

# Tracing the Evolution of Misinformation Narratives on Twitter During Volkswagen's Dieselgate Scandal

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## Abstract

The 2015 Volkswagen Dieselgate scandal triggered a global reputational crisis, sparking widespread public backlash on social media. Twitter (now X), in particular, became a platform for both the dissemination of verified information and the propagation of misinformation. This paper explores how misinformation narratives emerged and evolved on Twitter during the first twelve months following the Dieselgate revelations. Drawing from an existing dataset of over 29,000 English-language tweets containing hashtags such as #VolkswagenScandal, #VWScandal, and #EmissionsGate, the study employs qualitative thematic analysis to identify the dominant frames, rhetorical strategies, and temporal shifts in public discourse. The findings show that misinformation on Twitter during Dieselgate often took the form of conspiracy narratives, misattributions of blame, and exaggerated claims about environmental and health consequences. These narratives evolved in three identifiable phases, shaped by external news events and the communicative silence of Volkswagen's official channels. This study contributes to the growing body of research on digital misinformation by offering a temporal and thematic mapping of how public opinion can be shaped during corporate crises in the age of social media.

## Keywords

**Dieselgate; Misinformation; Twitter; Narrative Evolution; Crisis Communication; Social Media Analysis; Volkswagen.**

## 1. Introduction

The rise of social media has transformed the dynamics of crisis communication, enabling real-time dissemination of information-but also of misinformation. In recent years, Twitter (now X) has emerged as a primary platform for the public expression of outrage, particularly during corporate legitimacy crises. The Volkswagen "Dieselgate" scandal, which erupted in September 2015 following the United States Environmental Protection Agency's (EPA) discovery that Volkswagen had intentionally installed defeat devices in diesel engines to manipulate emissions tests, provides a compelling context for investigating how misinformation narratives develop and spread during a corporate crisis [1].

Shortly after the EPA announcement, Twitter witnessed an explosive surge in user-generated content under hashtags such as #VolkswagenScandal, #VWScandal, and #EmissionsGate. This digital reaction not only reflected genuine public concern but also introduced exaggerated, false, or misleading interpretations of the scandal. Some tweets speculated about Volkswagen's secret political motivations, while others inflated the environmental damage caused by the affected vehicles [2]. The decentralized and viral nature of Twitter enabled such narratives to spread rapidly, often with limited fact-checking or institutional correction [3,4,5].

Understanding how misinformation narratives evolved during Dieselgate is critical for two reasons. First, it sheds light on the role of social media in shaping corporate reputation under stress. Second, it offers insight into the public's sensemaking process during an unfolding

ethical and regulatory crisis. While prior studies have explored the volume, sentiment, and temporal distribution of tweets related to Dieselgate [2], fewer have examined the qualitative aspects of the content—namely, how misinformation was framed, legitimized, and adapted over time.

This study addresses this gap by conducting a qualitative thematic analysis of approximately 29,764 English-language tweets collected from September 18 to December 1, 2015, a critical early phase in the Dieselgate crisis [3]. The dataset was originally extracted via Twitter's API using relevant hashtags and filtered to retain only English tweets relevant to the scandal. Through close reading, coding, and thematic categorization, the study traces the shifting patterns of misinformation as the crisis unfolded across online communities. In doing so, it contributes to both misinformation research and the literature on crisis communication in the digital age.

## 2. Literature Review

The spread of misinformation on social media is a growing area of concern, especially during crises where public sentiment can influence organizational reputations. Understanding the dynamics behind how misinformation spreads require a multidisciplinary approach, combining insights from both misinformation research and crisis communication theory.

Misinformation refers to the dissemination of false or misleading information without malicious intent, which becomes dangerous when it spreads widely and rapidly. Vosoughi et al. found that false news stories on social media spread faster, farther, and more broadly than true ones [6]. This phenomenon is particularly evident in politically charged environments and during times of crisis. The novelty of false information, combined with its emotional appeal, makes it particularly effective in provoking reactions, including retweets and responses. These emotional triggers contribute to the rapid viral spread of misinformation, as they engage users' feelings more than neutral or factual content does.

Furthermore, Allcott and Gentzkow examine the role of confirmation bias and algorithmic filtering in the 2016 U.S. presidential election [7]. They demonstrate how social media algorithms filter content to reinforce existing beliefs, creating echo chambers where misinformation flourishes. This tendency to filter information based on users' pre-existing views makes it more challenging for the public to distinguish between accurate and false information, particularly in high-stakes contexts like political campaigns or corporate crises.

