

November 9th 2025

Presented by

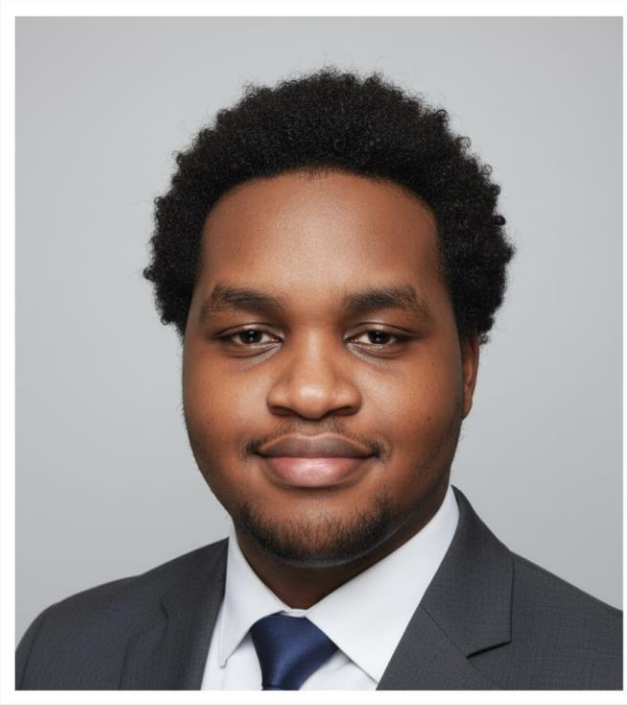
Group 1

APEX FINANCIAL GROUP

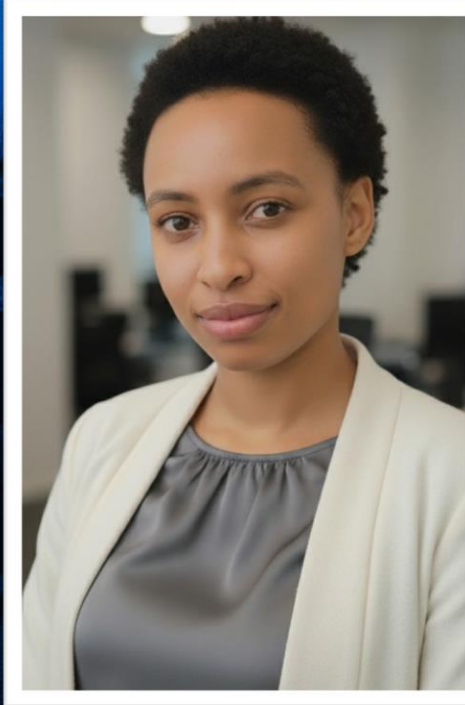
Predictive Stock Analytics For African
Markets



