Understanding the impact of online firestorms on financial performance in corporate social responsibility campaigns

Filipe Dias[1] [0009-0008-8451-1778]

Paulo Rita[1*] [0000-0001-6050-9958] prita@novaims.unl.pt

Nuno António[1] [0000-0002-4801-2487]

Celeste Vong[1] [0000-0002-6921-3026]

[1] NOVA Information Management School (NOVA IMS), Universidade Nova de Lisboa, Campus de Campolide, 1070-312 Lisboa, Portugal

*Corresponding author

This is the accepted author manuscript of the following article published by EMERALD in ***Marketing Intelligence and Planning:***

Dias, F. M. C., Rita, P., António, N., & Vong, C. (2025). Understanding the impact of online firestorms on financial performance in corporate social responsibility campaigns. Marketing Intelligence and Planning. https://doi.org/10.1108/MIP-10-2023-0570

Understanding the impact of online firestorms on financial performance in corporate social responsibility campaigns

ABSTRACT

Purpose: This study examines the impact of online firestorms on the financial performance of corporate social responsibility (CSR) campaigns by analyzing Twitter data and stock market trends.

Design: Four publicly known campaigns that received backlash were studied, involving data from 76,242 tweets.

Findings: This investigation revealed that organizations could still achieve financial gains despite experiencing backlash. The duration of an online firestorm typically ranged between three to six days. Also, a positive correlation was found between online sentiment on social media and stock market prices.

Originality: The findings provide significant insights for both academia and organizations, demonstrating that CSR campaigns involved in online firestorms do not necessarily result in adverse financial outcomes. Overall, this study provides valuable perspectives on the effects of CSR campaigns and their potential impacts on financial performance.

Summary Statement of Contribution

This research contributes to understanding how brand hate can escalate into an online firestorm and how consumers behave during such incidents. Our model explains how an online firestorm starts, investigating the causes that fuel them and allows marketers to anticipate better and mitigate potential adverse outcomes. With this model, a marketer can be cautious when seeing problems that can escalate into an online firestorm and gain time preparing a crisis plan for the business.

KEYWORDS

Corporate Social Responsibility; Financial Markets; Cause-Related Marketing; Backlash; Online Firestorm

1. Introduction

Online firestorms, characterized by rapid and intense social media backlash, present significant challenges for organizations, particularly in the context of corporate social responsibility (CSR) campaigns (Pfeffer et al., 2014). As Carroll (1979) defined, CSR encompasses the economic, legal, ethical, and discretionary obligations businesses have to society. Recent studies highlight the importance of ethical alignment between consumers and companies, emphasizing the significant impact of a brand's values on consumer behavior and brand positioning (Pengue, 2022).

Statistics reveal that 40% of consumers actively seek values-aligned purchases (Haller et al., 2019), emphasizing the pivotal role of CSR initiatives in differentiating brands and fostering consumer loyalty, mainly when consumers prioritize altruistic values (Rice, 2020). However, the myriad definitions and interpretations surrounding CSR, as presented by various researchers, sometimes obscure the core essence of this concept (Carroll, 1979; Carroll and Buchholtz, 2009; Friedman, 1970; Gillan et al., 2021; Heald, 1957; Kotler and Lee, 2011).

Notably, review of existing literature identifies several research gaps. First, there is a lack of real-life case studies and limited research on CSR campaigns that were poorly received by customers, indicating a significant gap in understanding the backlash associated with CSR initiatives (Hui & Wenan, 2022; Rohit et al., 2022). Second, while recent attention has been given to online firestorms, there remains a substantial gap in comprehending their impact on CSR campaigns. Third, there is a need for a holistic perspective that examines both the brand-related and financial aspects of online firestorms. Exploring how online firestorms affect these campaigns can provide valuable insights for businesses aiming to align their marketing efforts with social responsibility goals while effectively managing potential risks and challenges. Although existing studies primarily focus on brand-related issues (Hui & Wenan, 2022; Rohit et al., 2022), it is equally crucial to consider the monetary and financial aspects to understand the broader impact comprehensively.

This study aims to address these gaps in the literature by examining the interrelationship between online firestorms, CSR campaigns, and their financial implications. Previous research primarily focused on the impact of online firestorms on the brand, often neglecting their financial implications. This study aims to address two key areas: firstly, the identification of an online firestorm, as prior studies lacked consensus on the attributes that could help community managers recognize them, and secondly, the examination of consumer backlash, with the terms "backlash" and "online firestorm" being considered synonymous in this context.

While prior literature had shown the positive effects of CSR campaigns on business characteristics such as financial performance and brand reputation (Carroll & Buchholtz, 2009; Kotler et al., 2012), it has also highlighted the negative impact of online firestorms on businesses (Chan et al., 2018; Delgado-Ballester et al., 2021). However, there is a lack of evidence regarding the combined impacts of these factors, leaving it unclear whether the overall impact on business leaned more toward being detrimental or advantageous. Specifically, the present study aims to answer the following research questions:

RQ1. What is the impact of online firestorms triggered by CSR campaigns that support causes on a company's financial performance, and what is the duration of these firestorms?

RQ2. What is the relationship between the stock market price, the number of tweets, and the sentiment of those tweets during online firestorms?

2. Literature review

2.1 Corporate Social Responsibility

Gillan et al. (2021) referred to corporate activities with greater social responsibility and to another frequently used term conveying the same meaning –Environmental, Social, and Governance (ESG). Similarly, Carroll & Buchholtz (2009) highlighted the evolution of CSR to corporate citizenship, indicating this field's ongoing debate and evolution. This aspect highlights the necessity of a comprehensive understanding of CSR to address potential confusion among researchers and practitioners.

The concept of CSR can be traced back to the late 1950s, when Heald (1957) emphasized a corporation's obligation to contribute to human and social policies, albeit with an overly expansive definition. Subsequently, Friedman (1970) presented a perspective where assisting others was viewed as positive but not necessarily obligatory, with the primary requirement being to increase profits without engaging in deceitful practices. Carroll (1979) further divided a business's obligation to society into economic, legal, ethical, and discretionary categories, laying the groundwork for a comprehensive theory in this area. Carroll & Buchholtz (2009) proposed a definition of CSR encompassing economic, legal, ethical, and philanthropic responsibilities, emphasizing a business's broader role in society beyond profit-making. This comprehensive definition, known as the Four-Part Definition, provides a framework for companies to acknowledge and fulfill their responsibilities.

In exploring the multifaceted nature of CSR, Kotler et al. (2012) identified six types of initiatives that businesses can undertake to align with CSR principles and enhance their social impact. These initiatives are relevant to understanding how businesses can strategically engage in CSR activities, particularly considering the subsequent analysis of CSR campaigns involved in online firestorms. The six types of initiatives are as follows:

1. *Cause Promotion* (CP) – Using resources for a specific cause. *"It can be in a form of fundraising, volunteer participation, or sponsorship*" (Ásványi, 2020). This is the most expensive initiative for a business, indicating a significant commitment to the cause and potentially generating substantial public engagement (Thomas and Kureshi, 2017).
2. *Cause-Related Marketing* (CRM) *– a business "contributes a specified amount to a designated cause when customers engage in revenue-providing exchanges" (Varadarajan & Menon, 1988)*. This links consumer purchases directly to social impact, enhancing brand loyalty and consumer engagement.
3. *Corporate Social Marketing* (CSM) – Campaigns that aim to change specific behaviors (Kotler et al., 2012). Unlike Cause Promotion, CSM focuses on promoting or supporting behavioral change, aligning corporate actions with broader social goals.

4. Corporate Philanthropy (CPH) - The act of a business making a “direct contribution to a charity or cause” (Kotler & Lee, 2011). This initiative highlights the role of direct financial support in CSR, which can influence public perception and stakeholder trust.

5. Workforce Volunteering (WV) - Also known as Employee Volunteering (EV), it happens when a business is “addressing social issues by involving employees” (Bhinekawati et al., 2021). Engaging employees in CSR activities can enhance organizational culture and employee satisfaction, fostering a sense of community and purpose.

6. Socially Responsible Business Practices (SRBP) - “*corporation adapts and conducts discretionary business practices and investments that support social causes”* (Kotler & Lee, 2011). This involves integrating social responsibility into core business operations, reflecting a long-term commitment to ethical and sustainable practices.

Understanding these CSR initiatives provides a contextual foundation for analyzing the CSR campaigns studied in this research. Each type of initiative offers different pathways for businesses to engage with social causes, which is crucial for comprehending the dynamics of CSR campaigns that encounter online firestorms (Kotler et al., 2012).

