

# Multi-Agent Data Analysis Report

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## Executive Summary

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## Insights

### ***Key Findings***

- This report analyzes a dataset of iOS apps to identify key factors influencing app success. The analysis reveals that app version, total rating count, and price are the most important features. The dataset is relatively clean, but outliers exist in several numerical columns. Recommendations focus on optimizing app updates, building social proof, and carefully considering pricing strategies.
- Top Key Findings
- \* App Version Matters: The app version number is the most important feature, indicating user sensitivity to updates.
- \* Popularity Drives Success: Total rating count is the second most important feature, highlighting the power of social proof.
- \* Price Sensitivity: Price is a significant factor in app adoption.
- Detected 7384 anomalies across numeric columns.
- ver important (score=0.339)
- rating\_count\_tot important (score=0.203)
- price important (score=0.096)

### ***Recommendations***

- \* App Size Matters: App size impacts user download decisions.
- \* Outliers Present: Outliers exist in `size\_bytes`, `price`, `rating\_count\_tot`, `rating\_count\_ver`, `user\_rating`, `sup\_devices.num`, `lang.num`, and `vpp\_lic` columns.
- Actionable Recommendations
- \* Optimize App Updates: Prioritize thorough testing and quality assurance for every app update. Focus on bug fixes, performance improvements, and genuinely useful new features.
- \* Build Social Proof: Actively encourage users to rate and review the app. Respond to reviews to show that user feedback is valued.
- 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	6.430
EDA Agent	SUCCESS	6.403
Anomaly Detection Agent	SUCCESS	0.034
ML Agent	SUCCESS	9.823

### 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.

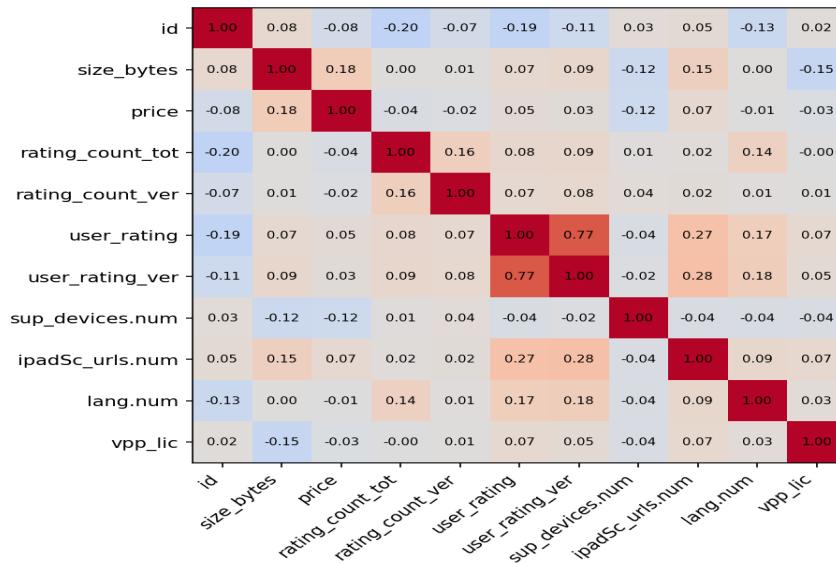
### Data Cleaning Agent - Results

This agent focuses on data preparation and quality assurance within the pipeline. It performs critical tasks such as handling missing values, resolving inconsistent formats, and standardizing data types. The agent removes duplicate entries to ensure data integrity. Its purpose is to deliver a clean, reliable dataset, thereby improving the accuracy and efficiency of subsequent analysis.

### EDA Agent - Results

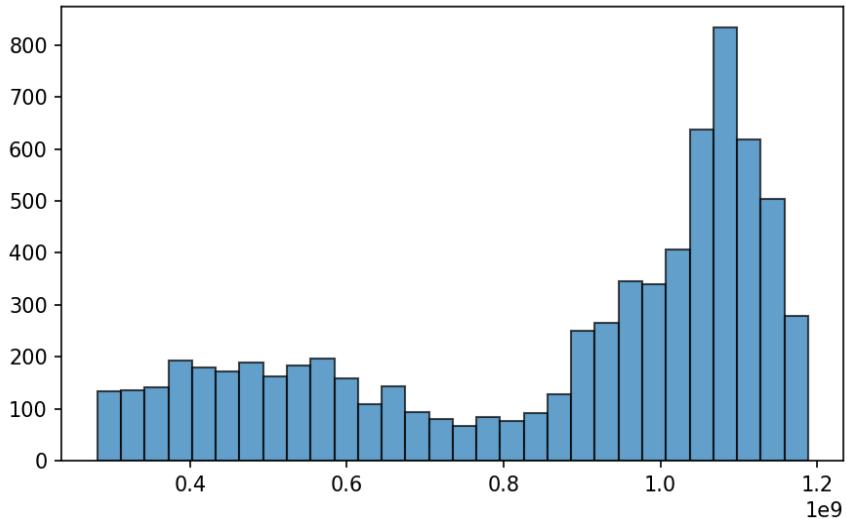
This agent performs exploratory data analysis and pattern discovery within the pipeline. Its purpose is to generate statistical summaries and visualizations, revealing key trends, correlations, and distributions present in the data. By identifying data structure, relationships, and quality issues, it provides critical insights for informed decision-making in subsequent stages.