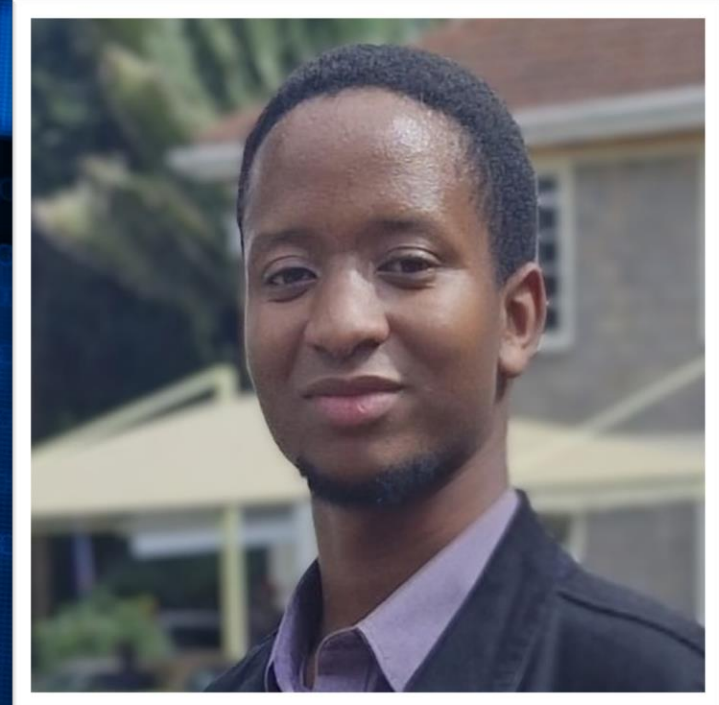
Meet the Team



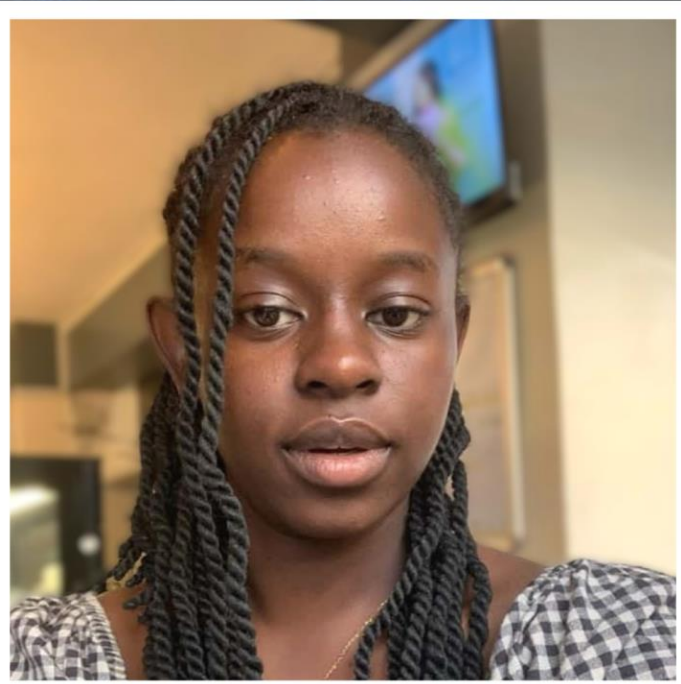
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Business Understanding

- Investors constantly seek to anticipate market movements and minimize risk, yet many rely on intuition rather than data-driven analysis.
- Understanding how stocks behave in relation to one another and predicting their future direction, can unlock strategic opportunities and improve investment outcomes.
- This project aims to deliver those insights in order to highlight emerging trends, and support smarter investment decisions



Problem Statement

- Predictive stock modeling has become a cornerstone of investment strategy in Western markets, yet African markets continue to face a gap in accessible, data-driven forecasting tools.
- This project addresses that gap by developing a model that analyzes market data to identify correlated stocks and predict whether prices will rise or fall. By transforming complex financial information into clear, actionable insights, the model empowers investors to make smarter, evidence-based decisions.



Project Goal

- To develop a predictive model that forecasts stock price direction and identifies correlated trends to support informed investment strategies





Project Objectives



- **Understand Market Behavior** - Analyze historical stock data to uncover key patterns and trends that influence price movements.
- **Identify Related Stocks** - Discover stocks that tend to move together, helping investors recognize potential opportunities and risks.
- **Predict Future Price Direction** - Use data-driven insights to forecast whether stock prices are likely to rise or fall.
- **Support Strategic Decision Making** - Provide actionable insights that enable investors and analysts to anticipate market shifts.



Data Understanding

The dataset used for this project was compiled from the Nairobi Securities Exchange (NSE) and TradingView platforms, and saved as “stock_data.csv.”

It contains historical market data for multiple listed companies across various industries

Data cleaning involved handling missing values, duplicates, format adjustments, and aligning data across tickers and time periods.