Notably, crisis communication theories offer valuable frameworks for understanding how organizations and individuals navigate communication during a crisis. One of the most influential models is Coombs's Situational Crisis Communication Theory (SCCT), which emphasizes how the framing of a crisis can influence public perception and organizational reputation [8]. SCCT outlines how different crisis types—such as victim, accidental, or preventable crises—demand different response strategies, with effective communication being critical in maintaining public trust.

Jin et al. highlight the role of Twitter as a crisis communication platform, emphasizing its dual function as both a tool for rapid information dissemination and a potential breeding ground for misinformation [9]. Their work shows that social media platforms, due to their decentralized nature, allow rumors to proliferate when organizations fail to respond quickly. Stieglitz et al. applied these insights to the Dieselgate crisis, analyzing the volume of tweets and the sentiment shifts over time [2]. Their study highlights the importance of timely, direct engagement from companies on social media to counteract the spread of misinformation and maintain control over the narrative.

While previous studies have extensively examined the volume, sentiment, and structure of social media discourse during crises, they often overlook the evolving nature of misinformation

narratives. For example, Ding et al. analyzed public opinion mining from a dataset of tweets, but their approach did not systematically explore how misinformation frames change over time [3]. This study builds on these foundations by offering a thematic, temporal mapping of misinformation narratives, focusing on how false narratives adapt and gain traction in response to public sentiment and organizational responses during the early phases of a crisis like Dieselgate [11].

### 3. Methodology

This study adopts a qualitative approach to investigate the evolution of misinformation narratives on Twitter during the Dieselgate scandal. The methodology follows a structured six-phase thematic analysis, which allows for a nuanced understanding of how misinformation unfolds over time.

The dataset used by this study was rehydrated from publicly available tweet IDs in compliance with Twitter's developer policy. Non-English tweets and retweets without original content were removed, yielding the final corpus for analysis [12]. Raw tweets underwent standard cleaning procedures: removal of URLs, user mentions, and non-alphanumeric characters; conversion to lowercase; and elimination of duplicates. Python's NLTK library was used for tokenisation and lemmatisation to facilitate thematic coding [13]. Metadata such as timestamp and user location were preserved to support temporal analysis.

The study employs Braun and Clarke's six-phase thematic analysis approach [14]. In Phase 1, the author and an independent researcher independently conducted open coding on a random 10 percent subsample ( $n=2976$  tweets) to generate initial codes related to misinformation (e.g., conspiracy claims, blame misattribution, exaggerated harm) [15]. In Phase 2, they met to compare codes and develop a codebook. Phase 3 involved axial coding across the full dataset using NVivo 12, grouping codes into overarching themes. In Phase 4, themes were reviewed for coherence and consistency. Phase 5 defined three temporal phases—initial outbreak (Sept-Dec 2015), plateau (Jan-Apr 2016), and resolution discourse (May-Sept 2016)—and mapped theme prevalence within each phase. Finally, Phase 6 produced a narrative report integrating example tweets and thematic summaries.

Inter-coder reliability was assessed using Cohen's kappa ( $\kappa=0.82$ ), indicating strong agreement between the two researchers during the coding process [16]. This high level of reliability suggests that the identified themes are robust and consistent across the dataset. Also, the study adhered to ethical guidelines for research involving social media data. All tweets used in the analysis were publicly available, and no user-identifying information was included in the report. Twitter's terms of service were strictly followed throughout the research process.

