Evaluating the Competition of Sales, Stocks, and Trends between Coca-Cola and Pepsi

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Abstract

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Brand competition plays a central role in shaping consumer behavior and influencing global market dynamics. Among the most iconic rivalries, Coca-Cola and Pepsi serve as longstanding examples of how advertising and cultural branding help sustain market dominance. For decades, both companies have used seasonal campaigns—Coca-Cola's Christmas advertisements and Pepsi's Super Bowl performers—to capture public attention and reinforce brand identity. While marketing strategies are often studied qualitatively, fewer studies use empirical data to examine how these campaigns affect measurable outcomes like sales performance, stock prices, and public interest. Understanding how the timing of advertising relates to financial indicators offers insight into the connection between cultural capital and corporate value. However, the consistency and durability of these effects remain unclear.

In our study, we show that, contrary to popular belief, Pepsi's Super Bowl campaign does not lead to a significant increase in sales in the weeks following the event. Despite the high visibility and cultural relevance of the campaign, the data reveals minimal impact on short-term consumer behavior. Interestingly, while Coca-Cola's seasonal presence is more emotionally resonant, Pepsi consistently holds a higher market value based on stock performance across key quarters. These findings challenge assumptions about the financial effectiveness of seasonal advertising and suggest that market value may be influenced by broader investor perceptions rather than campaign timing alone.

Our research bridges marketing psychology, finance, and data analytics to explore how cultural events shape economic behavior. These insights may inform future advertising strategies, investment decisions, and corporate planning.

Objective

To use gain insights into how the Pepsi Superbowl Halftime show and the Coca-Cola Holiday advertisements contributes to positive brand engagement and overall company growth.

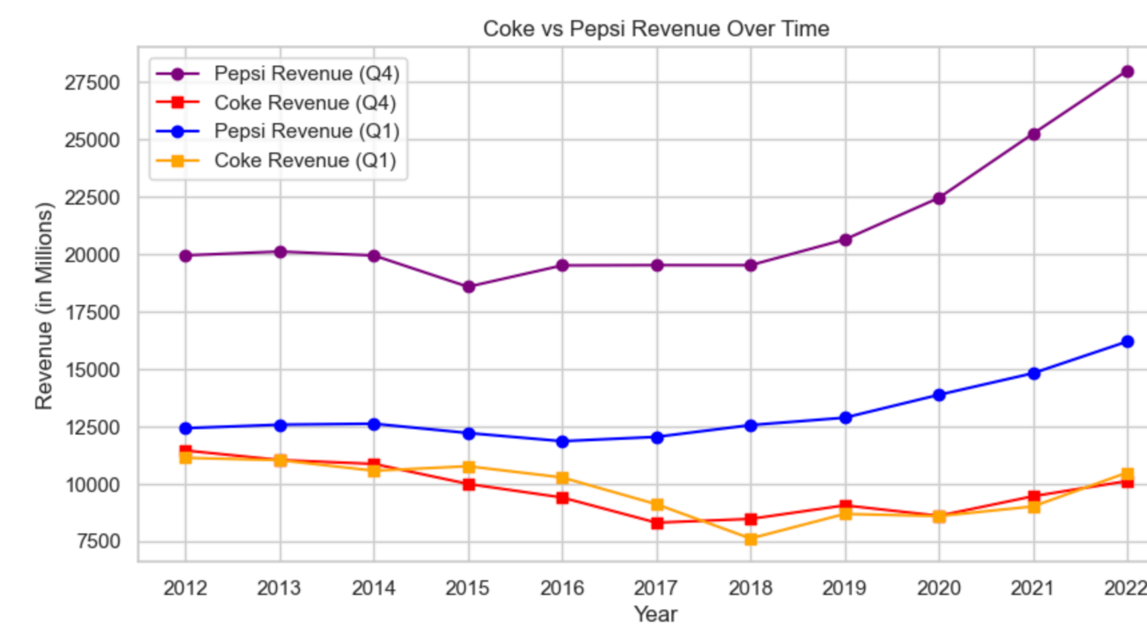
We analyze how Coca-Cola and PepsiCo advertisements actually translate to sales and increase in stock prices. Specifically, Pepsi hosted the Super Bowl Halftime show for a while; while millions of American Football fans watch the halftime show, this positive increase in marketing may have led to positive revenue and stock prices. By looking into Pepsi sales from **2012 to 2022** (the most recent ten years of the Pepsi Halftime show before selling it to Apple Music), one can analyze if there is an increase in sales during the month the Super Bowl occurs – every February.