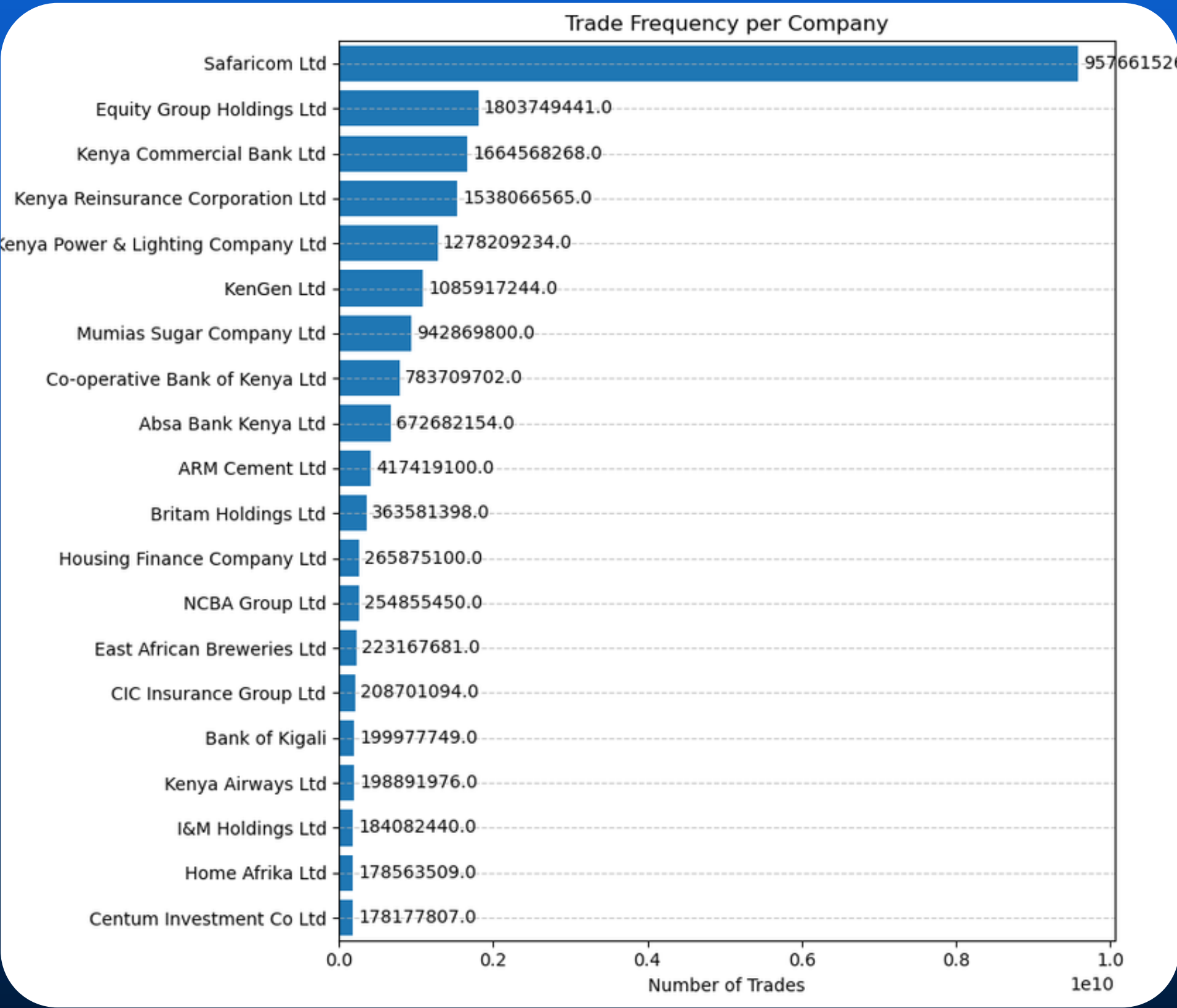
Data Analysis

Methodology

- Business Understanding
- Data Understanding
- Exploratory Data Analysis
- Modeling
- Evaluation
- Deployment