2.2 From Negative Attitudes against a brand to an online firestorm

In the context of online firestorms, it is important to note that the phenomenon is closely related to the concept of consumer backlash (CB). Fitzsimons & Lehmann (2004) defined consumer backlash as the intentional contradiction of campaign recommendations by the community or customers. Delgado-Ballester et al. (2021) suggested that customer backlash was also known by other names such as Collaborative Brand Attacks, Twitterstorms, Shitstorms, and Online Firestorms, indicating the lack of consensus on the terminology. The emergence of the term "Online Firestorm" is attributed to platforms like Twitter, known for their microblogging features that can rapidly propagate negative messages within a short timeframe (Pfeffer et al., 2014). The number of users has increased over the years (Dixon, 2022), which amplifies the potential impact of online firestorms on companies. Online firestorm is defined as “*The sudden discharge of large quantities of messages containing negative WOM and complaint behavior against a person, company, or group in social media networks*.” (Pfeffer et al., 2014). This definition highlights online criticism's rapid and expansive nature, which can significantly influence public perception and brand reputation.

Hegner et al. (2017) discussed the concept of Brand Hate (BH) and the underlying reasons that could lead to such behavior, providing valuable insights into the actions prompted by consumer complaints in the context of online firestorms. Hegner et al. (2017) identified several reasons for brand hate, including negative experiences with the brand, symbolic incongruity, and ideological incompatibility. These factors can lead to actions such as brand avoidance, brand retaliation, and negative word of mouth (WOM), critical components of online firestorms. In particular, negative electronic word of mouth (eWOM) has the potential to escalate into an "Online Firestorm" characterized by intense online criticism (Herhausen et al., 2019; Pfeffer et al., 2014). eWOM's strength lies in its ability to instantly enable consumers to voice their complaints, reaching a broad audience (Nadeau et al., 2020).

The stimulus for consumers to participate in an online firestorm can range from person to person (Delgado-Ballester et al., 2021). Delgado-Ballester et al. (2021) examined personal factors that can drive the initiation of an online firestorm. They investigated two drivers (Civic Engagement or Narcissism) and sought to discover which factor weighed more. The consequences of an online firestorm can be severe, leading to reputation damage and monetary loss. For example, Delgado-Ballester et al. (2021) provided a practical example of organizations like EasyJet losing £46,841 due to one online firestorm. This example underscores the significant financial risks associated with online firestorms. Businesses experiencing an online firestorm may suffer from impacts such as damaged brand reputation, short-term decreases in sales volume, and loyal customers switching choices to other brands (Chan et al., 2018).

2.3 Hypotheses Development

2.3.1. The impact of an online firestorm on a company's financial performance

Prior research indicated the advantages of CSR initiatives concerning business attributes such as financial performance and brand reputation (Carroll & Buchholtz, 2009; Kotler et al., 2012). It has also been demonstrated that online firestorms have the potential to affect businesses adversely (Chan et al., 2018; Delgado-Ballester et al., 2021). When involved in online firestorms, CSR campaigns attract significant public attention, influencing investor sentiment and stock prices. Accordingly, we propose the following hypothesis:

H1: Online firestorms associated with CSR campaigns will significantly impact a company's financial performance.

2.3.2. The duration of online firestorms triggered by CSR campaigns

Previous research by Delgado-Ballester et al. (2022), Hegner et al. (2017), Herhausen et al. (2019), and Pfeffer et al. (2014) has acknowledged the significant impact of online firestorms. These authors have examined the various aspects of online firestorms, such as their initiation, behavior, prevention strategies, and mitigation of impacts. Their studies developed a deeper understanding of online firestorms; however, some aspects required answers, such as the typical duration of Online Firestorms on CSR campaigns. Understanding the usual duration of online firestorms in CSR campaigns can inform strategic planning efforts. Organizations can develop proactive strategies to mitigate the effects of potential firestorms and minimize their impact on ongoing CSR initiatives. Accordingly, we propose the following hypothesis:

H2: The duration of an online firestorm associated with CSR campaigns is a critical determinant of its overall impact

2.3.3. Sentiments of CSR campaigns that trigger an online firestorm

Studies on brand hate and consumer backlash (Hegner et al., 2017; Herhausen et al., 2019) suggest that negative experiences and ideological incompatibility often drive these sentiments. However, empirical evidence is required to validate this assumption in the context of CSR campaigns, where consumer expectations and ethical considerations play a pivotal role. Understanding the specific sentiment drivers during these firestorms will provide deeper insights into consumer behavior and the potential for mitigating negative impacts through strategic communication and engagement. Accordingly, we propose the following hypothesis:

H3: In the event of an online firestorm related to CSR campaigns, the prevailing sentiment expressed online will be predominantly negative.

Sacramento (2021) explored the correlation between sentiment analysis derived from Twitter and stock market data, suggesting a relationship between the number of tweets and stock market price. This relationship underscores the importance of public sentiment as a predictor of financial performance. However, the dynamics of this relationship in the context of CSR campaigns require further investigation. CSR initiatives often invoke strong emotional responses due to their ethical and social implications, and these responses can significantly influence investor behavior. This study aims to elucidate the broader financial consequences of public perception in CSR contexts by analyzing the correlation between online sentiments and stock market performance during online firestorms. Accordingly, we propose the following hypothesis:

H4: There is a significant relationship between stock market price and sentiments associated with online firestorms triggered by CSR campaigns.

3. Methodology

A study was conducted to empirically understand CSR campaigns caught by online firestorms. As cases of study, four publicly known campaigns for receiving Online Firestorm were used (Table 1).

Table 1 – CSR campaigns that lead to online firestorm

Campaign	Date	Description
Gillette "The best a man can be"	January 13, 2019	"Encouraging men to fight toxic masculinity" (Harris, 2019) This campaign aimed to combat toxic masculinity and raise awareness of positive male role models. It sparked varied reactions online, some applauding the message while others criticized it, leading to a heated discussion over traditional masculine qualities.
Nike "Just do it" Featuring Colin Kaepernick	September 3, 2018	Promote an NFL player that created awareness about "police brutality toward minorities" (Youn, 2018) Nike's collaboration with Colin Kaepernick, who protested against police brutality, drew both support and backlash. Social figures, including Donald Trump, opposed the ad, and instances of burning Nike products were shared online.
Mastercard 2018 FIFA World Cup	May 31, 2018	Supply meals to children (Lepitak, 2018) In partnership with the World Food Program and UEFA, this campaign pledged to donate meals for every goal scored by selected football stars. However, it faced criticism on social media, with questions about the initiative's effectiveness.
Pepsi "Live For Now"	April 4, 2017	Ad's purpose was initially to reach millennials and "to project a global message of unity, peace, and understanding," per a PepsiCo statement (Tillman, 2019) Pepsi's ad featuring Kendall Jenner aimed to resonate with millennials and convey a message of unity. However, it stirred controversy by depicting Pepsi as a solution to societal issues, sparking a significant online backlash.

Data from Twitter (via Twitter API) and the stock market exchange (Alpha Vantage API) were collected to analyze the campaigns. These data sources enabled comprehensive brand perception and stock market performance analyses. Twitter was one of the social media that enabled the rapid exchange of information (Penney and Dadas, 2014). The study's architecture comprises the following modules:

1. Business Understanding – This module is responsible for gathering information about each campaign. The study focuses on campaigns that received backlash and were categorized as CSR campaigns (See Description in Table 1).
2. Data Acquisition – This module is responsible for gathering data from two sources. The raw data is obtained from: a. Twitter API – This source retrieves data from Tweets. b. Alpha Vantage – This provides information about stock prices.
3. Data Preparation – This module transforms raw data into processed data and creates the analysis model.

4. Data Modelling – This module is responsible for conducting sentiment analysis using the Vader algorithm and merging all data into a single dataset.
5. Visualization and Data Analysis – This module presents visual elements to evaluate data results. It also involves developing a heatmap to understand the correlation within the data.

3.1 Data Acquisition

The data were retrieved from Twitter and the stock market through the respective APIs utilizing Python. Data were gathered for each of the campaigns. In order to gain insights into the company's response to an Online Firestorm, it was imperative to consider the period before and after the campaign. Therefore, data were collected from the two periods, as shown in Table 2. For stock market data, two months between the start of the campaign and two months after the campaign. For Twitter data, just fifteen days after, because as the literature recognized, the effect in social media tends to be quick (Pfeffer et al., 2014).

Table 2 – Extraction dates

Campaign	Extraction Dates - Twitter	Extraction Dates - Alpha Vantage
Gillette	January 13, 2019 to January 28, 2019	November 1, 2018 to March 1, 2019
Nike	September 3, 2018 to September 18, 2018	July 1, 2018 to November 1, 2018
Mastercard	May 31, 2018 to June 14, 2018	April 1, 2018 to August 1, 2018
Pepsi	April 4, 2017 To April 19, 2017	February 1, 2018 to June 1, 2018

The Twitter datasets were composed of the following columns:

- ID – A variable to identify the user.
- Date - Information about the date of each tweet.
- Tweet full text – Contained phrases and sentences that the user wrote on Twitter.
- Retweet Count - Total number of retweets each tweet had.
- Like Count - Total number of likes each tweet had.

