

Multi-Agent Data Analysis Report

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Executive Summary

Processed dataset with 153 rows and 7 columns.

Insights

Key Findings

- Detected 11 anomalies across numeric columns.
- profit important (score=0.563)
- customers important (score=0.225)
- satisfaction important (score=0.088)

Recommendations

- Investigate outliers for data quality or business trends.
- Leverage top features to improve predictive modeling and decision-making.

Agent Execution Summary

Agent	Status	Execution Time (s)
Data Cleaning Agent	SUCCESS	9.584
EDA Agent	SUCCESS	5.455
Anomaly Detection Agent	SUCCESS	0.022
ML Agent	SUCCESS	5.931

Insights Agent

The Business Insights Agent consolidates outputs from all other agents, transforms them into actionable findings, and generates recommendations. It acts as the decision-making layer of the pipeline, summarizing complex analyses into clear business-focused insights.

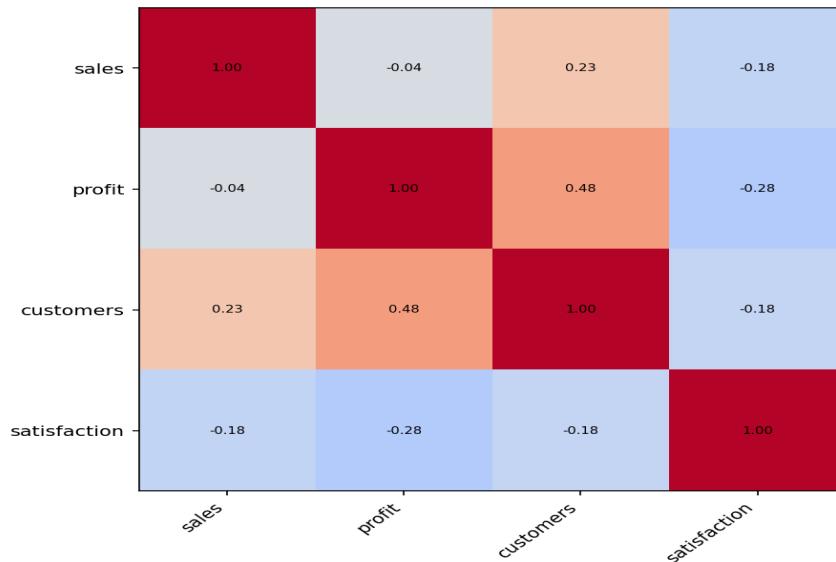
Data Cleaning Agent - Results

This agent focuses on data preparation and quality assurance within the pipeline. It performs crucial tasks such as handling missing values, resolving format inconsistencies, and removing duplicate records. The agent standardizes data types to ensure compatibility and generates a clean, reliable dataset. Its purpose is to provide high-quality input, enabling accurate and efficient downstream analysis.

EDA Agent - Results

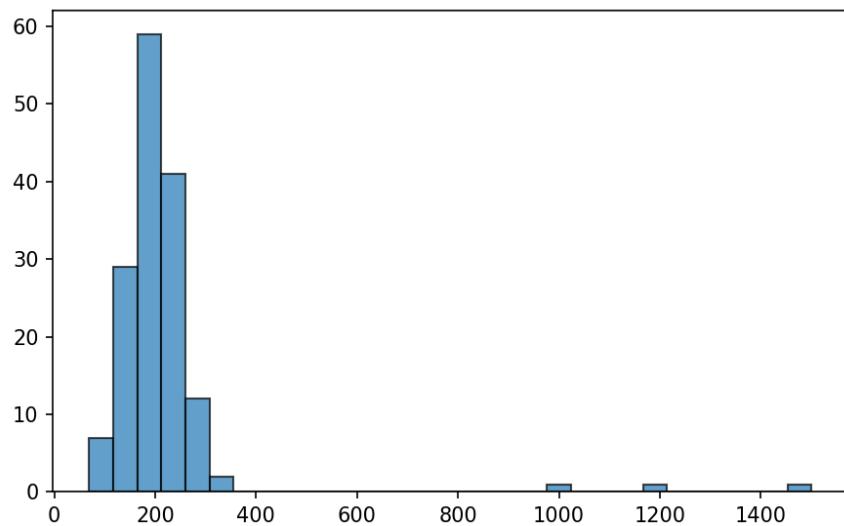
This agent performs exploratory data analysis and pattern discovery within the pipeline. It generates statistical summaries and visualizations to reveal underlying data structures, relationships, and distributions. Identifying trends, correlations, and potential data quality issues is also a key function. Ultimately, its purpose is to provide actionable insights that inform subsequent analysis and modeling stages.