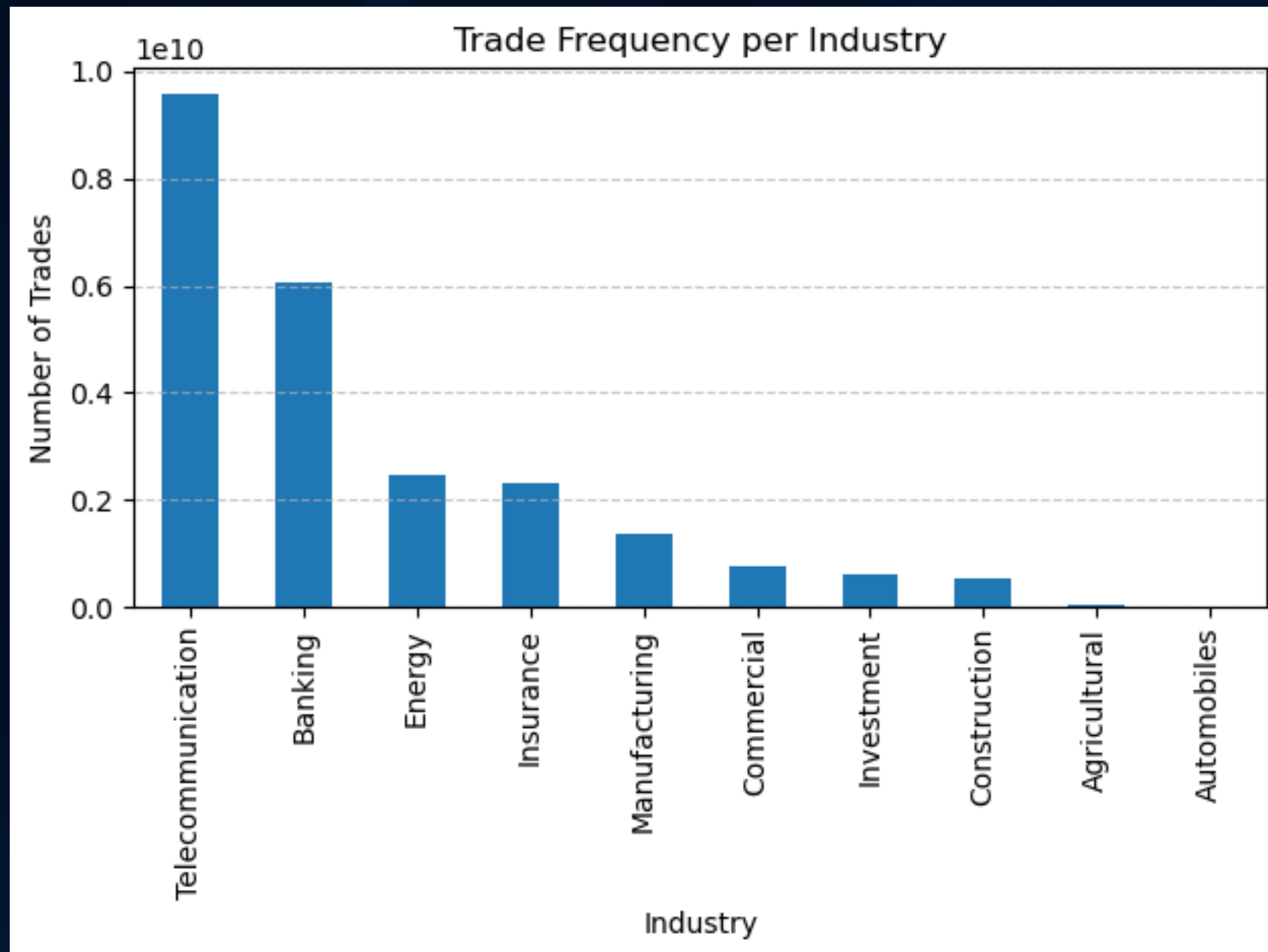
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