The total number of tweets extracted was 76,242. Some brands represented a bigger share of the total, like Nike, with 33,709 Tweets (44.21%), but Mastercard had lesser values, with 940 Tweets (1.23%).

The list of columns of the market share data was less extensive. The daily data collected in the columns that were used in the analysis were:

- Date - Information about the date of each data point.
- Adjusted Close – Closing price after adjustments.
- Volume – Number of stocks traded during that date.

In total, 508 records were retrieved.

3.2 Data Preparation

The first process was the selection of the data to include in the analysis. In the case of the Twitter dataset, several procedures were applied to select and clean the data (Figure 1).

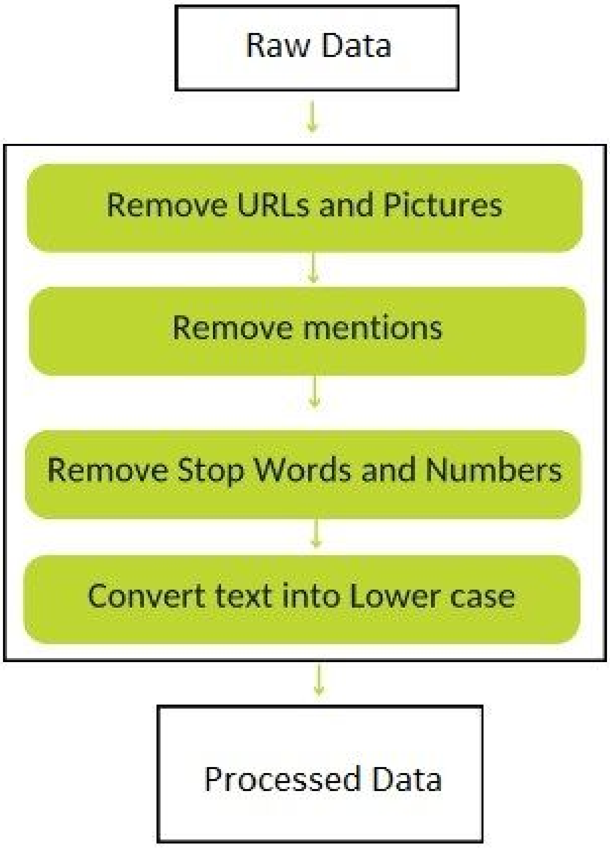


Figure 1 – Procedure to transform raw data to processed data

A cleaning process is needed when working with models that are focused on sentiment analysis. This article followed the same procedures as Sacramento (2021), which shows that values can be biased when this process is not done. The data cleaning process created specific challenges as tweets often contain mentions, URLs, pictures, stop words, and numbers. Cleaning the data involved replacing those instances that pose such constraints for spaces. However, the procedure did not eliminate the lines in that situation; instead, it removed them from the "Tweet Full text" variable. The stock market dataset did not need to be cleaned; only the unneeded variables, such as open, close, low, high, dividend amount, and split coefficient, did need to be removed.

3.3 Data Modelling

The sentiment of each tweet was evaluated using the VADER tool (Valence Aware Dictionary and Sentiment Reasoner). VADER is a library for Python that classifies text with polarity and subjectivity (Hutto and Gilbert, 2014). A new variable named Compound was added to each Twitter dataset. Compound classified tweets between -1, negative, and 1, positive. Subsequently, data from the two datasets were grouped by date using average daily polarity. The datasets were merged into a consolidated dataset in the following format:

- Date – Numerical
- Brand – String
- Number of Tweets – Numerical
- Compound – Numerical
- Volume – Numerical
- Adjusted Close – Numerical

In the process of merging the datasets, missing values emerged, primarily due to the presence of tweets on weekends or holidays, days when stock markets were closed. The approach to solving these missing values was to attribute the value from the following day. The rationale behind selecting the subsequent value instead of the preceding one was based on the consideration that choosing the following value can be interpreted as an outcome derived from the tweet data.

The Kruskal-Wallis Test was used for the first research question. It is a non-parametric test to compare two or more populations, determining whether a difference exists (Keller, 2014). It was measured to see if there was a significant statistical difference between the Adjusted Close values in the two periods. For this, the data was filtered by brand, creating two series for each brand. One series represents the data before the campaign, while the other represents the data during and after. The dates used were:

Table 3 – Formatting values for each brand

Brand	Before	During/After
Nike	Dates < 03-04-2018	Dates > 03-04-2018
Gilette	Dates < 13-01-2019	Dates > 13-01-2019
Pepsi	Dates < 04-04-2017	Dates > 04-04-2017

Mastercard	Dates < 31-05-2019	Dates > 31-05-2019

Regarding the duration of an online firestorm in CSR campaigns, an 80% threshold was defined to capture most firestorm activity. The advantage of establishing this threshold instead of employing other models is that even if the compound values do not align with expectations, the number of tweets provides valuable insights. In other words, the threshold is a reliable indicator, enabling analysis and evaluation based on tweet volume, irrespective of the compound sentiment values. For each brand, 80% of the values were:

- Nike – 26,968 Tweets
- Gilette – 26,183 Tweets
- Pepsi – 7,092 Tweets
- Mastercard – 608 Tweets

The tweet volumes across the four CSR campaigns vary, with Mastercard generating fewer tweets, which may be attributed to the degree of controversy and emotional resonance the campaign elicited (Tong & Chan, 2023). While well-intentioned, Mastercard's World Cup meal donation initiative likely sparked less polarization and debate compared to the more contentious themes addressed by Nike and Gillette. However, this variation does not undermine the validity of our findings; rather, it enriches our understanding of how different CSR approaches impact public discourse.

To address the research question regarding the sentiments around each campaign, Exploratory Data Analysis was used to describe and gather insight into the campaigns, and the Pearson coefficient of correlation was applied to study if there is any relationship between the stock market price and the sentiment of those tweets. The correlation coefficient is used to measure the strength of the association between two variables (Keller, 2014).

4. RESULTS

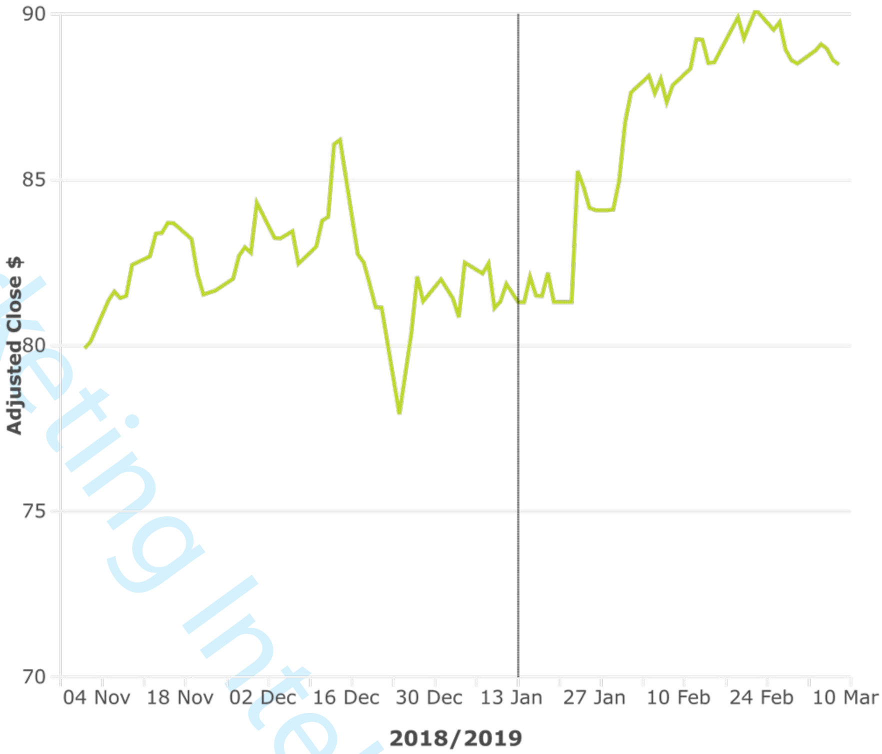
4.1 THE IMPACT OF ONLINE FIRESTORM ON A COMPANY'S FINANCIAL PERFORMANCE

This analysis provided differences between before and during/after Online Firestorms. The study revealed significant differences in prices for Gilette, Pepsi, and Mastercard stock, while no statistically significant differences were found for Nike shares, see Table 4.