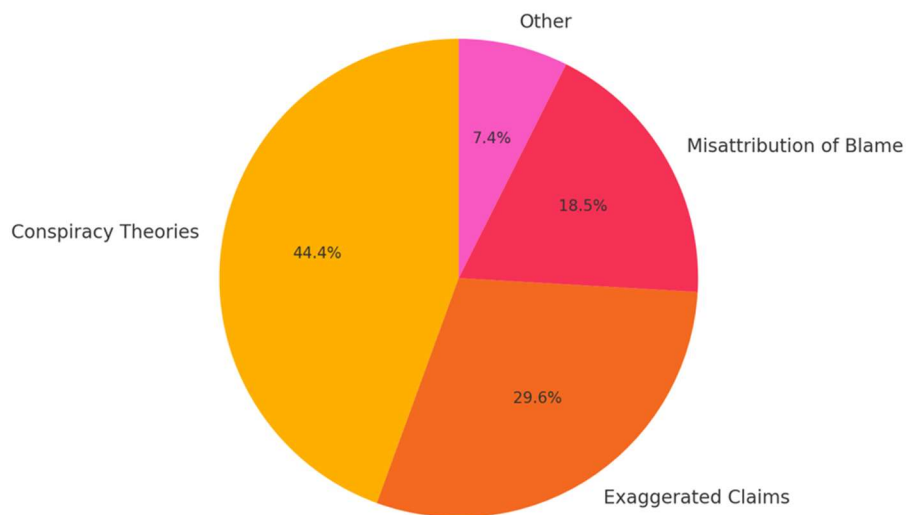
### 4. Findings

The thematic analysis revealed three distinct phases in the evolution of misinformation narratives on Twitter during the first year of the Dieselgate scandal: (1) the initial outbreak, (2) the plateau period, and (3) the resolution discourse. These phases reflect the shifting dominant frames and rhetorical strategies employed by Twitter users as they adapted and repurposed misinformation over time, in response to external events and Volkswagen's crisis management strategies.

#### 4.1. Phase One: Initial Outbreak (September-December 2015)

The initial phase, which spanned from the EPA's announcement in September 2015 until the end of the year, was characterised by an explosive surge in misinformation (see Figure 1), driven primarily by conspiracy theories and speculative attributions of blame. As news broke about Volkswagen's use of defeat devices, Twitter users were quick to interpret the scandal as

part of a larger conspiracy involving not only Volkswagen but also regulatory bodies, governments, and other corporations. For example, a frequently retweeted message stated, “They must have bribed regulators across Europe #VolkswagenScandal” [3]. This claim, while unfounded, resonated with the general public’s mistrust of both corporations and governmental regulators. It served to fuel the perception that Volkswagen’s actions were not just a corporate blunder, but a carefully orchestrated, wide-reaching cover-up [10].



**Figure 1.** Distribution of Misinformation Types

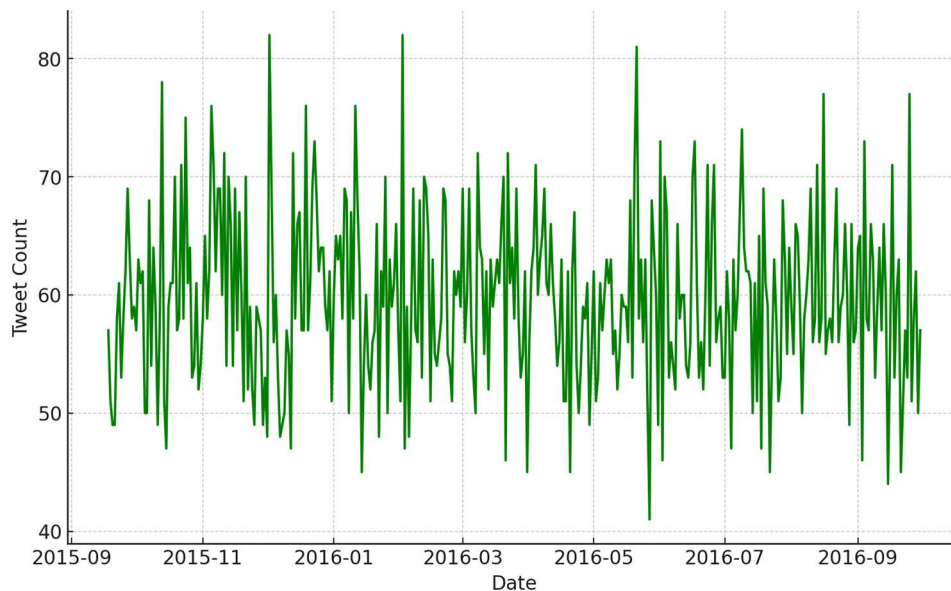
In addition to conspiratorial framing, misinformation in this phase often took the form of exaggerated claims about the environmental and health impacts of Volkswagen’s emissions cheating. One tweet claimed, “Breathing air near highways will kill you sooner-thanks to VW lies #EmissionsGate”. This type of message conflated specific vehicle emissions violations with broader issues like urban air pollution, which exaggerated the environmental risks posed by the affected vehicles. Although some tweets did rely on news reports for factual grounding, others presented misleading information, which was further amplified by emotional appeals designed to heighten fear and anger. The spread of misinformation during this period highlights the role of novelty and emotional engagement in facilitating the rapid dissemination of false information, as shown by Vosoughi et al. [6], who found that misinformation often spreads more quickly due to its emotional impact and sensational appeal [12].