Moreover, Coca-Cola has a well-known Santa Campaign during the Holiday season (November to Early January) which could be seen as a similar marketing strategy to Pepsi's Halftime show.Therefore, also looking into Coca-Cola sales from **2012 to 2022** during the months of November to January 1st, one can analyze if this marketing strategy translates to a drastic improvement in revenue.

During both these time frames for the respective companies, we will analyze how the stock prices are also influenced. Additionally, since there has been an increase in social media influencing consumers, analyzing how Google Trends play a role in the searches during the respective time frames. The frequency of how often people Google either Coca-Cola or Pepsi may also translate to stock prices, sales, and overall consumer perceptions.

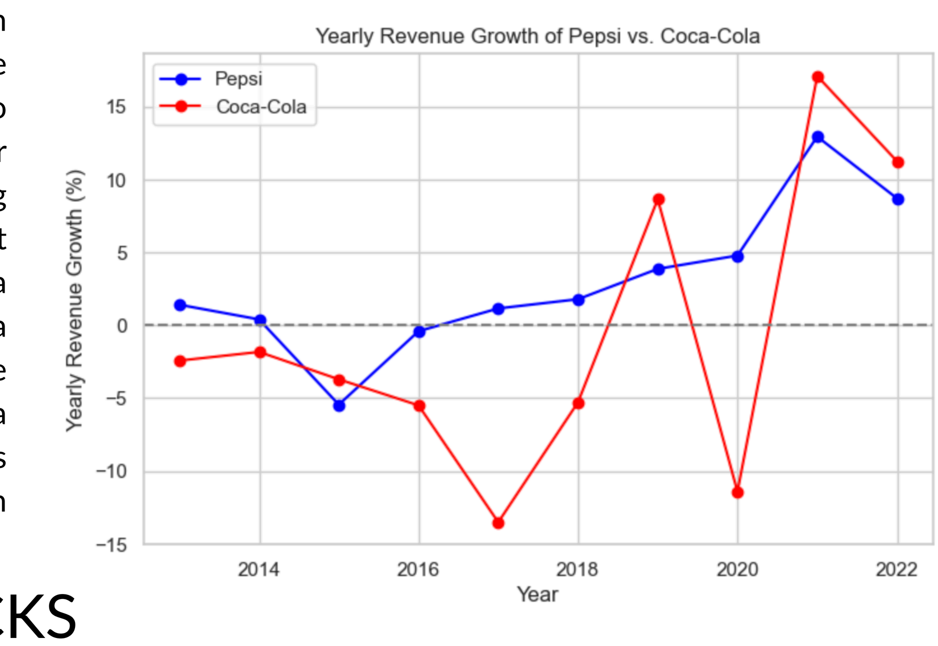
Exploratory Data Analysis

SALES

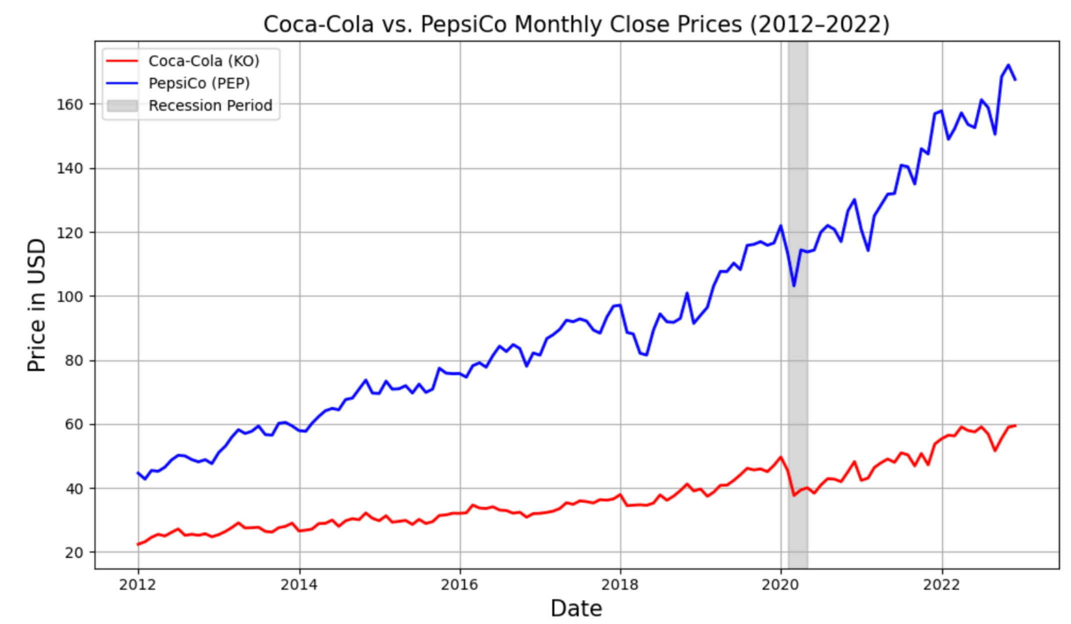


The graph on the left displays the revenue of Coca-Cola and Pepsi for quarters 1 and 4. The Pepsi Q4 (purple) is significantly higher than all the other comparisons, including Q1 Pepsi revenue. This informs us that contrary to our hypothesis, the Superbowl halftime show (which occurs in Q1) does not have a direct translation to an increase in sales. When looking at Coca-Cola, the warmer colors of orange and red display that Coca-Cola revenue is significantly lower than Pepsi's. This may be because PepsiCo sells a larger variety of products than Coca-Cola, including food items like Lay's Chips. Coca-Cola as a whole does not see a drastic difference beteween Q1 and Q4 revenue. Simiar to Pepsi's Halftime show, the Holiday campaign does not directly tranlsate a great increase in sales; however, Coca-Cola is maintaining sustainable revenue. Meaning, as long as the cost of the advertisements are not too high, it is beneficial for Coca-Cola to keep the annual advertisements.

The graph to the right displays the percentage of growth or decline in revenue for Pepsi and Coca-Cola over the years. By seeing how the revenue for Coca-Cola or Pepsi flunctuates, it allows some insights into how marketing may be successful or causing little to no effect. For example, in 2015, the Pepsi Halftime performer was Katy Perry featuring Lenny Kravitz; perhaps her performance and music gives insights into what loyal Pepsi consumers enjoy. Moreover, in 2017, Coca-Cola revenue had a large decrease compared to previous years; after some research, Coca-Cola claims to have refranchised its bottling system in hopes to focus on value rather than volume. This may have effected the quality of Coca-Cola products for a bit, resulting in loyal Coca-Cola consumers to purchase less Coca-Cola than normal. Outside factors like these two have great value in investigating.