#### *correlation\_heatmap*



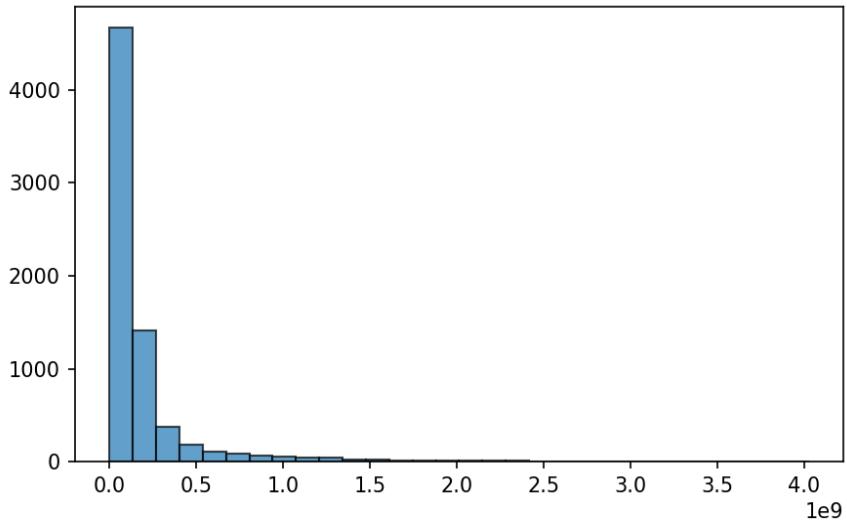
#### *distribution\_id*

Distribution of id



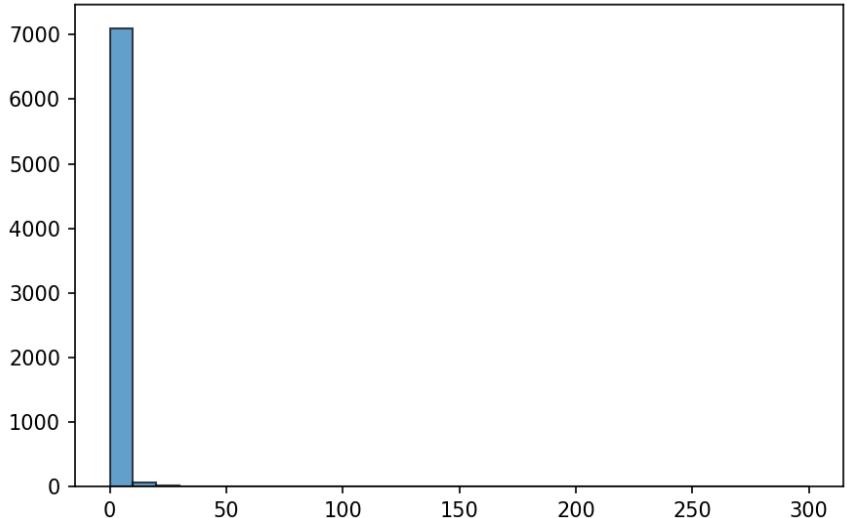
***distribution\_size\_bytes***

Distribution of size\_bytes



***distribution\_price***

Distribution of price



## Anomaly Detection Agent - Results

This agent performs anomaly detection and data quality monitoring within the pipeline. It identifies unusual patterns and outliers in the data using IQR-based statistical methods. By flagging potential errors or special events, it helps ensure data integrity and accuracy. The agent outputs a summary of detected anomalies, including the affected features and their corresponding counts.

### **Anomaly Summary:**

- size\_bytes: 778 outliers (10.81%)
- price: 832 outliers (11.56%)
- rating\_count\_tot: 1231 outliers (17.10%)
- rating\_count\_ver: 1061 outliers (14.74%)
- user\_rating: 1029 outliers (14.30%)
- sup\_devices.num: 1975 outliers (27.44%)
- lang.num: 428 outliers (5.95%)
- vpp\_lic: 50 outliers (0.69%)

## ML Agent - Results

This ML 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. The agent's purpose is to reveal the most influential factors driving the target outcome. Ultimately, it delivers a ranked list of features, providing valuable insights for informed decision-making.

### **Top Features:**

- ver: 0.3387
- rating\_count\_tot: 0.2030
- price: 0.0955
- size\_bytes: 0.0715
- track\_name: 0.0481
- sup\_devices.num: 0.0477
- rating\_count\_ver: 0.0462
- prime\_genre: 0.0430
- user\_rating: 0.0264
- lang.num: 0.0223