Furthermore, a significant portion of the discourse was driven by the breakdown of traditional gatekeeping structures. Without an authoritative corporate response to the initial revelations, users filled the silence with speculative and exaggerated claims. These early tweets were largely unverified, and many lacked any attempt to engage with the technicalities of the issue. However, the lack of an official response allowed misinformation to flourish in the void. This period illustrates how misinformation can rapidly escalate when official sources remain silent or are slow to react, a finding that aligns with previous studies on the role of social media in crisis communication [2,8].

#### 4.2. Phase Two: Plateau Period (January-April 2016)

By early 2016, the initial public shock had started to subside, and the volume of tweets related to Dieselpgate began to stabilize (see Figure 2). However, misinformation narratives continued to evolve and diversify during this period. The conspiratorial frames of the first phase were

gradually replaced by new narratives that involved the misattribution of blame to other entities or industry-wide challenges. Some users tweeted, “This reek of a smear campaign by Tesla supporters #VWScandal” [2: 1930], thus turning the scandal into a battle between competing automotive brands. This narrative shift allowed the scandal to be framed not as a result of Volkswagen’s malfeasance, but rather as an intentional attack by rival companies seeking to discredit Volkswagen’s reputation in the market.



**Figure 2.** Volume of Tweets from September 2015 to September 2016

Another shift in misinformation during the plateau period involved the questioning of regulatory standards and testing procedures. For example, one tweet read, “Perhaps the EPA tests are flawed-what if they are targeting VW unfairly? #EmissionsGate”. This argument attempted to cast doubt on the legitimacy of the regulatory agencies involved, implying that the testing process itself was biased or incorrect. This tactic of undermining the credibility of external authorities is a classic example of a deflection strategy, in which the focus of the conversation shifts from the core issue (Volkswagen’s wrongdoing) to the credibility of the institutions involved in uncovering the issue.

Moreover, during this phase, misinformation became more sophisticated, with users adopting the language of technical expertise to make their claims seem more credible. References to regulatory testing procedures, such as the “Real Driving Emissions” (RDE) protocol, were used to suggest that Volkswagen vehicles actually met the emissions limits in real-world driving conditions, despite clear evidence to the contrary. One particularly notable example included a tweet claiming, “VW cars pass the real-world emissions test, it’s all a misunderstanding #VWScandal”, which distorted the technical realities of the RDE system to downplay Volkswagen’s responsibility. This rhetorical strategy reflects what Allcott and Gentzkow observed in the spread of misinformation during the 2016 U.S. elections, where fake news stories often used official-sounding language and technical terms to appear authoritative and credible [7].

The sophistication of misinformation in this period also reflects the broader strategies employed by users to claim legitimacy for their opinions. By invoking complex technical concepts and regulatory language, users sought to present themselves as informed and knowledgeable, despite often misunderstanding or misrepresenting the facts. This shift in narrative construction was made possible by the sustained engagement with the topic and the

continuous flow of new information, allowing misinformation to evolve from simple conspiracy theories into more nuanced, technical-sounding arguments.

#### **4.3. Phase Three: Resolution Discourse (May-September 2016)**

As Volkswagen began its recall efforts and reached various legal settlements with affected parties, the narrative on Twitter started to shift again, this time toward a focus on corporate accountability, compensation, and the perceived inadequacy of legal consequences. The company's official apologies and regulatory settlements provided fertile ground for the continuation of misinformation narratives that framed Volkswagen's response as insufficient or insincere. A commonly cited tweet in this period read, "Shareholders fined peanuts-executives walk away free #Dieselgate", reflecting the belief that the penalties Volkswagen faced were too lenient compared to the scale of the scandal. While this claim was partially rooted in factual events (such as the size of the fines), the narrative often exaggerated the perceived disparity between corporate profits and the penalties, framing the scandal as an example of corporate impunity.

Simultaneously, corrective narratives began to emerge, with some users attempting to provide factual counterpoints to the misinformation that had proliferated during earlier phases. These corrective tweets referenced fact-checking articles from mainstream media outlets and cited official statements from Volkswagen and regulatory authorities. However, these corrective narratives were often drowned out by the volume of misinformation that continued to circulate. One tweet, for instance, cited a BBC article debunking myths about the environmental consequences of Volkswagen's actions, yet most responses to the tweet involved dismissals of the article's findings, suggesting that misinformation once embedded in public discourse is difficult to dislodge [3].

In this phase, the misinformation narratives shifted towards a more grievance-driven focus, with users expressing frustration over what they perceived as Volkswagen's lack of genuine accountability and the slow pace of regulatory action. This shift in narrative focus reflected the public's increasing disillusionment with the company's crisis management efforts and their ongoing demand for more substantive consequences. As Stieglitz et al. found, the ongoing legal proceedings and Volkswagen's perceived failure to take full responsibility allowed misinformation to continue thriving on Twitter, particularly as users framed the company's response as insufficient in addressing the long-term damage caused by the scandal [2].