Table 4 – Kruskal-Wallis for each brand

Brand	H-Statistic	P-Value
Gilette	27.84	1.32E-07
Pepsi	57.62	3.17E-14
Mastercard	68.19	1.49E-16
Nike	2.18	0.14

Gilette, Pepsi, and Mastercard have relatively high H-statistic values and small p-values. These values indicated significant differences among the groups for these brands. By employing the Kruskal-Wallis test, this study successfully captured and analyzed the variations in brand share prices, providing a more comprehensive understanding of the stock market dynamics. However, utilizing the Kruskal Wallis test alone offered information about the price differences but did not indicate whether the prices were higher or lower. Data visualization techniques can be beneficial in addressing these issues, see Figure 2.



(a) Gilette

(b) Pepsi

(c) Mastercard

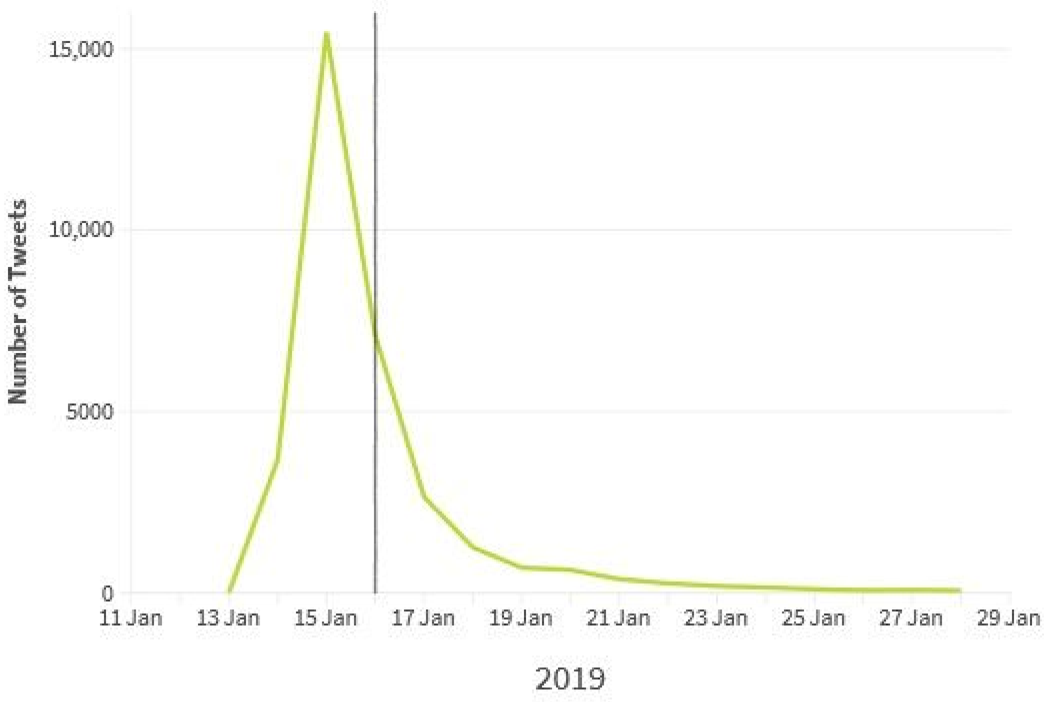
(d) Nike

Figure 2 - Adjusted close prices for four brands over their respective time periods

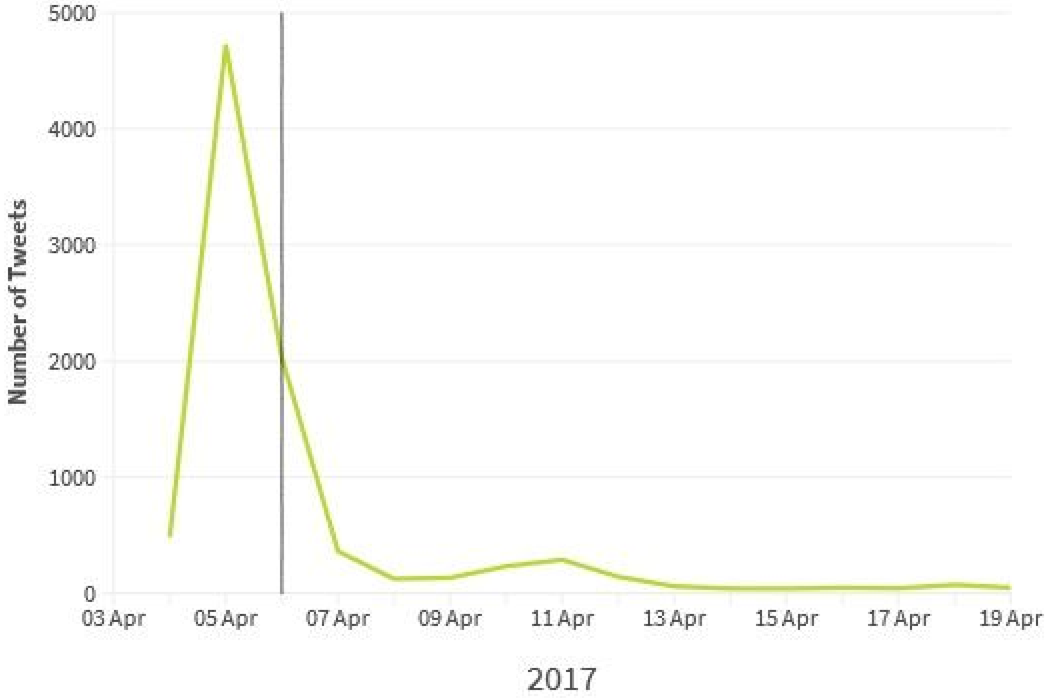
Contrary to expectations that online firestorms following CSR campaigns could harm stock prices, several brands have seen their market values rise instead. Gillette, Pepsi, and Mastercard are prime examples, each experiencing a notable increase in stock prices post-campaign. Mastercard, in particular, saw a significant surge, with its stock price escalating from an average of $177.64 to $196.24, a substantial 10.5% rise. Similarly, Gillette's stock price grew by 4.82%, rising from $82.31 to $86.28, while Pepsi experienced a 4.4% uptick, moving from $91.57 to $95.60.

4.2 Duration of an Online Firestorm

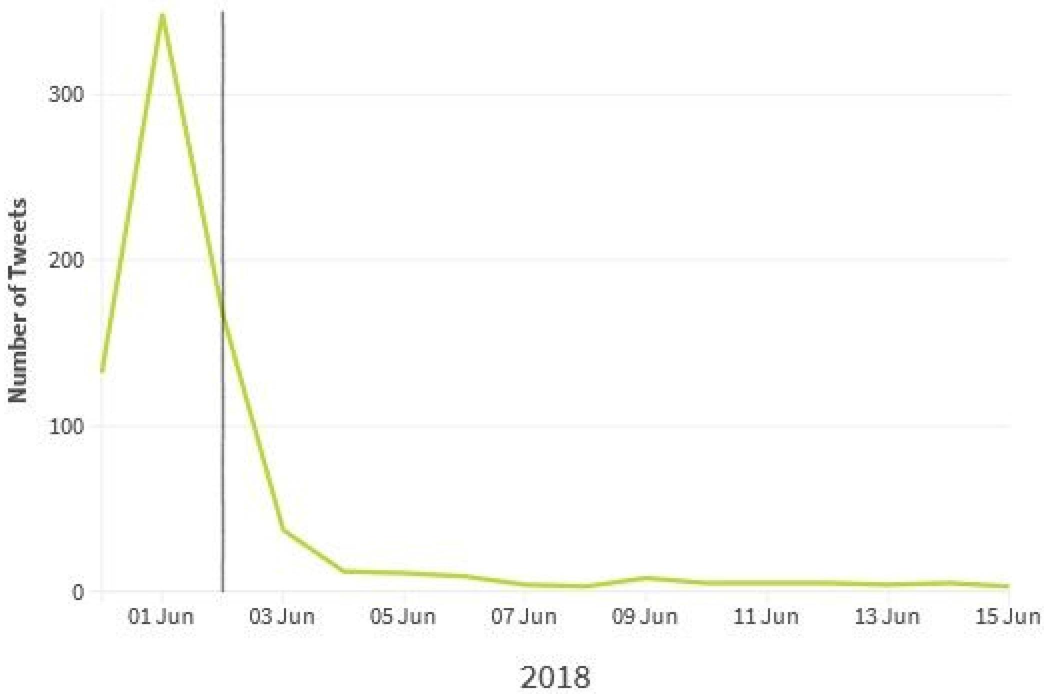
The findings suggested that the impact and discussion surrounding similar campaigns can have a mixed duration between a specific time, as seen in Figure 3.