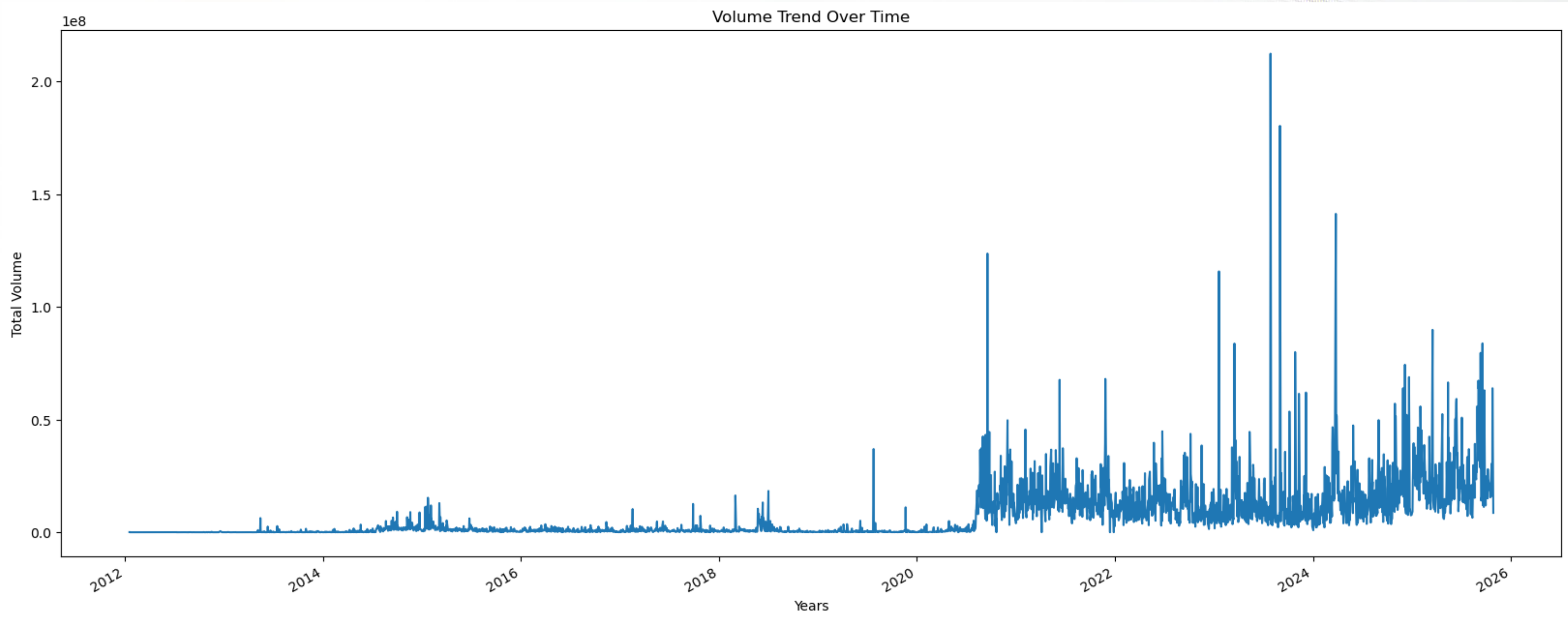


