TESLA Stock Performance analysis Using Quantitative Methods

- **Team :**
  - Islam Manal
  - Naria Domingas Ventura De Oliveira

Introduction

- *Tesla Inc. (TSLA) has remained at the forefront of the electric vehicle industry, with its stock performance significantly influenced by various strategic decisions, market trends, and economic conditions. Understanding the relationship between TSLA's financial indicators and stock price movements is crucial for investors and stakeholders.*

- *The main objective of this research is to analyze the performance of Tesla stock price trends and assess the impact of major events on TSLA's stock performance*
 *.*

Methods

- To conduct a comprehensive analysis of TSLA stock performance, the study employs the following methodologies:

- 2.1 Time-Series Analysis

- Time-series analysis was conducted to understand trends and patterns in TSLA stock prices over time. A decomposition of the stock price series was performed to extract trend, seasonal, and residual components, offering insights into the underlying movement of TSLA's stock.

- 2.2 Event Study Methodology

- The impact of specific events, such as product launches, market expansions, and economic crises, on TSLA's stock performance was examined through event study methodology. Abnormal returns around event dates were calculated to determine whether these events had a significant effect on stock price fluctuations.

- 2.3 Regression Analysis

- Regression analysis was used to quantify the relationship between TSLA financial indicators (such as earnings per share, return on equity, and trading volume) and its stock price. An Ordinary Least Squares (OLS) regression model was constructed, incorporating key financial metrics as independent variables and stock price as the dependent variable.
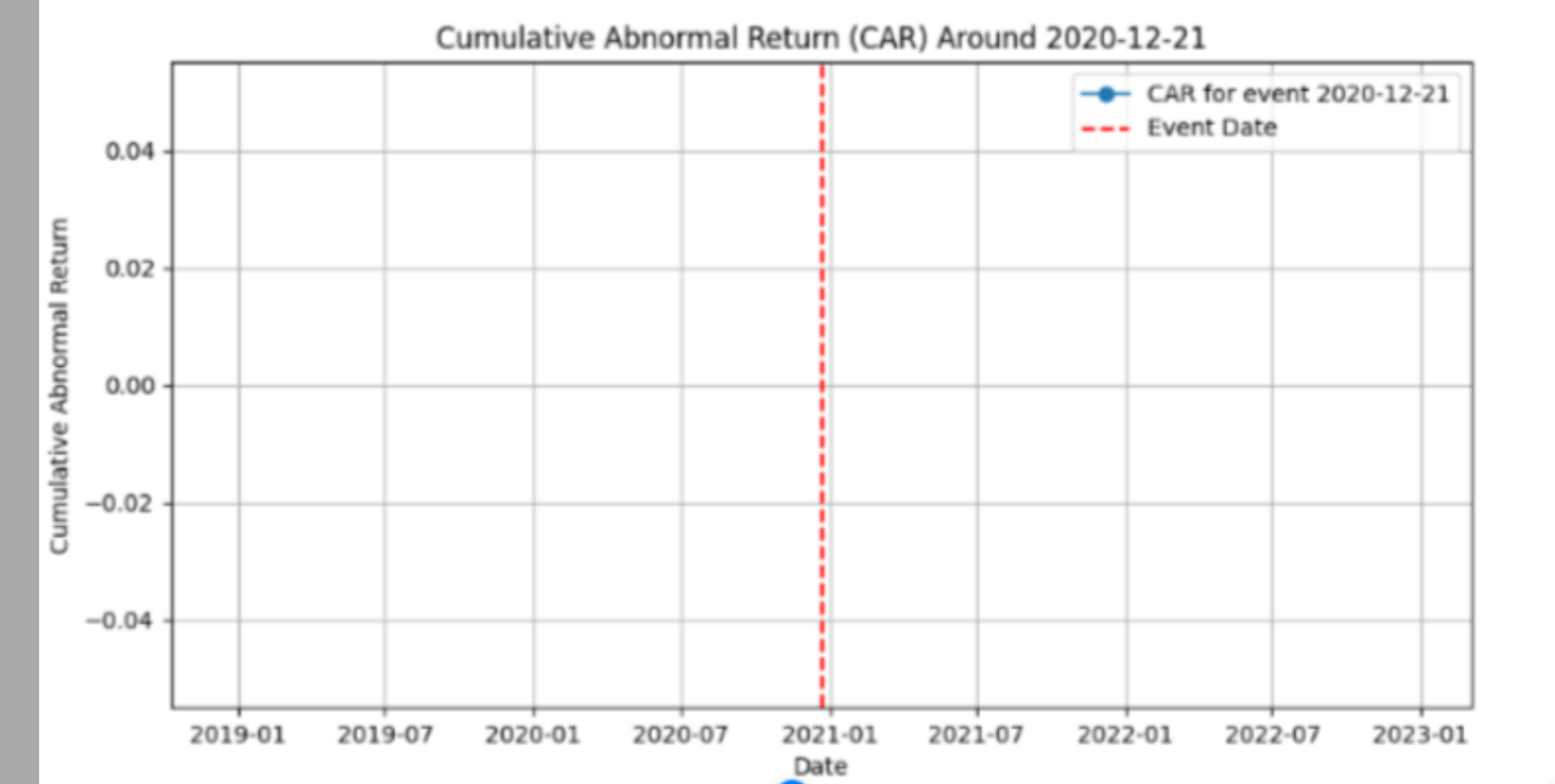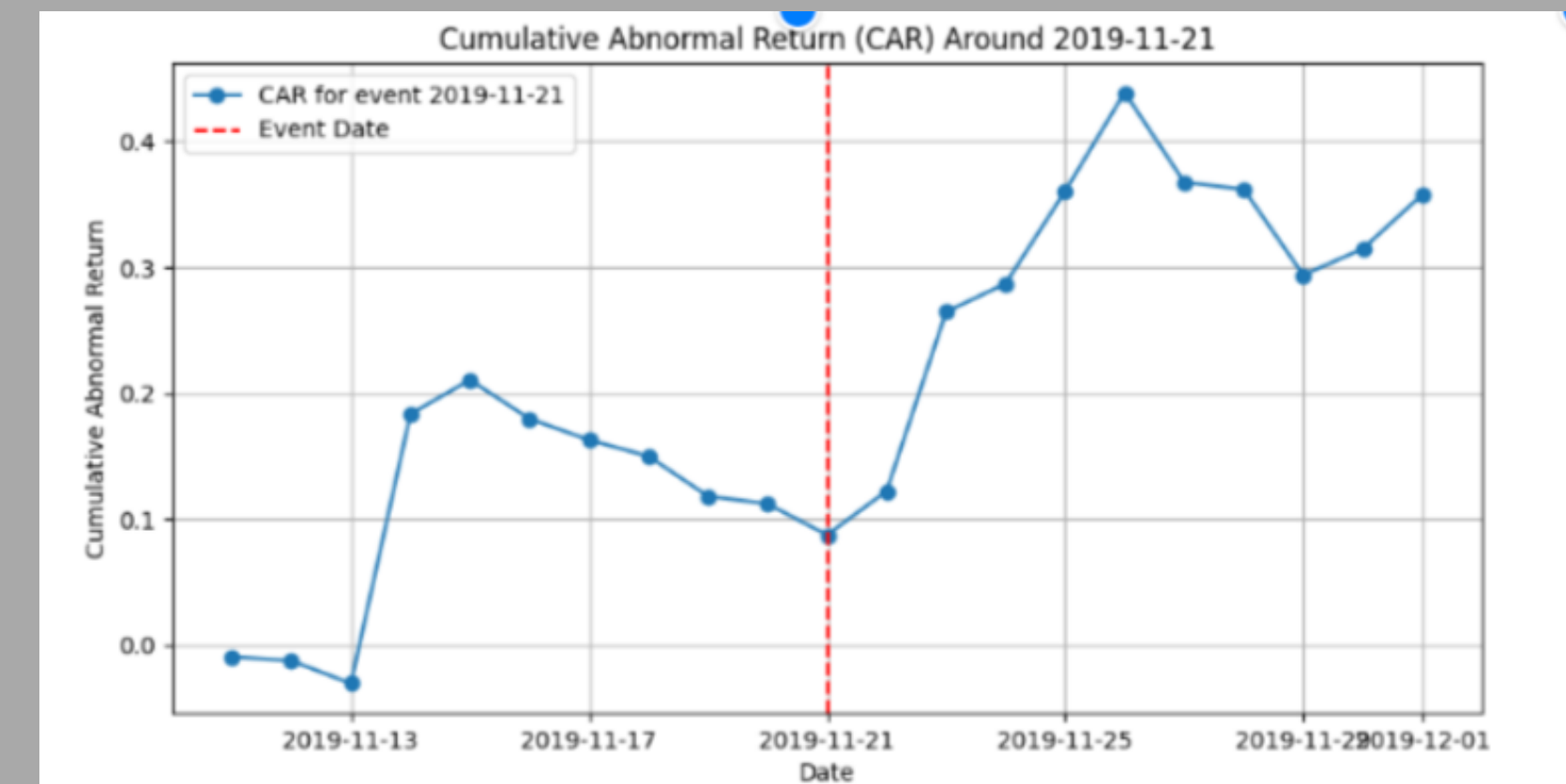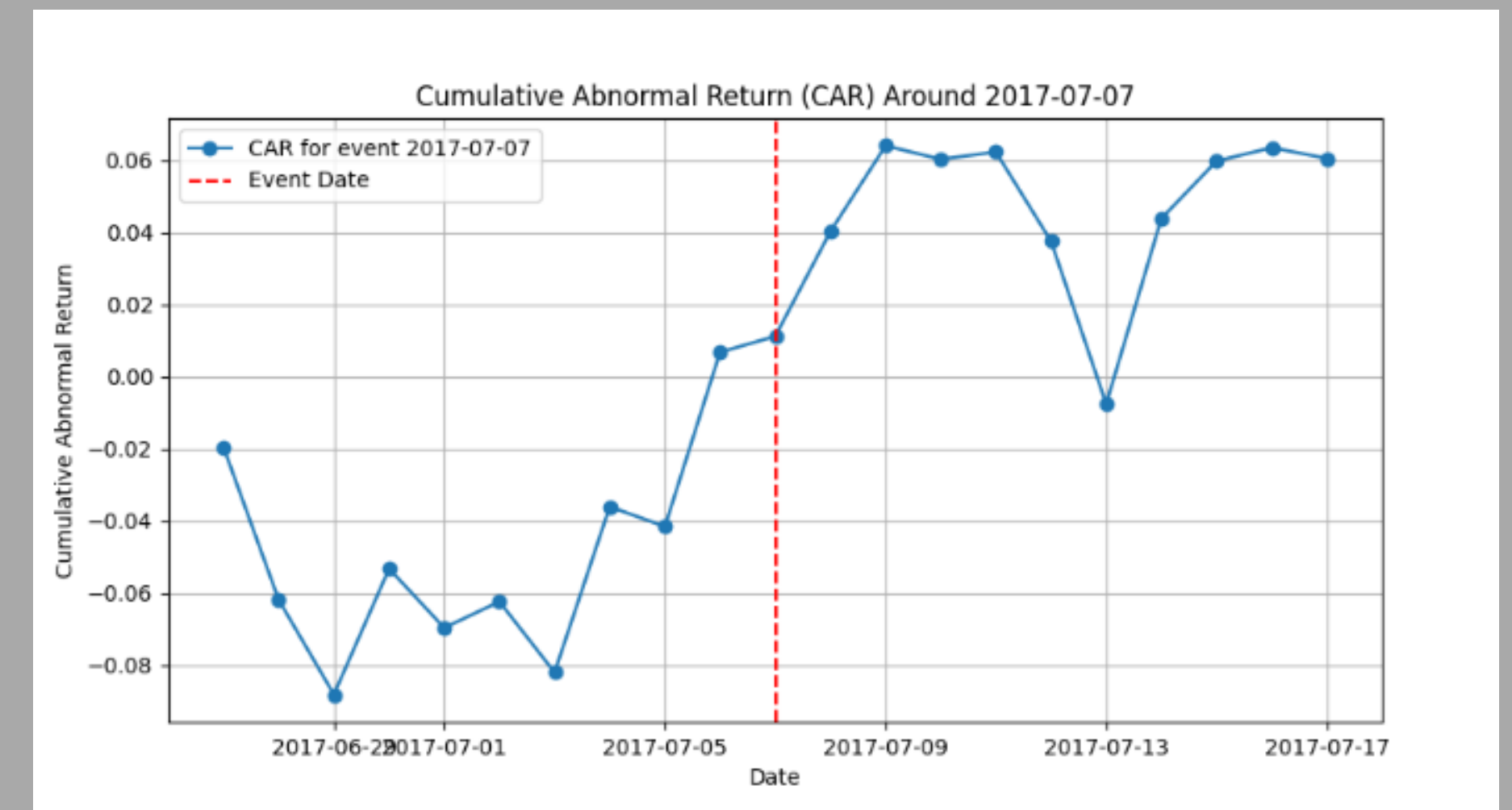
Results