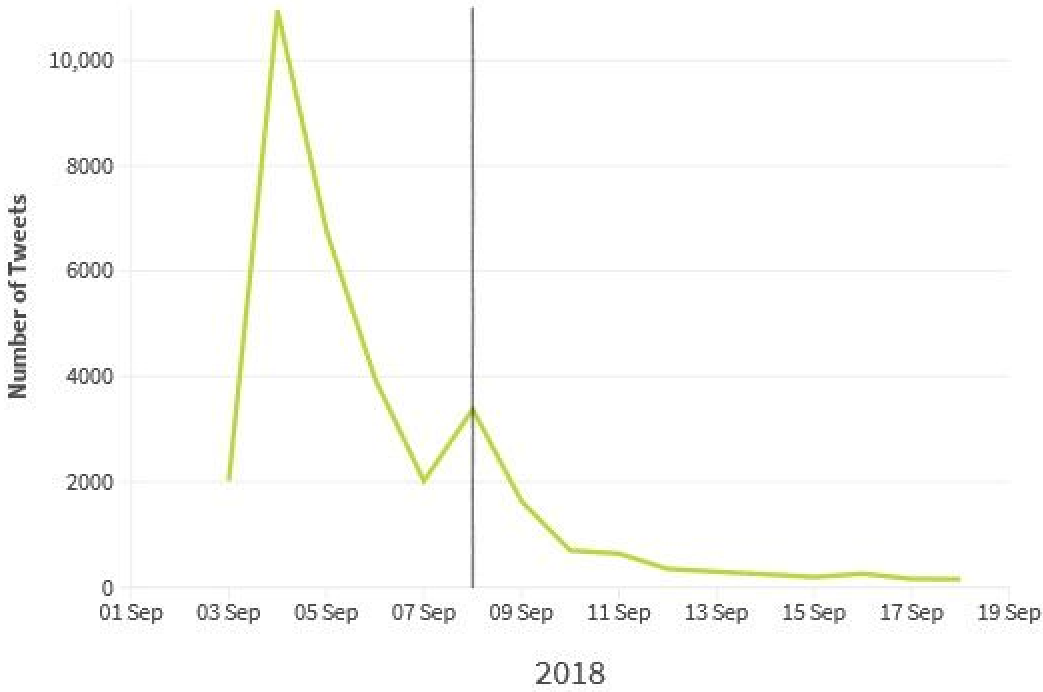
(a) Gilette



(b) Pepsi



(c) Mastercard



(d) Nike

Figure 3 - Number of tweets for four brands over their respective time periods

We observed differences among the brands in analyzing the time it took for online activity to reach a predefined threshold. Specifically, Nike encountered an Online Firestorm that lasted six days, while Gillette's lasted four days, and both Mastercard and Pepsi experienced a shorter duration of three days. Each brand saw a marked increase in Twitter activity following the campaign's launch, with a subsequent decline indicating a possible trend shift.

4.3 Sentiment Analysis

The initial phase of our analysis involved a detailed review of the data on an individual brand basis. This systematic approach uncovered some compelling findings about each brand's Twitter engagement levels. To visually convey these findings, Figure 4 presents the distribution of the tweets, showcasing the collective volume of tweets from all brands, totaling 76,242.

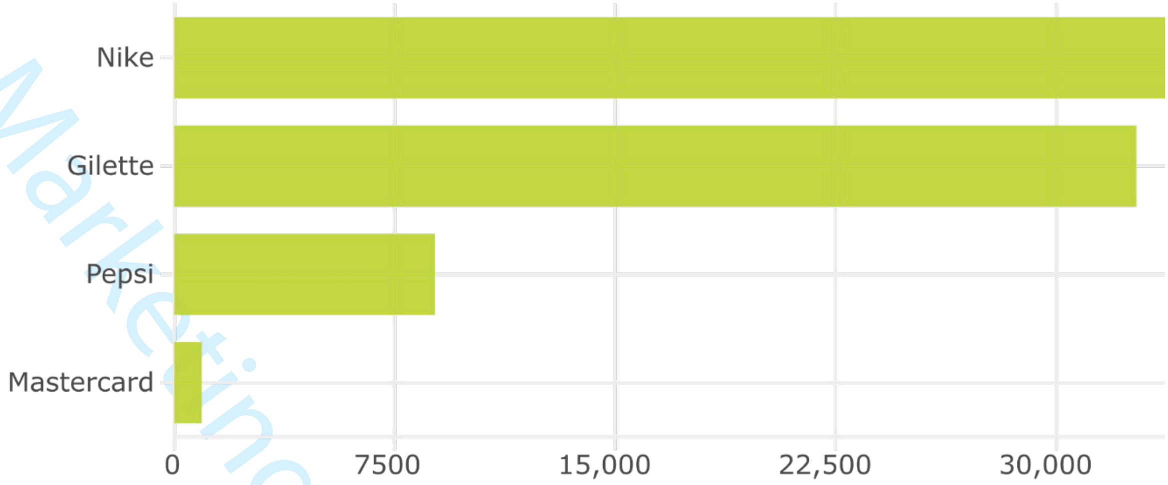


Figure 4 – Number of tweets for each brand

When examining the frequency of campaign-related discussions on Twitter, it is apparent that Nike (44.21%) and Gillette (42.93%) led the way in generating conversations. These two brands stood out with significantly higher Twitter engagement than their peers. On the other hand, Pepsi (11.63%) and Mastercard (1.23%) attracted fewer tweets.

The sentiment analysis for these campaigns utilized the VADER tool. This powerful sentiment analysis tool detailed the emotional tone behind the tweets related to each brand's campaign. The summarized outcomes of this analysis are visually represented in Figure 5, displaying the average Compound Value (CV) sentiment scores. These scores range from -1 to 1, where -1 indicates a strongly negative sentiment, and 1 indicates a strongly positive sentiment within the tweet content.

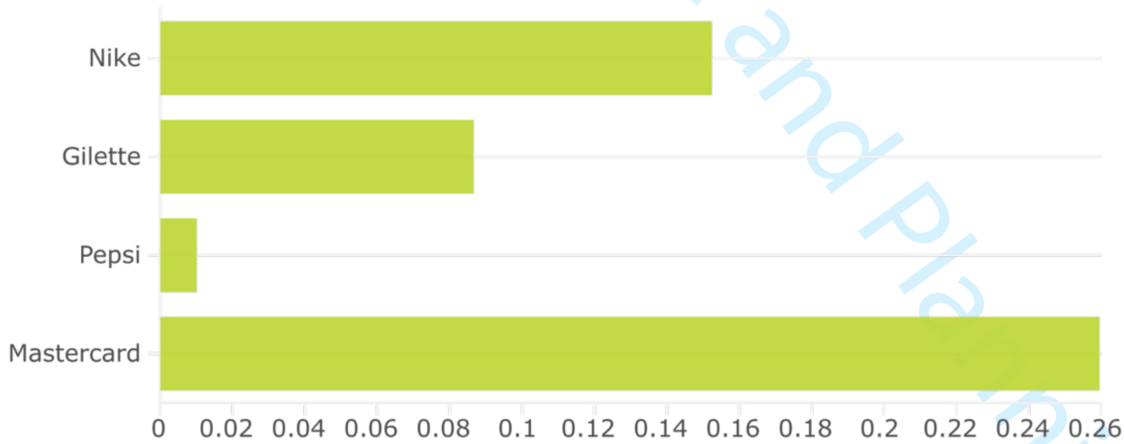


Figure 5 – Average compound values for each brand

The VADER tool categorizes tweets into three distinct sentiment classes based on the CV:

- Negative Sentiment: CV ≤ -0.5
- Neutral Sentiment: -0.5 < CV < 0.5
- Positive Sentiment: CV ≥ 0.5

The analysis revealed that the overall sentiment of the tweets did not skew distinctly toward negative or positive. Mastercard, for instance, exhibited a relatively higher CV score of 0.26. However, this result was deemed potentially biased due to the smaller volume of tweets concerning the brand. Pepsi's campaign was among those with a predominantly neutral sentiment, as illustrated in Figure 6. This figure also details each brand's minimum and maximum compound sentiment scores, highlighting the variability in public perception across different campaigns. The data clearly demonstrates that sentiment outcomes can vary substantially from brand to brand.

Upon reviewing the sentiment analysis conducted with the VADER Model, we observe interesting findings when comparing the average compound values with the range of sentiment expressed through the minimum and maximum compound values. Figure 6 illustrates these comparisons, providing insights into the variability of public perception across different brands and campaigns.