- Safaricom is the most traded company in Kenya amassing a volume of 9 billion shares traded in total.
- Safaricom, Equity, KCB, Kenya Reinsurance, KPLC and KenGen are the companies which have over 1 billion shares traded.

TECHNICAL



- The Telecommunication sector leads in volume by around 9 billion.
- Banking comes at distant second with a volume of around 6 billion.
- Investment Services, Agricultural and Automobiles are the bottom three sectors in our dataset with each having less than 100 million total trades



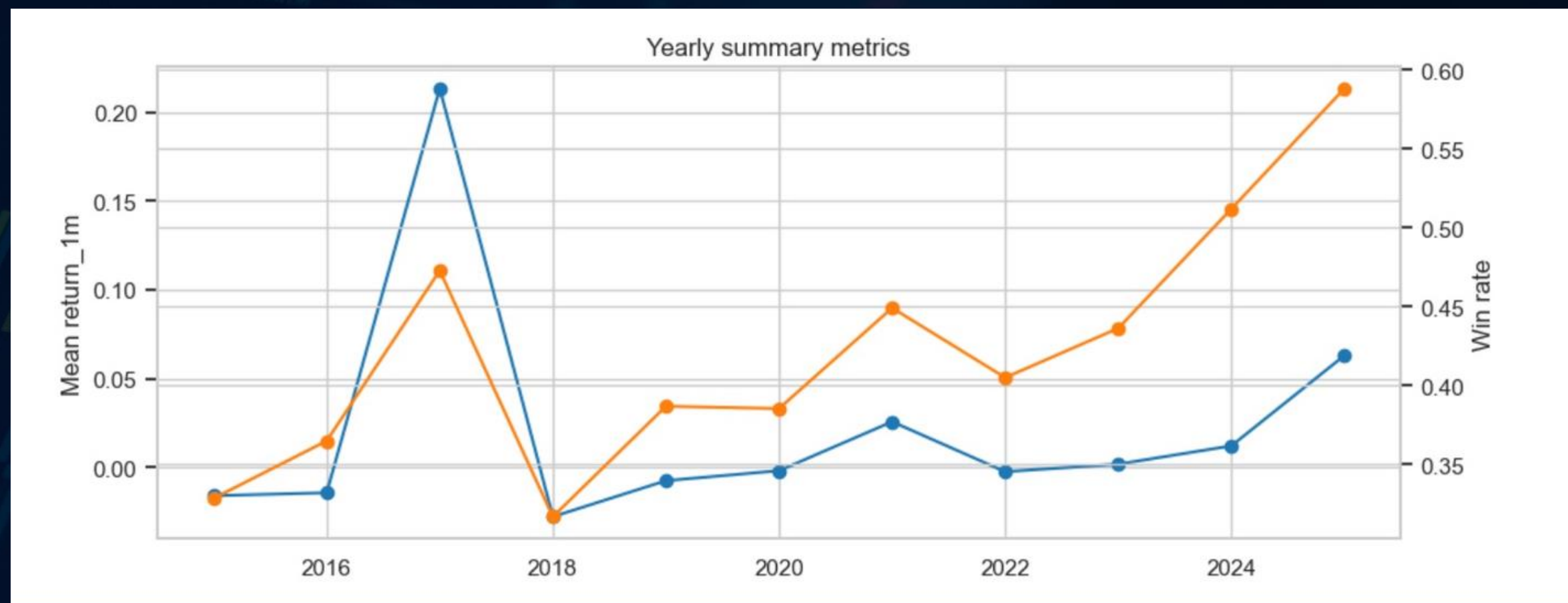
TECHNICAL

- There was a huge spike in trading activity after 2020. Presumably because after a lot of layoffs during the COVID-19 pandemic, many switched to trading as a source of income.
- The highest trading volume was recorded in 2023 where it reached as high as 2 billion.

