eabl
— SINCE 1922 —
CELEBRATING LIFE

EABL TIME SERIES PREDICTIVE MODELING

Using Time Series And Consumer Sentiment Data

Meet the Team

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Business Understanding

- Over the last decade, EABL has experienced fluctuating stock prices, negatively impacting investor confidence and stability.

- Recent regulatory measures, including stringent filing requirements by the Kenya Revenue Authority, add to the company's challenges.

Objectives

- Use regression and time series to measure how different factors affect stock prices.

- Apply sentiment analysis to connect customer opinions and investor actions.

- We develop strategies to stabilize stock prices and inform policy

Data understanding

DATA SOURCES:

Internal Data Sources:
- **EABL Stock Prices history(EABL website):**
  EABL
- **EABL Dividends payout(EABL website):**
  Dividends

External Data Sources:
- **Social Media Data (customer sentiment)**

- **Quarterly inflation rates(World Bank Website): Inflation**

- **USD Exchange Rates(CBK website):**
  Exchange
- **Unemployment rates(MacroTrends website):**
  Unemployment

4,955
ROWS

18
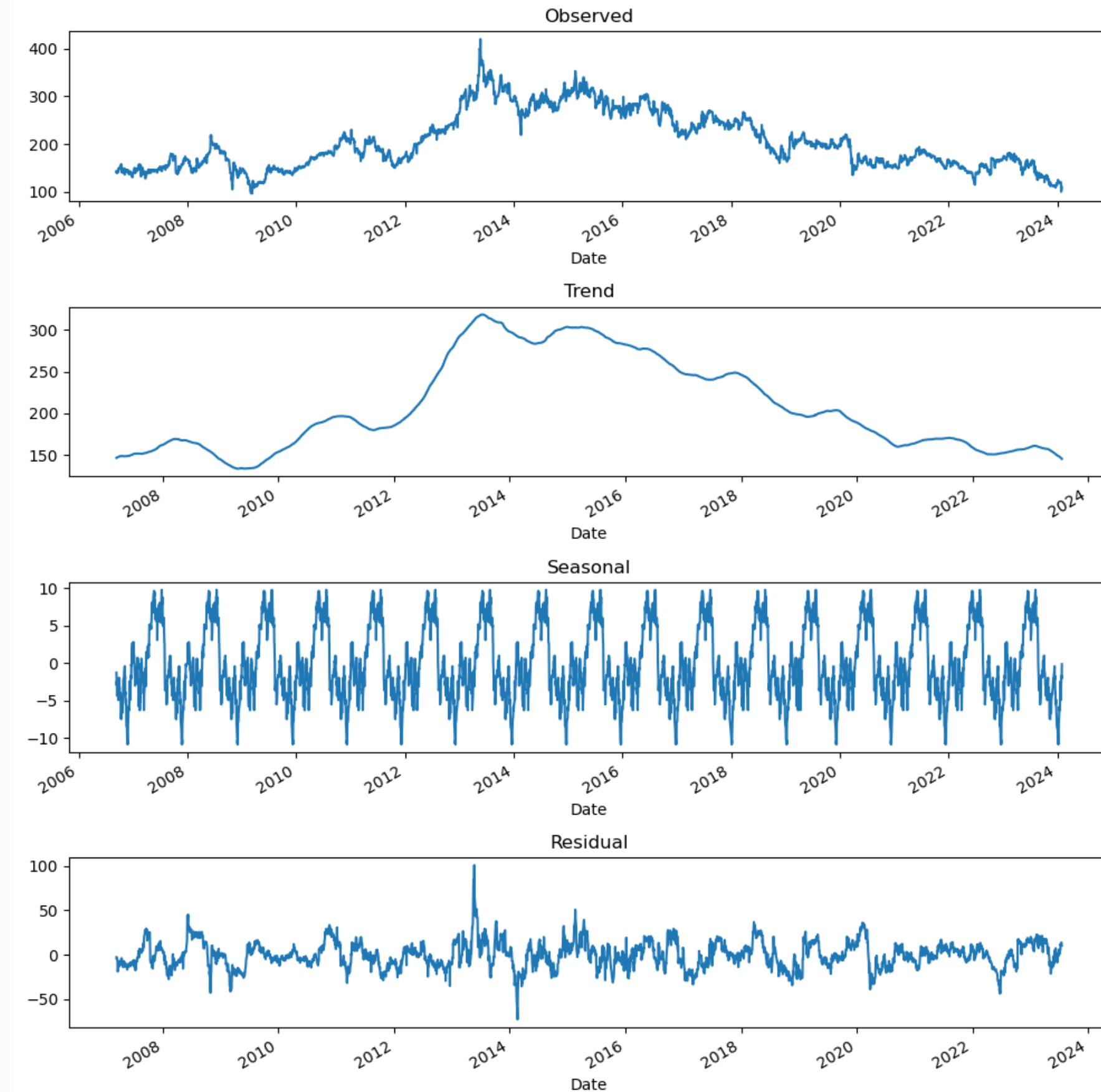**COLUMNS**

85
MISSING VALUES

Data Cleaning and Preparation

- Standardizing the dataset for analysis.
- Date parsing for time series analysis,
- Imputation of missing values in critical columns.

Trend and Seasonality Analysis

- **EABL's stock trended up until 2013, then down, with no clear seasonality effect.**

- **Investigating the causes of the decline post-2013 could provide deeper insights used to develop strategies to mitigate or reverse this trend**

  - **Investors looking for long-term opportunities should pay close attention to the trend component to align their investment strategies with the overall direction of the stock.**
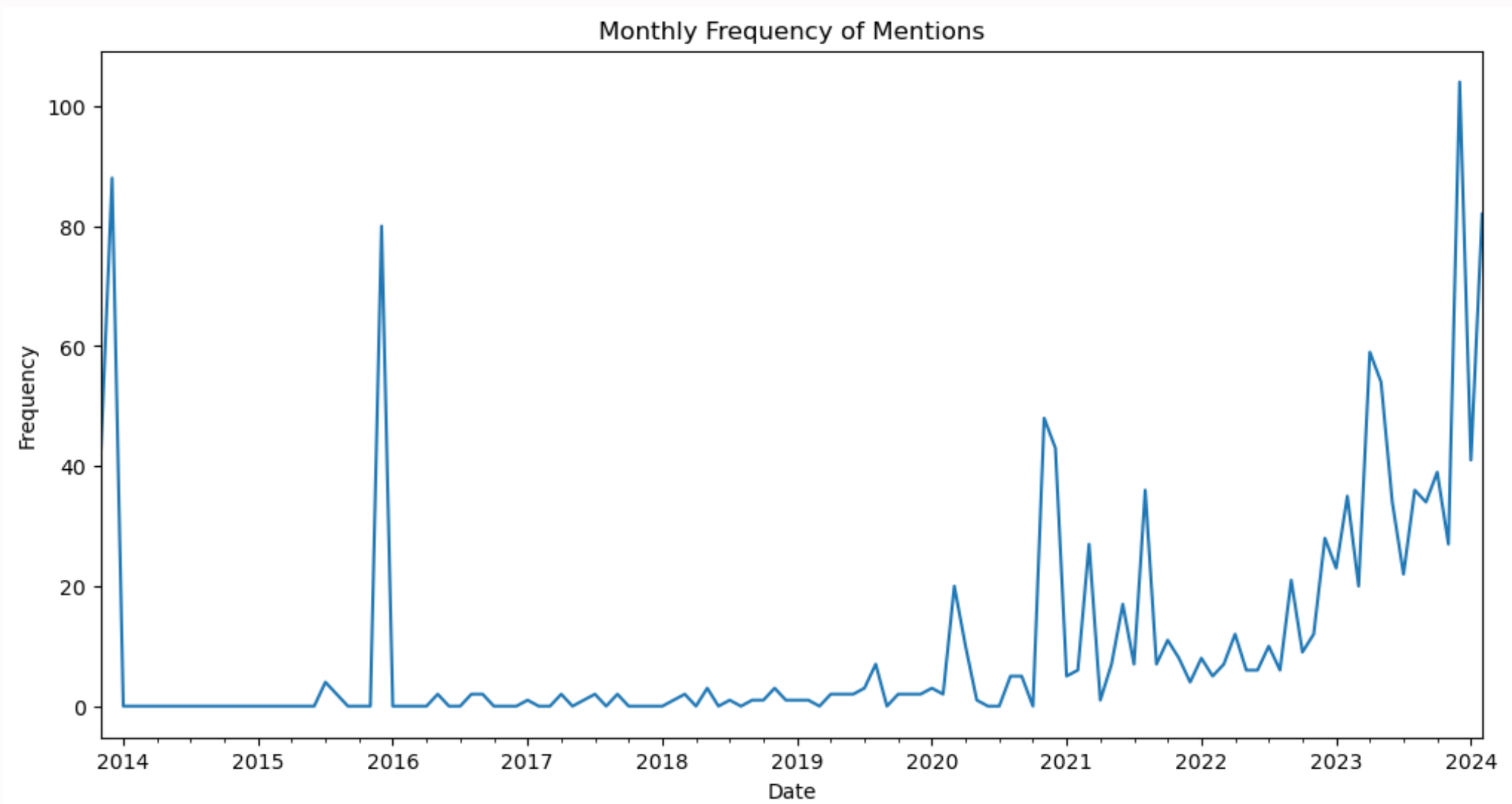
Sentiment Analysis