- *3.1 Time-Series Analysis Findings*

- *The time-series decomposition indicated an upward trend in TSLA stock prices over the analyzed period. The seasonal component revealed fluctuations in stock prices, likely driven by quarterly earnings announcements and broader market trends*
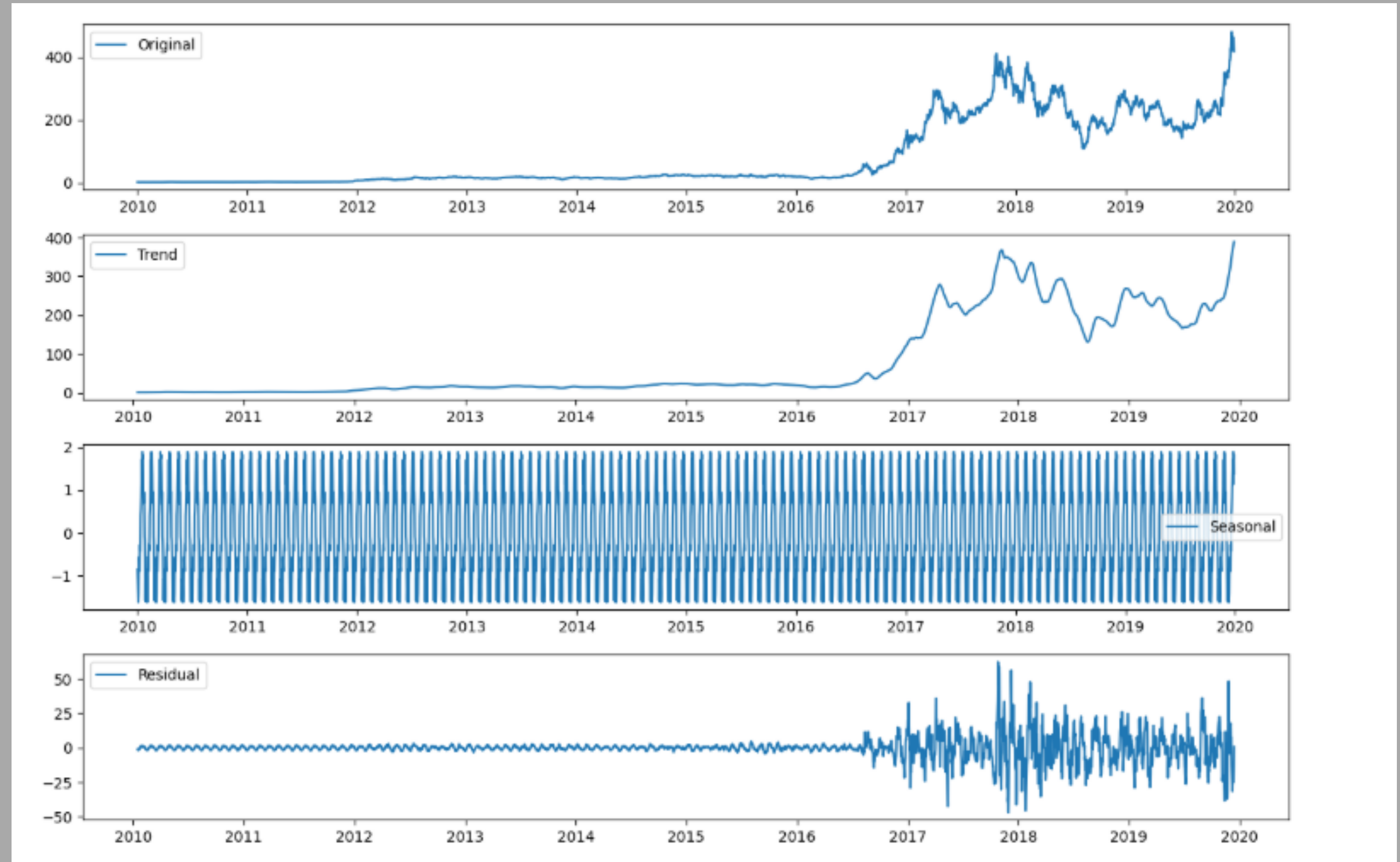
Results