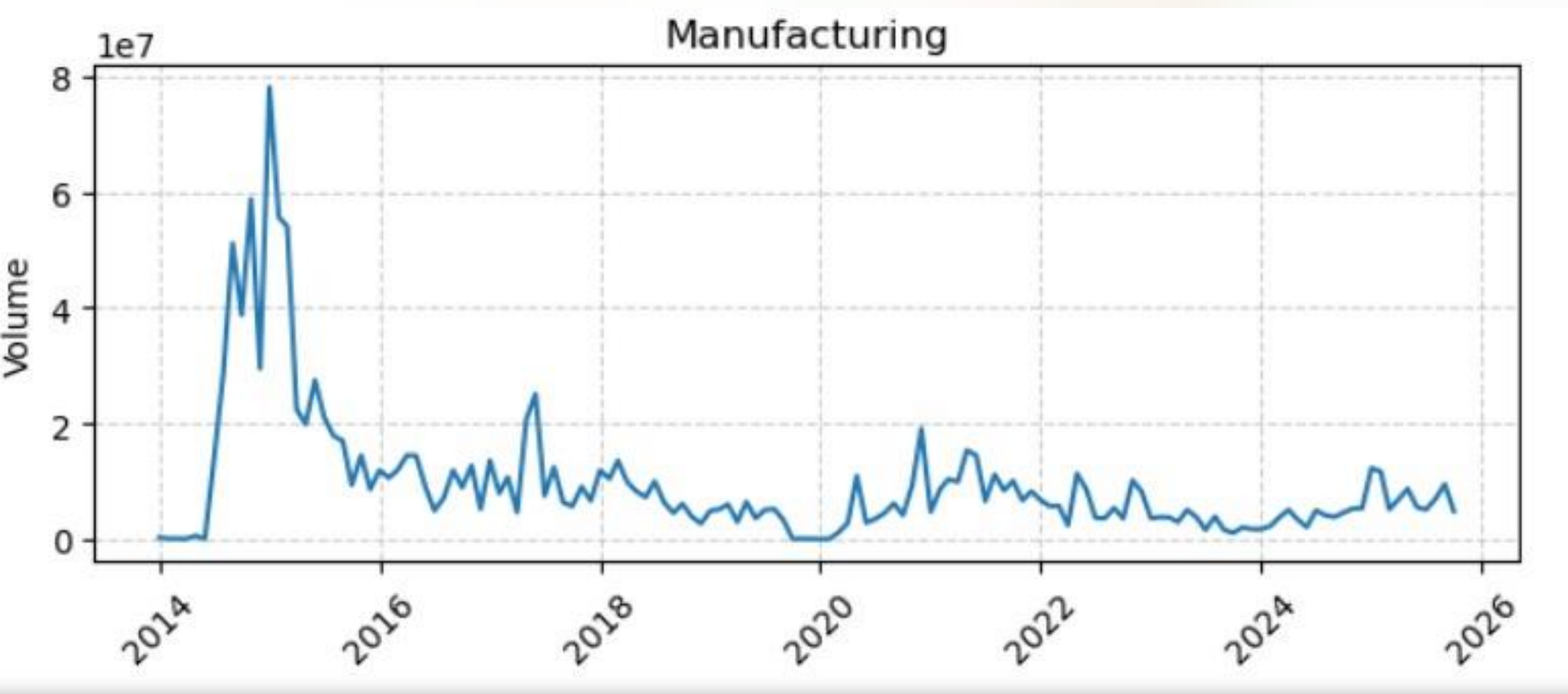
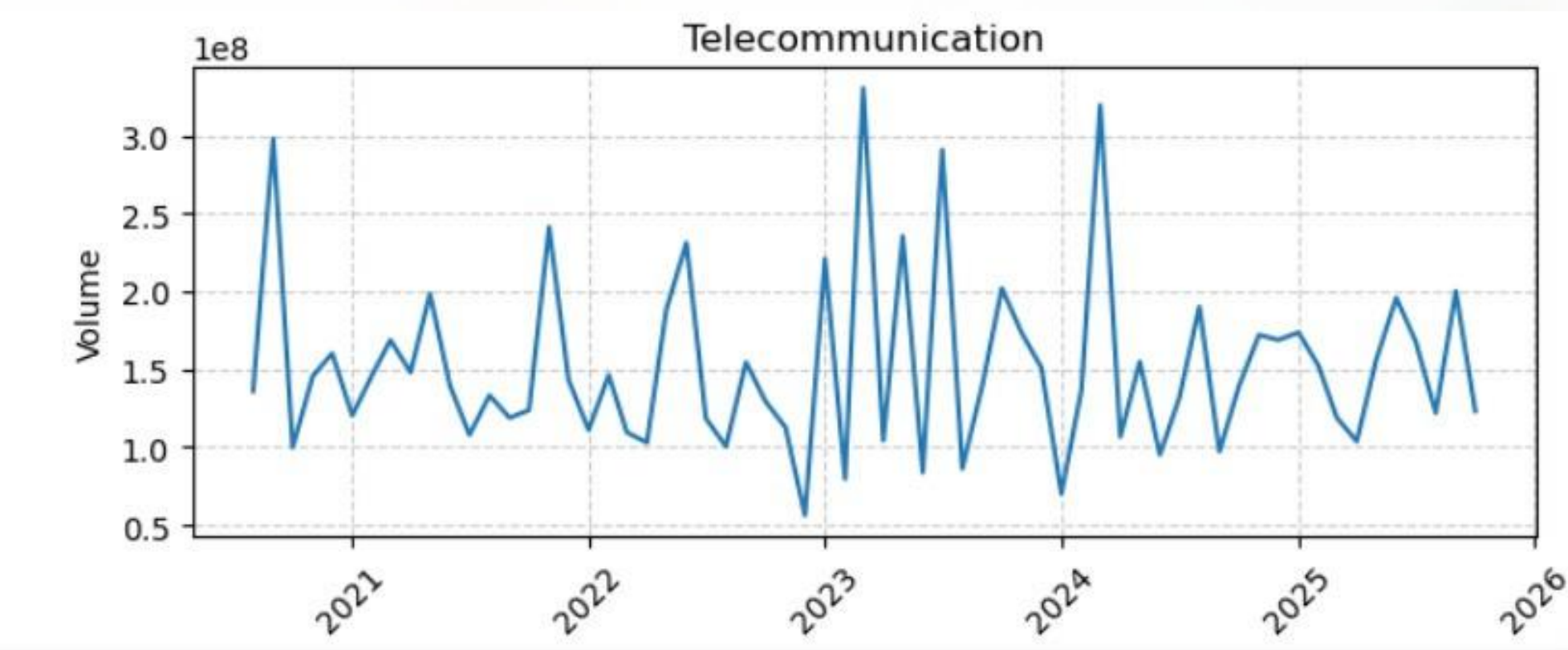