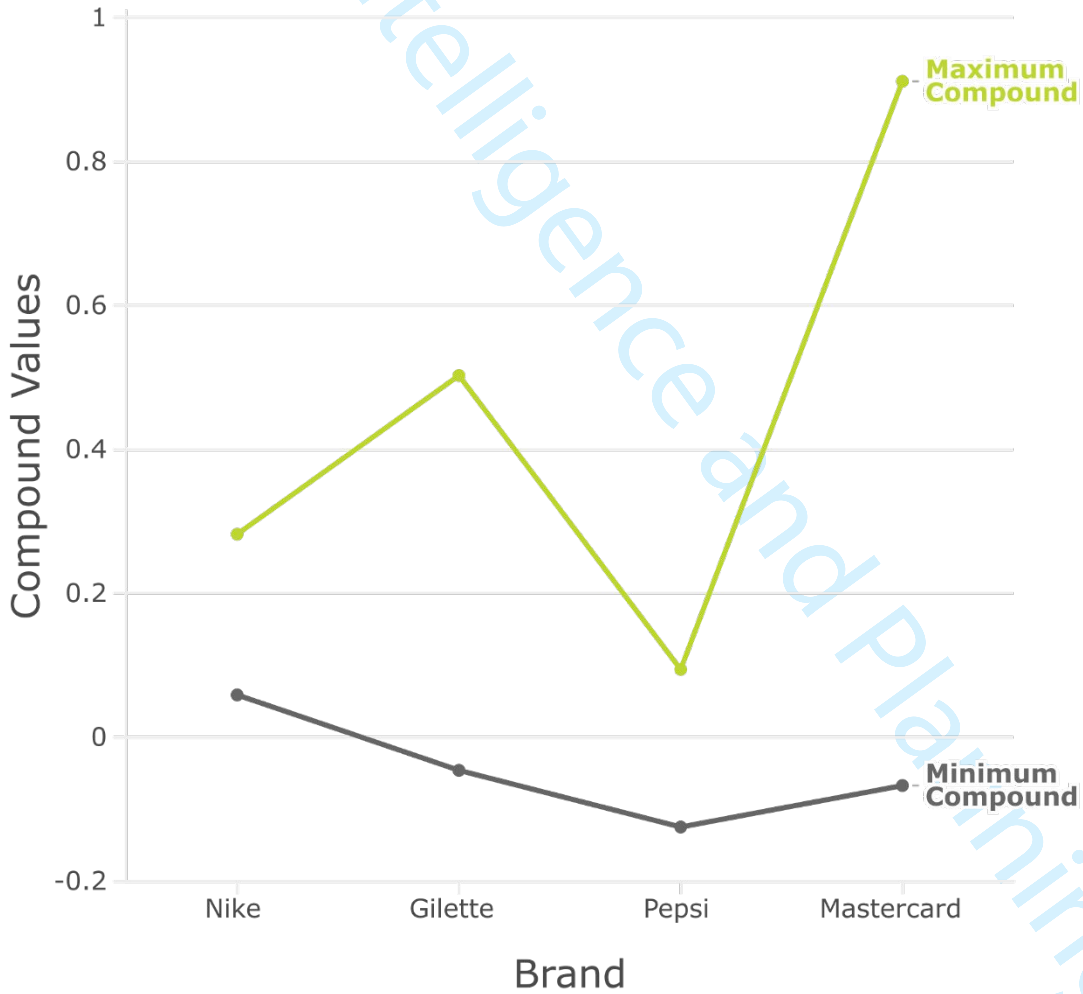


Figure 6 – Minimum and maximum compound values for each brand

The sentiment analysis conducted through the VADER Model offers a nuanced perspective, divergent from the predominant narrative, as it reveals that positive compound values signify a subset of campaigns that managed to garner positive reactions from Twitter users. This insight contrasts the anticipated negative sentiment typically associated with events characterized as online firestorms. Despite such expectations, the statistical evidence does not support the pervasive presence of negative compound values. Nonetheless, it is imperative to acknowledge the relative scarcity of these positive sentiments, a fact that is underscored by Figure 7, which delineates the low frequency of positive compound values within the dataset. Hence, the empirical findings suggest a complex sentiment landscape where, despite substantial criticism, the interactions concerning these campaigns were not uniformly negative, and a segment of the responses was indeed positive, albeit not predominantly.

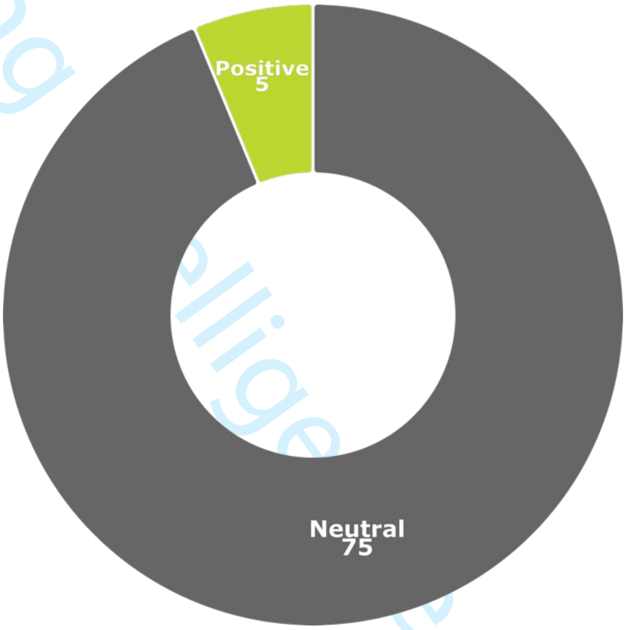


Figure 7 – Compound values classified as negative, neutral, or positive

4.4 Correlation between variables

Figure 8 presents a heatmap with a Pearson correlation that indicates several values between the numeric variables.

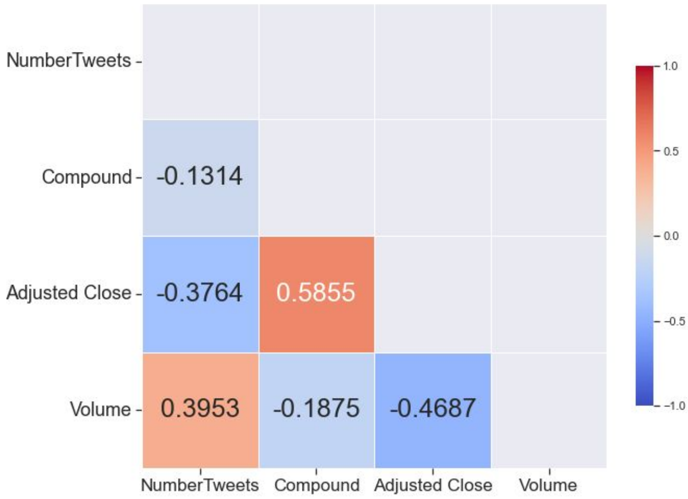


Figure 8 – Heatmap – Pearson correlation between numeric variables

The current study and Sacramento's (2021) research reveal a moderately positive correlation between Twitter sentiments and stock market prices, with correlation coefficients of 0.58 and 0.62, respectively. This indicates that public sentiment on Twitter has a significant, albeit not strong, association with stock market trends. This suggests that stock prices tend to rise as positive sentiment on the platform increases and vice versa.

5. Discussion

5.1 Impact of Online Firestorms on Financial Performance

The analysis revealed significant differences in stock prices for Gillette, Pepsi, and Mastercard, indicating that online firestorms can substantially affect a company's financial performance. At the same time, Nike did not show significant changes. These findings align with existing literature that suggests CSR initiatives and the ensuing public backlash can influence financial outcomes (Carroll & Buchholtz, 2009; Kotler et al., 2012; Chan et al., 2018; Delgado-Ballester et al., 2021). The absence of significant financial impact for Nike suggests that the company's market robustness may buffer it against the effects of online firestorms or that its specific CSR campaign must resonate more strongly with investors to cause noticeable market fluctuations. This aspect underscores the need for a nuanced understanding of how different brands may experience varied financial impacts from online firestorms depending on their market position and the nature of their CSR initiatives.

5.2 Duration of Online Firestorms

The study found that the duration of online firestorms varied significantly among brands, with Nike encountering the longest firestorm lasting six days, Gillette's lasting four days, and both Mastercard and Pepsi experiencing shorter durations of three days. Understanding the typical duration helps organizations develop proactive strategies to manage and mitigate these impacts effectively. These findings are critical for understanding the temporal dynamics of online backlash and planning appropriate response strategies. Previous research has highlighted the importance of timely responses to mitigate the adverse effects of online firestorms (Pfeffer et al., 2014; Herhausen et al., 2019). By knowing how long such backlash events typically last, companies can better allocate resources and efforts to manage the crisis.

