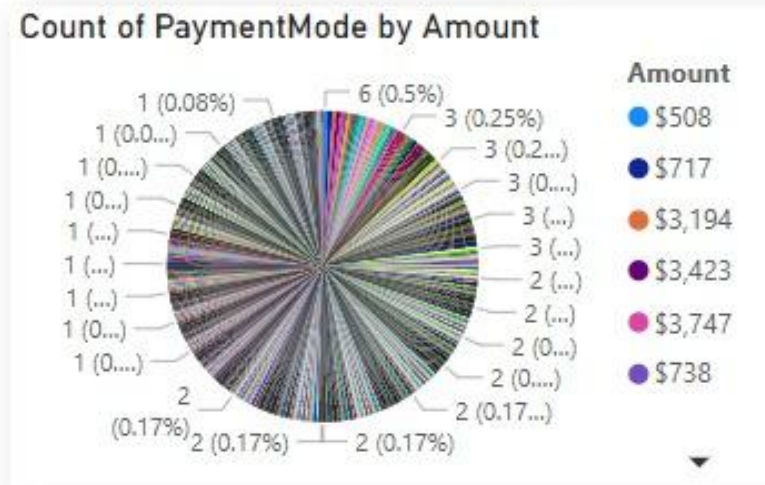
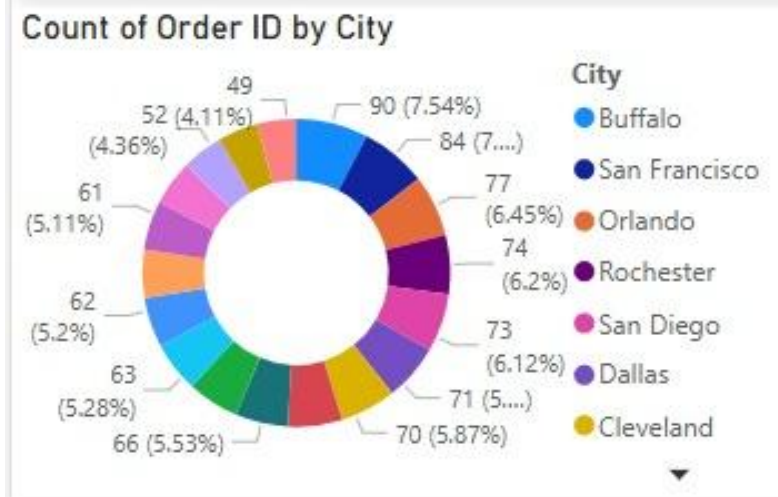
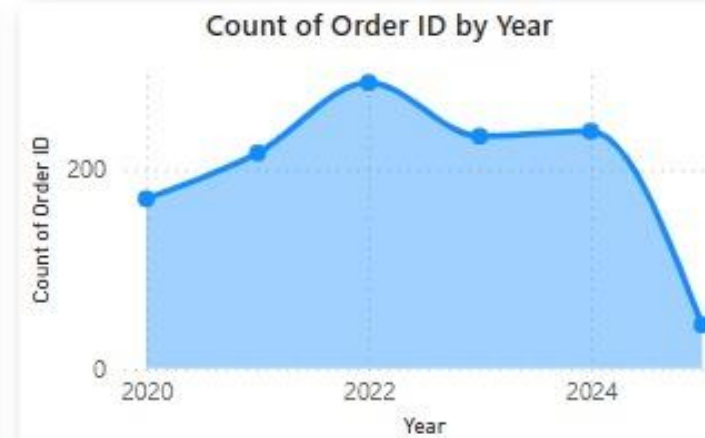


Model Implementations



Sales Heatmap

State	2020	2021
California	\$163,884	\$174,395
Florida	\$160,977	\$214,649
Illinois	\$136,064	\$178,864
New York	\$193,183	\$214,376
Ohio	\$136,327	\$180,033
Texas	\$68,966	\$219,129
Total	\$859,401	\$1,181,446



SALES

Category

All

Order Date

All

PaymentMode

All

Thank You

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