All of the companies in the Banking industry like `Co-operative Bank of Kenya`, `Equity`, `I&M`, `HFC`, `Kenya Commercial Bank` have recorded their highest point in 2025





- Market performance has fluctuated over time, with strong peaks in 2017 and steady improvement after 2020, which highlights improving market resilience and growing investor confidence despite fluctuations in average returns.



The Telecommunication industry seems to be the most volatile in our dataset while the Manufacturing sector has been on a general downward trend.



Model Evaluation

Our best model combined two models to give us the following metrics:

- Recall score of 56% where it correctly identified the winning stocks.
- ROC-AUC score of 62%.



Conclusion.

- The analysis showed clear and consistent patterns in how different stocks move over time, with many companies in the same sector displaying similar price behaviors.
- Market performance varies notably across industries, with some sectors showing stronger growth and trading activity than others.
- Historical data revealed that stock prices tend to follow identifiable trends rather than random fluctuations, indicating that past performance can provide meaningful insights into future movements.

Overall, the findings highlight the value of using structured market data to understand investor behavior, identify opportunities, and anticipate potential risks in dynamic market environments.

- Investors should diversify their portfolios by combining stocks with lower correlations to reduce risk and improve long-term returns.
- Pay close attention to sector trends, as companies within the same industry often react similarly to economic and market events.
- Continuously track price patterns and correlations, since market relationships evolve over time with changing economic conditions.
- Encourage wider adoption of data-driven decision-making tools in emerging markets to strengthen investor confidence and market transparency.
- Future improvements could include real-time data integration to provide more responsive insights and enhance forecasting accuracy.

Recommendations





Questions?



Thank you!

Apex Financial Group.

Click [here](#) to view the full project. Feel free to leave comments and insights.