correlation_heatmap



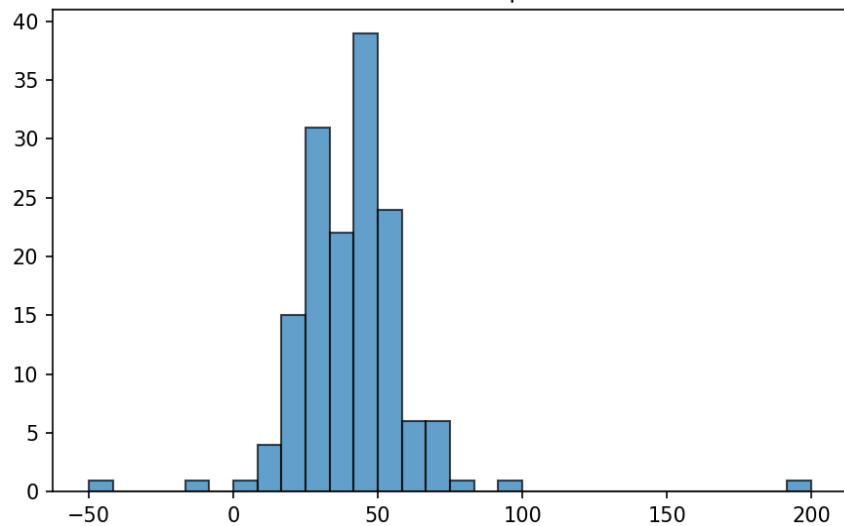
distribution_sales

Distribution of sales



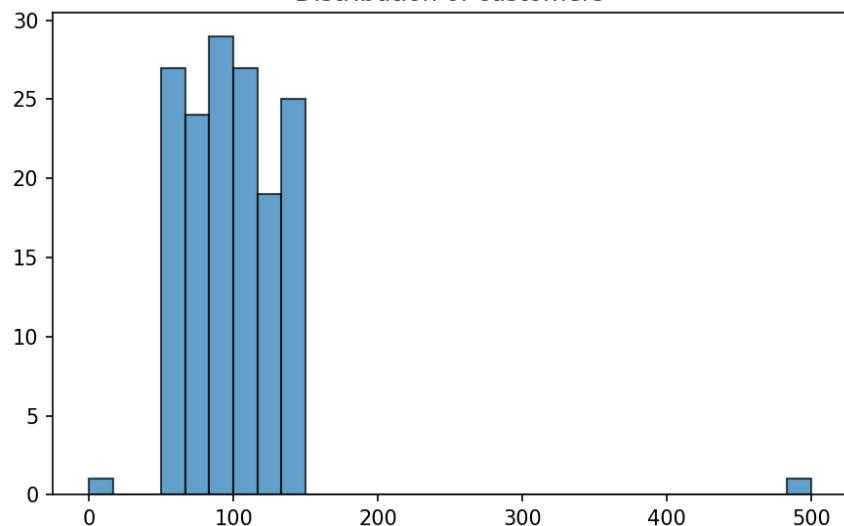
distribution_profit

Distribution of profit



distribution_customers

Distribution of customers



Anomaly Detection Agent - Results

This agent focuses on outlier detection and data quality monitoring within the pipeline. It performs anomaly detection using IQR-based statistical methods, identifying unusual patterns in the data. Its purpose is to flag potential errors, special events, or data inconsistencies that may impact analysis results. The agent outputs a summary of detected anomalies, including affected features and their corresponding counts, enabling prompt investigation and corrective action.

Anomaly Summary:

- sales: 5 outliers (3.27%)
- profit: 4 outliers (2.61%)
- customers: 1 outliers (0.65%)
- satisfaction: 1 outliers (0.65%)

ML Agent - Results

This agent focuses on predictive modeling and feature analysis within the data pipeline. It performs baseline model training and calculates feature importance scores to identify key predictive patterns. Its purpose is to reveal the underlying drivers of the target outcome. Ultimately, the agent outputs a ranked list of features, highlighting the most influential variables for further investigation.

Top Features:

- profit: 0.5629
- customers: 0.2253
- satisfaction: 0.0878
- date: 0.0520
- category: 0.0431
- region: 0.0290