1,054 3 Tweets

ROWS   **COLUMNS**   **NATURE OF TEXT**

- Text Cleaning and Preprocessing:involved normalizing text to lowercase, removing punctuatins and removing stopwords

- Sentiment Score Generation: The cleaned text was analyzed using Vader Sentiment Analyzer to generate polarity scores. This step quantifies the sentiment of the text, providing a basis for sentiment analysis.

Monthly Frequency of Mentions

- The monthly frequency of mentions for EABL shows a significant upward trend, especially from early 2021 through 2024, indicating increasing consumer engagement or interest.

- Sentiment analysis reveals that the majority of consumer sentiments towards EABL are neutral, with fewer expressions of positivity and negativity, suggesting a balanced public perception with a tendency towards neutrality.
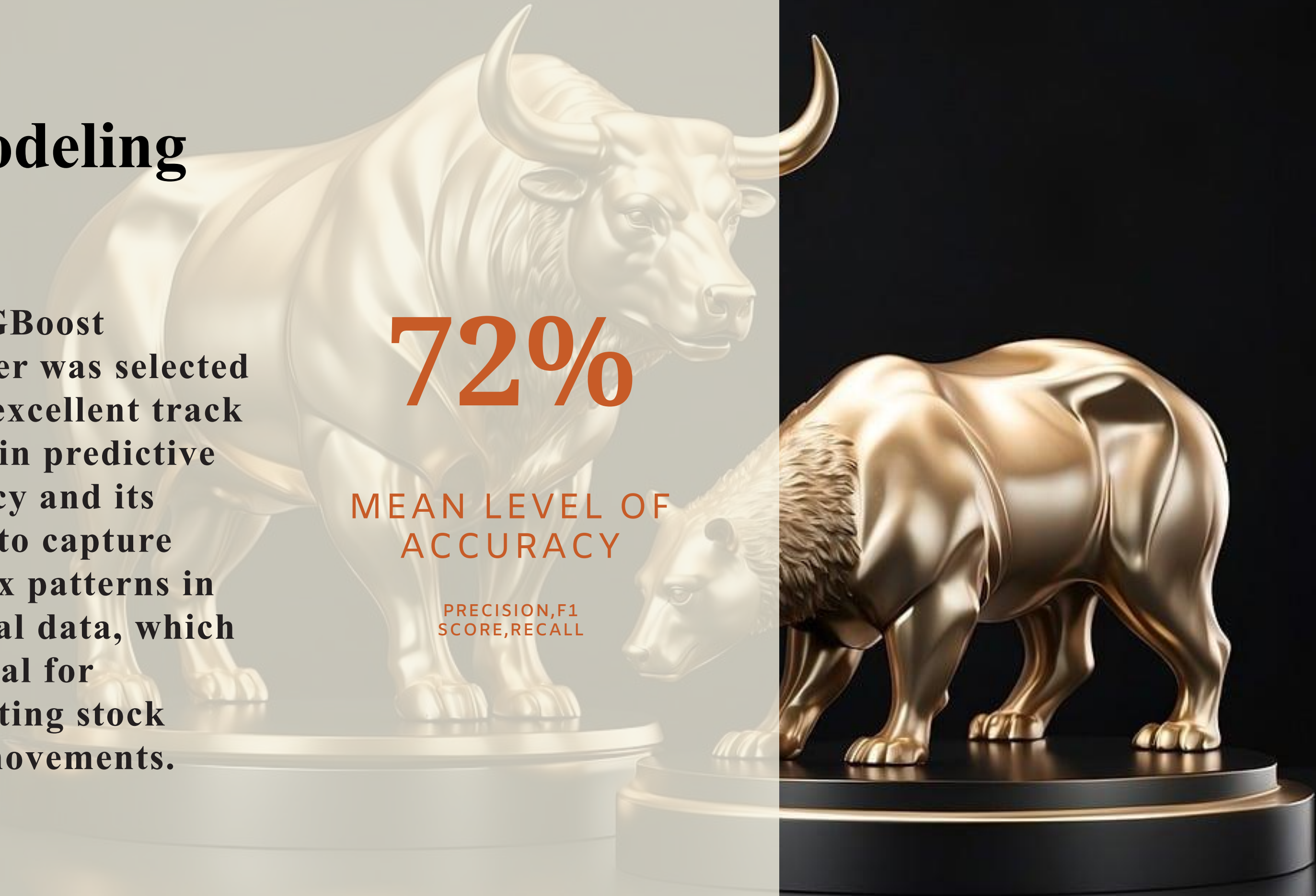
Modeling

The XGBoost classifier was selected for its excellent track record in predictive accuracy and its ability to capture complex patterns in financial data, which is crucial for forecasting stock price movements.

72%

MEAN LEVEL OF ACCURACY

PRECISION,F1 SCORE,RECALL

- **After tuning with GridSearch CV, the XGBoost classifier achieved a high precision of up to 0.90.**

90%

TUNED XGBOOST ACCURACY

- **The overall F1-scores indicate a well-balanced model with the best performance.**

Recommendations

- **Risk Management:** Use volatility and volume data to manage price risk.

- **Dividend Considerations:** Stay updated on EABL's financials and dividend decisions.

- **Market Indicator Sensitivity:** Watch unemployment and exchange rates closely, as they affect stock performance.

- **Investment Strategy:** Adopt a long-term view, as past prices predict future prices.

Conclusion

- Data-driven strategies: The project uses data to improve EABL's stock stability and growth.

- Investor confidence: The project boosts investor trust and value by addressing risks and opportunities.

- Insights generated: The project empowers EABL to navigate market uncertainties, optimize financial outcomes, and enhance its industry position.

Future works

- Training a neural network: Building an advanced machine learning model to predict stock prices and sentiment for EABL.

- More data collection: More data collection on market, consumer, and regulatory factors to improve analysis and decision-making for EABL.

- Continuous monitoring and advancement: Establishing a system for continuous monitoring of market dynamics, regulatory developments, and stock performance metrics

Thank you!