5.3 Sentiment Analysis of Online Firestorms

Sentiment analysis revealed varied engagement levels, with Nike and Gillette generating the most discussion. The overall sentiment was predominantly negative, consistent with the definition of online firestorms as significant backlash events (Hegner et al., 2017; Herhausen et al., 2019). However, some positive sentiments indicate a more nuanced public perception, suggesting that certain aspects of CSR campaigns may resonate positively with some audience segments even during backlash. This complexity underscores the need for organizations to carefully craft their communication strategies during such events to manage negative and positive feedback effectively. It also highlights that while negative sentiments dominate, there are opportunities to reinforce positive messages that can help mitigate the overall impact of the backlash.

5.4 Relationship Between Stock Market Prices and Sentiments

The study confirmed a moderately positive correlation between Twitter sentiments and stock market prices, indicating that public sentiment on Twitter is associated with stock market trends. This finding supports previous research by Sacramento (2021) and highlights the importance of social media sentiment as a predictor of financial performance. The correlation suggests positive sentiment can enhance investor confidence, leading to favorable stock market outcomes, while negative sentiment can have the opposite effect. This relationship emphasizes the critical role of monitoring and managing online sentiment as part of a comprehensive strategy to protect and enhance financial performance during CSR campaigns. Companies need to be vigilant about the online discourse surrounding their campaigns to anticipate market reactions and take corrective measures promptly.

5.5 Summary

These findings collectively contribute to the broader discourse on CSR and digital communication by providing a nuanced understanding of how online firestorms impact financial performance, the duration of these firestorms, and the relationship between sentiment and stock market trends. The insights gained from this study emphasize the importance of strategic communication and proactive management in mitigating the adverse effects of online backlash and leveraging the potential positive outcomes of CSR initiatives. By aligning these findings with existing literature, this study offers valuable implications for both academia and practitioners in navigating the complex landscape of CSR in the digital age. The integrated approach to examining financial impacts, duration, sentiment, and market correlations offers a comprehensive view that can guide future CSR campaign strategies and crisis management practices.

6. Conclusion

This study analyzed the influence of online firestorms triggered by CSR campaigns, specifically focusing on those embroiled in social media controversies on Twitter and assessing their impact on businesses' financial performance using stock market data. The analysis confirmed that, perhaps surprisingly, certain campaigns can positively influence financial outcomes. The study showed that stock prices increased significantly for three out of four campaigns examined. This factor supports the idea that online firestorms benefit the financial performance of brands launching CSR campaigns, even amid backlashes.

Furthermore, the analysis indicated that the online firestorms typically lasted between three to six days, with Nike experiencing six days, Gillette for four days, and Mastercard and Pepsi for three days. Sentiment analysis suggested that, despite encountering backlash, these campaigns did not convey negative sentiments. The second aspect of the study, examining the relationship between sentiments and adjusted close prices, found a moderate positive correlation of 0.5855. This points to a certain degree of association between these two variables, albeit not particularly strong.

6.1 Theoretical Contributions

This study makes several significant theoretical contributions to understanding CSR campaigns and online firestorms. First, it confirms that online firestorms can substantially impact a company's financial performance, particularly for brands like Gillette, Pepsi, and Mastercard, while others like Nike may remain unaffected. This finding adds depth to the existing literature by highlighting the differential financial impacts of CSR-related online firestorms based on brand characteristics and market position. Second, the study shows the varying durations of online firestorms, providing a more precise temporal framework for these events. This temporal understanding enriches the theoretical discourse on online firestorms, emphasizing the need for timely and strategic responses to mitigate negative impacts. Third, the sentiment analysis reveals that while negative sentiments dominate online firestorms, there are instances of positive engagement, offering a more nuanced view of public reactions. This complexity underscores the importance of managing both positive and negative feedback during online firestorms, which contributes to a more comprehensive understanding of consumer behavior in the digital age. Lastly, the confirmed correlation between social media sentiment and stock market performance underscores the significant role of online public opinion in financial outcomes, aligning with and expanding upon previous research. This highlights the need for ongoing theoretical exploration of the interplay between digital communication and financial markets.

6.2 Managerial Implications

The findings of this study offer several practical insights for managers. Managers should be aware that online firestorms can significantly impact their company's financial performance, as evidenced by changes in stock prices for brands like Gillette, Pepsi, and Mastercard. Understanding this impact enables managers to better prepare for and respond to potential financial fluctuations resulting from online backlash. For instance, developing robust crisis management plans and maintaining open lines of communication with investors can help mitigate adverse financial effects. Knowing that the duration of online firestorms can vary, lasting up to six days for Nike and shorter periods for others, managers can develop more effective time-bound strategies to address these events. This may include allocating appropriate resources and maintaining heightened monitoring and response efforts during the critical initial days of a firestorm to minimize long-term damage. The predominantly negative sentiment during online firestorms and occasional positive feedback suggest that managers adopt a balanced communication strategy. While addressing negative feedback promptly and transparently, they should also amplify positive messages to help counteract the overall negative tone. Engaging positively with supportive customers can also help to reinforce brand loyalty even amidst a firestorm. The correlation between social media sentiment and stock market performance indicates that managers should closely monitor online discussions about their CSR campaigns. By using sentiment analysis tools, managers can gauge public opinion and anticipate market reactions, allowing them to make informed decisions that can positively influence investor confidence and stock performance. Proactively engaging with stakeholders through transparent and ethical communication can help build resilience against the potential negative impacts of online firestorms. Managers should create authentic CSR initiatives that resonate well with their audience and maintain consistency in their messaging to build trust and credibility. That way, managers can better navigate the complexities of CSR in the digital age, enhancing their ability to protect and improve their company's financial and reputational standing during online firestorms.

6.3 Limitations and Future Work

This research has several limitations that warrant consideration. Notably, the lack of extensive prior studies on CSR initiatives and online firestorms limited the depth of our analysis. A deeper exploration into the distinctions between consumer behavior and CSR and a review of methodological literature in this field would have provided a more robust framework for our findings. Another significant limitation was the absence of access to brands' internal data, which would have allowed us to assess the direct impact of CSR campaigns on employees. Furthermore, the focus on English-language data might miss nuances in global consumer responses, suggesting a need for research in other languages. Moreover, a follow-up study should investigate how external factors, consumer preferences, and economic conditions affect CSR. While providing foundational insights, future research must also consider worker productivity and cultural differences, compare sentiment analysis across studies, and expand into non-English markets to fully understand CSR effectiveness in the digital realm.

References

Ásványi K (2020) Cause Promotions. In: Idowu S, Schmidpeter R, Capaldi N, et al. (eds) *Encyclopedia of Sustainable Management*. Cham: Springer International Publishing, pp. 1–3. DOI: 10.1007/978-3-030-02006-4_1089-1.

Bhatia, R., Gupta, A., Vimalkumar, M., & Sharma, D. (2023). Factors affecting Consumer Brand Sabotage virality: a study of an Indian brand# boycott. Information Systems and E-Business Management, 1–28.

Bhattacharya, S. (2017). Does corporate social responsibility contribute to strengthen brand equity? An empirical study. International Review on Public and Nonprofit Marketing, 14, 513–533.

Bhinekawati R, Daryanto WM, Indradjaja AN, et al. (2021) Employee Volunteering. In: Crowther D and Seifi S (eds) *The Palgrave Handbook of Corporate Social Responsibility*. Cham: Springer International Publishing, pp. 471–498. DOI: 10.1007/978-3-030-42465-7_25.

Carroll AB (1979) A Three-Dimensional Conceptual Model of Corporate Performance. *Academy of Management* 4(4). The Academy of Management Review: 497–505.

Carroll AB and Buchholtz AK (2009) *Business & Society: Ethics and Stakeholder Management*. 7th ed. Mason, OH: South-Western Cengage Learning.

Chan TKH, Skoumpopoulou D and Yu Q (2018) Firestorms on Social Media: Effects of Social Information Characteristics on Customer Responses.

Chadegani, A. A., Salehi, H., Yunus, M. M., Farhadi, H., Fooladi, M., Farhadi, M., Nader, &, & Ebrahim, A. (2013). A Comparison between Two Main Academic Literature Collections: Web of Science and Scopus Databases. Asian Social Science, 9(5). https://doi.org/10.5539/ass.v9n5p18

Delgado-Ballester E, López-López I and Bernal-Palazón A (2021) Why Do People Initiate an Online Firestorm? The Role of Sadness, Anger, and Dislike. *International Journal of Electronic Commerce* 25(3): 313–337. DOI: 10.1080/10864415.2021.1943173.

Dixon S (2022) Number of worldwide social network users 2027. Available at: https://www.statista.com/statistics/278414/number-of-worldwide-social-network-users/ (accessed 18 January 2023).