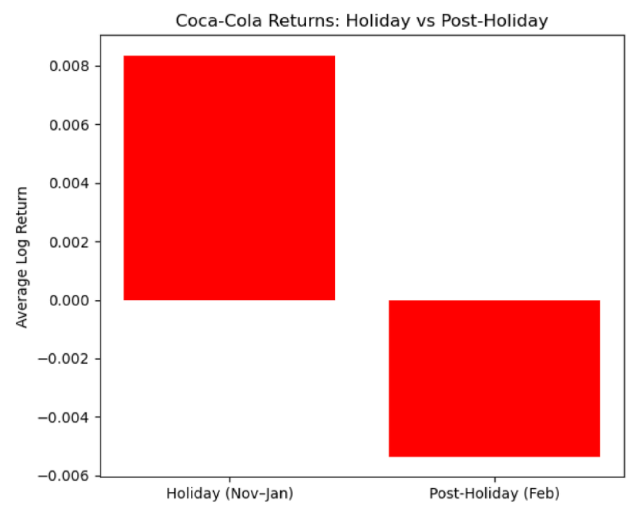


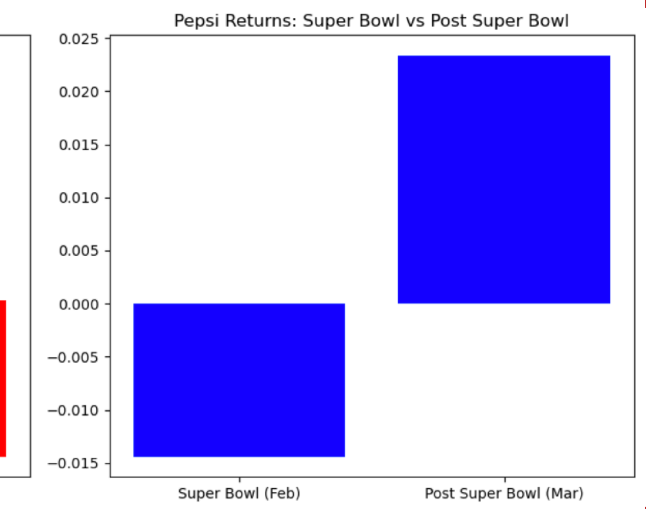
STOCKS



Monthly closing stock prices for Coca-Cola (KO) and PepsiCo (PEP) were collected from 2012 to 2022 to analyze long-term trends and performance differences. The data was visualized using Python, with Coca-Cola represented in red and PepsiCo in blue. To contextualize broader economic impacts, a shaded region marks the recession period around 2020, highlighting the disruption caused by the COVID-19 pandemic. The graph shows that PepsiCo consistently maintained a higher stock price than Coca-Cola, beginning at around $45 in 2012 and rising to over $170 by 2022. In contrast, Coca-Cola's stock price also grew but at a steadier pace, increasing from approximately $24 to $60 during the same period. Although both companies experienced a temporary decline during the 2020 recession, their stock prices rebounded quickly. Notably, PepsiCo demonstrated a sharper upward trend in the years following the recession. These patterns suggest that consumer staples stocks—especially strong global brands like Coca-Cola and PepsiCo—tend to be resilient during periods of economic uncertainty. Furthermore, the steeper growth observed in PepsiCo's stock may reflect the success of diversified product lines and high-impact marketing campaigns, such as its annual Super Bowl halftime sponsorship. Meanwhile, Coca-Cola's steady performance could be tied to its consistent branding and seasonal campaigns, particularly during the winter holidays. Overall, the visualization highlights not only the resilience of these companies over the decade but also the different strategies that may influence their market performance. These findings offer insight into investor behavior and help illustrate how branding, advertising, and macroeconomic conditions shape long-term trends in the beverage industry.

To analyze the short-term impact of seasonal marketing on stock performance, average log returns were calculated for Coca-Cola (KO) and PepsiCo (PEP) during key promotional periods. For Coca-Cola, the holiday season (Nov–Jan) aligns with its iconic winter campaigns, while February represents the post-holiday period. For PepsiCo, February marks the Super Bowl, which it sponsors, and March serves as the post-event period. These returns were visualized using bar plots, with Coca-Cola in red and PepsiCo in blue. The graph on the left shows that Coca-Cola's stock had a positive average log return of approximately 0.008 during the holiday season, followed by a negative return in February. A positive average log return implies consistent price growth over the period, suggesting that Coca-Cola's stock tends to appreciate during its peak holiday marketing season. In contrast, the post-holiday dip may reflect a temporary slowdown after the heightened holiday visibility. On the right, PepsiCo displays the opposite trend: returns are negative during the Super Bowl month but increase significantly in the post-Super Bowl period, with an average return above 0.02.