- *3.2 Event Study Findings*

- *The event study methodology demonstrated that major product launches and earnings announcements resulted in notable abnormal returns. The findings indicate that positive corporate events tend to drive stock price appreciation, while regulatory challenges and negative news contribute to stock declines.*
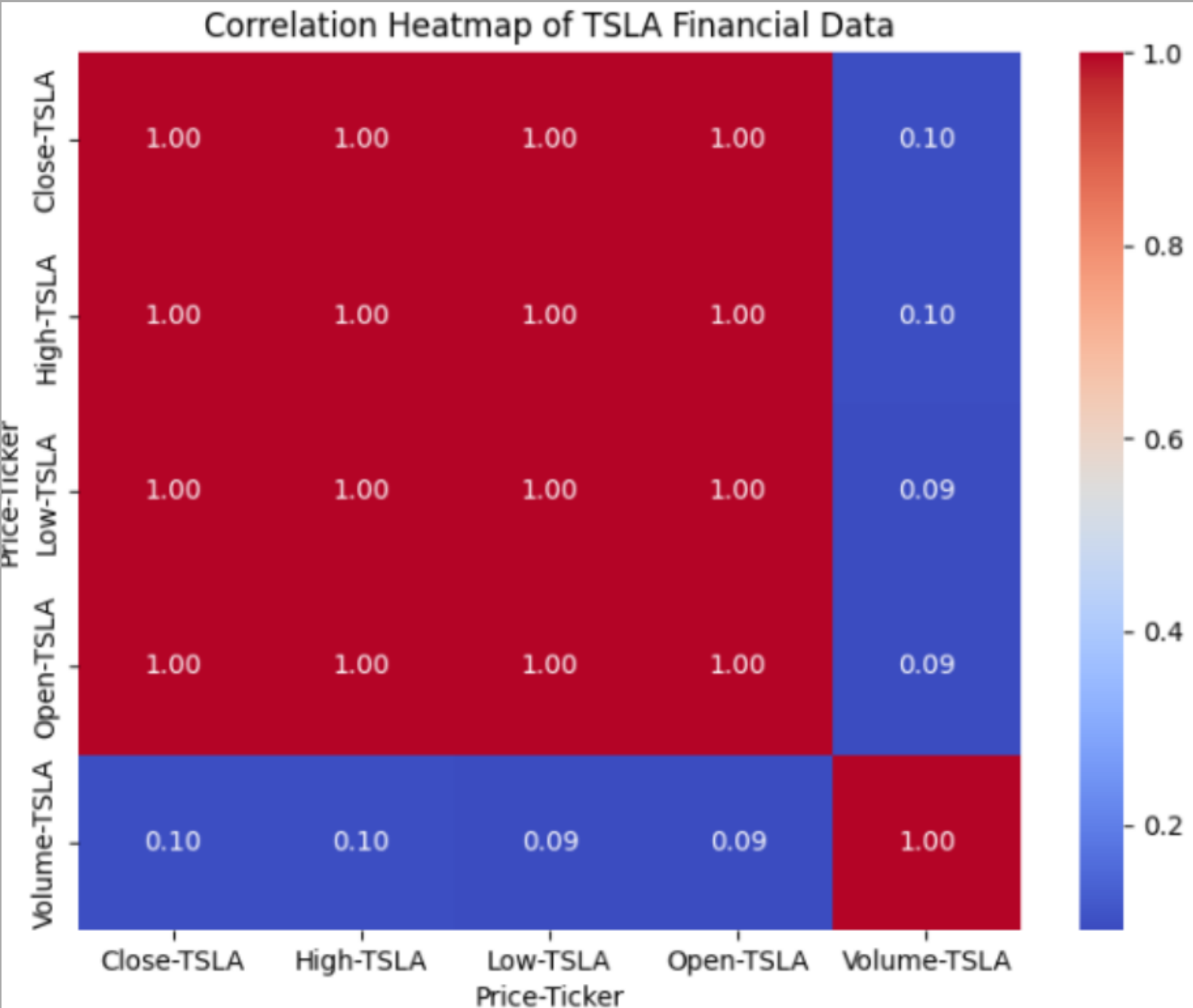
Results

- *3.3 Regression Analysis Findings*

- *The regression analysis revealed significant relationships between TSLA stock price and various financial indicators. The results suggest that trading volume and stock price have a strong correlation, indicating that increased investor activity influences price movements.*

Discussion

- Investors can utilize these findings to make informed decisions regarding stock investments. Additionally, the presence of seasonal trends suggests that market timing strategies could be effective for maximizing returns.

- This study provides a comprehensive quantitative analysis of TSLA stock performance, demonstrating how financial indicators, strategic events, and time-series patterns influence stock price movements. The findings offer valuable insights for investors, policymakers, and financial analysts in understanding TSLA's market behavior.

References:

- Yahoo Finance. "Tesla, Inc. (TSLA) Historical Data." Yahoo Finance, 2024, https://finance.yahoo.com/quote/TSLA/history

Thank You!