Dreyfuss E (2019) Gillette's Ad Proves the Definition of a Good Man Has Changed. *Wired*, 16 January. Available at: https://www.wired.com/story/gillette-we-believe-ad-men-backlash/ (accessed 6 March 2023).

ESPN (2018) Mastercard ends campaign to donate meals for every Lionel Messi, Neymar goal at World Cup. Available at: https://www.espn.com/soccer/fifa-world-cup/story/3517847/mastercard-ends-campaign-to-donate-meals-for-every-lionel-messi-and-neymar-goal-at-world-cup (accessed 6 March 2023).

Fitzsimons GJ and Lehmann DR (2004) Reactance to Recommendations: When Unsolicited Advice Yields Contrary Responses. *Marketing Science* 23(1): 82–94. DOI: 10.1287/mksc.1030.0033.

Friedman M (1970) A Friedman doctrine-- The Social Responsibility of Business Is to Increase Its Profits. *The New York Times*, 13 September. Available at: https://www.nytimes.com/1970/09/13/archives/a-friedman-doctrine-the-social-responsibility-of-business-is-to.html.

Gillan SL, Koch A and Starks LT (2021) Firms and social responsibility: A review of ESG and CSR research in corporate finance. *Journal of Corporate Finance* 66: 101889. DOI: 10.1016/j.jcorpfin.2021.101889.

Gillette (n.d.) The Best A Man Can Be. Available at: https://gillette.com/en-us/about/the-best-men-can-be (accessed 6 March 2023).

Guardian Sport (2019) Nike's 'Dream Crazy' advert starring Colin Kaepernick wins Emmy. *The Guardian*, 16 September. Available at: https://www.theguardian.com/sport/2019/sep/16/nikes-dream-crazy-advert-starring-colin-kaepernick-wins-emmy (accessed 6 March 2023).

Guerreiro J, Rita P and Trigueiros D (2015) Attention, emotions and cause-related marketing effectiveness. *European Journal of Marketing* 49(11/12): 1728–1750. DOI: 10.1108/EJM-09-2014-0543.

Guerreiro J, Rita P and Trigueiros D (2016) A Text Mining-Based Review of Cause-Related Marketing Literature. *Journal of Business Ethics* 139(1): 111–128. DOI: 10.1007/s10551-015-2622-4.

Haller K, Lee J and Cheung J (2019) Meet the 2020 consumers driving change - Why brands must deliver on omnipresence, agility, and sustainability.: 1–20.

Harris S (2019) The best a man can get? Why some men are brushing off Gillette's ad campaign | CBC News. Available at: https://www.cbc.ca/news/business/gillette-ad-toxic-masculinity-outrage-1.4979651 (accessed 3 March 2023).

Heald M (1957) Management's Responsibility to Society: The Growth of an Idea. *Business History Review* 31(4): 375–384. DOI: 10.2307/3111413.

Hegner SM, Fetscherin M and van Delzen M (2017) Determinants and outcomes of brand hate. *Journal of Product & Brand Management* 26(1): 13–25. DOI: 10.1108/JPBM-01-2016-1070.

Herhausen D, Ludwig S, Grewal D, et al. (2019) Detecting, Preventing, and Mitigating Online Firestorms in Brand Communities. *Journal of Marketing* 83(3): 1–21. DOI: 10.1177/0022242918822300.

Hutto C and Gilbert E (2014) VADER: A Parsimonious Rule-Based Model for Sentiment Analysis of Social Media Text. *Proceedings of the International AAAI Conference on Web and Social Media* 8(1): 216–225. DOI: 10.1609/icwsm.v8i1.14550.

Jing, N., Wu, Z., & Wang, H. (2021). A hybrid model integrating deep learning with investor sentiment analysis for stock price prediction. Expert Systems with Applications, 178, 115019.

Keller G (2014) *Statistics For Management And Economics*. 10th ed. Cengage Learning.

Kotler P and Lee NR (2011) *Corporate Social Responsibility: Doing the Most Good for Your Company and Your Cause*. Wiley. Available at: https://books.google.pt/books?id=f6k9ycrf6b8C.

Kotler P, Hessekiel D and Lee NR (2012) *Good Works!: Marketing and Corporate Initiatives That Build a Better World...and the Bottom Line*. BusinessPro collection. Wiley. Available at: https://books.google.pt/books?id=m7PlVXxjXEAC.

Krishna V (2020) Ad Analysis: 'Live For Now' Campaign (Pepsi). Available at: https://www.linkedin.com/pulse/ad-analysis-live-now-campaign-pepsi-vatsala-krishna/ (accessed 6 March 2023).

Lepitak S (2018) 'The worst marketing I've ever seen' - Mastercard's World Cup children's meals campaign stirs debate. Available at: https://www.thedrum.com/news/2018/06/02/the-worst-marketing-ive-ever-seen-mastercards-world-cup-childrens-meals-campaign (accessed 3 March 2023).

Mccluskey M (2019) Gillette Makes Waves With Ad Highlighting 'Toxic Masculinity'. Available at: https://time.com/5503156/gillette-razors-toxic-masculinity/ (accessed 6 March 2023).

Nadeau J, Rutter R and Lettice F (2020) Social media responses and brand personality in product and moral harm crises: why waste a good crisis? *Journal of Marketing Management* 36(11–12): 1031–1054. DOI: 10.1080/0267257X.2020.1764080.

Pengue M (2022) Cause Marketing Statistics: Why Is It So Important in 2022? In: *WritersblockLive*. Available at: https://writersblocklive.com/blog/cause-marketing-statistics/#stat6.

Penney J and Dadas C (2014) (Re)Tweeting in the service of protest: Digital composition and circulation in the Occupy Wall Street movement. *New Media & Society* 16(1): 74–90. DOI: 10.1177/1461444813479593.

Pfeffer J, Zorbach T and Carley KM (2014) Understanding online firestorms: Negative word-of-mouth dynamics in social media networks. *Journal of Marketing Communications* 20(1–2): 117–128. DOI: 10.1080/13527266.2013.797778.

Rice L (2020) The value of Corporate Social Responsibility (CSR) – and how to get it right. In: *Qualtrics*. Available at: https://www.qualtrics.com/blog/value-of-csr/.

Rohit D, Panda R and Chakraborty S (2022) Determinants and Consequences of Cause–Brand Association: An Empirical Analysis. *Vision: The Journal of Business Perspective*: 097226292210873. DOI: 10.1177/09722629221087364.

Sacramento J (2021) *Sentiment Analysis in the Stock Market Based on Twitter Data*. ISCTE - University Institute of Lisbon.

Thomas L (2017) Pepsi taps 'Keeping up with the Kardashians' star for its latest ad campaign. Available at: https://www.cnbc.com/2017/04/04/pepsi-taps-a-kardashian-for-its-latest-ad-campaign.html (accessed 6 March 2023).

Thomas S and Kureshi S (2017) Exploring the interconnections of consumer preference between cause type and cause scope in a cause-related marketing activity: evidence from Indian context. *International Journal of Indian Culture and Business Management* 14(3): 365. DOI: 10.1504/IJICBM.2017.083239.

Tillman L (2019) Case Study: PepsiCo & Kendall Jenner's Controversial Commercial. Available at: https://astute.co/pepsi-kendall-jenner-commercial/ (accessed 3 March 2023).

Tong, S. C., & Chan, F. F. Y. (2023). Strategies to drive interactivity and digital engagement: a practitioners' perspective. *Journal of Research in Interactive Marketing*, 17(6), 901-920.

Tsakiridou E, Karvouni M, Tsakiridou E, et al. (2018) Live for Now-Pepsi. In: *AD DISCOVERY CREATIVITY Stories by ADandPRLAB*. Available at: https://medium.com/ad-discovery-and-creativity-lab/live-for-now-pepsi-ac340e22f1a4 (accessed 6 March 2023).

Van der RJ-P, Sears AM, Kuokkanen H, et al. (2022) Algorithmic pricing in hospitality and tourism: call for research on ethics, consumer backlash and CSR. *Journal of Hospitality and Tourism Insights* 5(4). Emerald Publishing Limited: 771–781. DOI: 10.1108/JHTI-08-2021-0216.

Xu S and Zhou A. (2020) Hashtag homophily in twitter network: Examining a controversial cause-related marketing campaign. *Computers in Human Behavior* 102: 87–96. DOI: 10.1016/j.chb.2019.08.006.

Xun, J., & Guo, B. (2017). Twitter as customer's eWOM: an empirical study on their impact on firm financial performance. Internet Research, 27(5), 1014–1038.

Youn S (2018) Nike's Colin Kaepernick 'Just Do It' campaign is controversial, but on brand: Experts. Available at: https://abcnews.go.com/Business/nikes-colin-kaepernick-campaign-controversial-brand-experts/story?id=57590454 (accessed 3 March 2023).