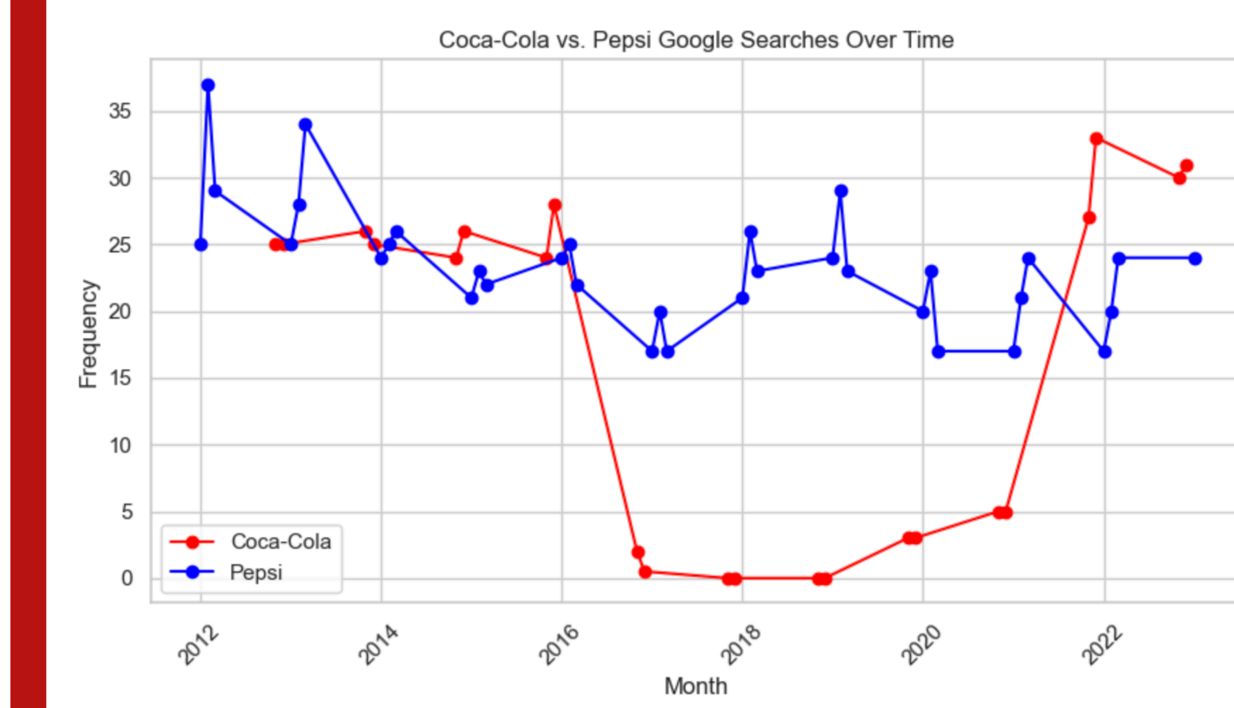




While the strong positive return in March indicates rising investor confidence, the negative return during February raises the possibility that sponsoring the Super Bowl may initially weigh on the stock—perhaps due to high upfront advertising costs or investor skepticism about short-term payoff. These patterns suggest that Coca-Cola benefits directly from holiday-themed brand visibility, while PepsiCo's Super Bowl strategy may involve delayed gains, with stock performance improving only after the event. Overall, the visualization highlights how the timing and nature of seasonal marketing efforts can produce different short-term impacts on investor behavior and stock performance across these two major beverage companies.

Google Trends

Coca-Cola and Pepsi Google Searches



This graph displays the frequency of Google searches over the respective years of 2012-2022. By looking into how many times "Pepsi" was Googled in the United States the months of January, February, and March (Q1), it grants insight into how the Pepsi halftime show left an impact on potential consumers. Likewise, seeing how many times "Coca-Cola" was Googled the months of November and December (Q4) translates to how the annual Santa marketing campaign is reached by consumers.

Something to consider with this data is the strict wording of "Coca-Cola" and "Pepsi." When it comes to Google, mis-typing and abbreviations like "Coke" are some things that effect these numbers. Also, the wording that surrounds "Pepsi" or "Coca-Cola" in these searches can reveal valuable insights, as, if the search was negative or positive. For example, "Coca-Cola near me" suggests that the individual is looking to purchase one. On the other hand, "why did my Coca-Cola get flat" suggests a negative experience with Coca-Cola.

Potential Next Steps

Sales:

Looking into every single quarter of the revenue, and seeing what percentage of revenue is coming from different products. Such as, Diet Coke vs regular Coca-Cola - likewise, breaking down what percentage of PepsiCo sales come from Lay's Chips vs the soda.

Stocks:

Year-by-year comparison to assess which campaigns had a greater effect on returns and growth rates of both stocks.

Google Trends:

Broadening the research to include words like "Coke." Also, obtaining a way to measure positive vs negative searches or looking into how seasonal flavors effect rends.

Datasets

This project uses three main datasets. The first includes sales data for Coca-Cola and Pepsi, sourced from MacroTrends. These figures are analyzed around each company's key marketing periods to evaluate how seasonal campaigns influence revenue.

The second dataset focuses on stock performance, using data retrieved through Yahoo Finance with Python. This allows us to assess how each company's marketing efforts affect their stock prices, capturing both positive and negative changes during promotional windows.

The third dataset is a Google Trends CSV file that tracks search interest in keywords like "Coca-Cola," "Coke," "Pepsi," and "PepsiCo." This data helps measure shifts in public interest and engagement in response to marketing campaigns.