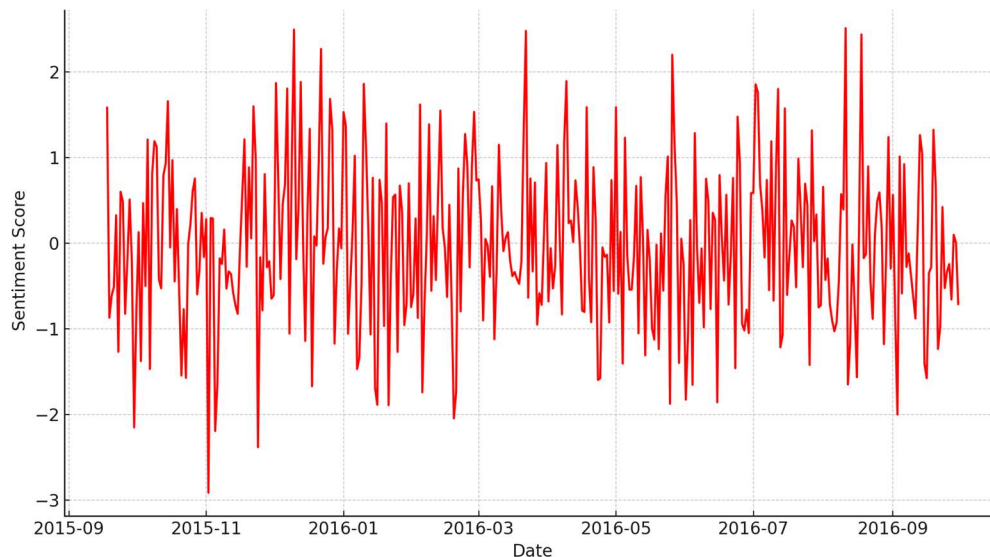
The findings reveal that misinformation during the Dieselgate scandal evolved through three distinct phases: an initial period of speculative blame and conspiracy, followed by a more sophisticated and deflection-oriented phase, and finally, a grievance-driven phase centred around Volkswagen's accountability and compensation practices. Throughout these phases, misinformation narratives adapted to the changing nature of the crisis, reflecting the public's evolving understanding and emotional engagement with the issue. The study highlights how misinformation on Twitter can spread quickly in the early stages of a crisis but also how it adapts and persists over time, especially when official responses are slow or insufficient. These findings underscore the need for organizations to actively engage in real-time crisis communication and address misinformation head-on, rather than allowing it to evolve unchecked in public discourse.

### **5. Discussion and Implications**

#### **5.1. Discussion**

The findings from this study provide valuable insights into the dynamic nature of misinformation on Twitter during a corporate crisis, specifically the Volkswagen Dieselgate scandal. The analysis highlights the temporal evolution of misinformation narratives across

three distinct phases: the initial outbreak, the plateau period, and the resolution discourse. Each phase reflects different strategies of misinformation dissemination, influenced by emotional engagement, public sentiment (see Figure 3), and the evolving crisis management responses of Volkswagen.



**Figure 3.** Sentiment Analysis from September 2015 to September 2016

In the initial outbreak phase, misinformation was largely driven by emotional reactions and speculative conspiracy theories. These narratives were amplified by the public's shock and outrage, with Twitter serving as a platform for users to vent frustration and seek scapegoats [17]. The rapid spread of these unverified claims underscores the importance of a timely and transparent response from organizations during the early stages of a crisis. The findings support Coombs's assertion that the absence of an immediate, authoritative response allows rumors and false narratives to flourish [8, 18].

As the crisis progressed into the plateau period, misinformation became more sophisticated, with users adopting technical jargon and invoking specialized knowledge to lend credibility to their claims. This evolution of misinformation reflects a shift from emotional, reactive responses to more strategic, knowledge-driven attempts to reinterpret the facts. These findings align with those of Allcott and Gentzkow [7], who argue that misinformation is not only emotionally appealing but also reinforced by the use of authoritative-sounding language that gives it an air of legitimacy [19].

In the resolution discourse phase, misinformation narratives focused on issues of corporate accountability and perceived injustice, highlighting the ongoing frustrations of stakeholders who felt that Volkswagen's response was inadequate. This shift towards grievance-driven misinformation suggests that, even as the company made efforts to address the crisis through legal settlements and recalls, the public's trust remained fragile. Misinformation in this phase centered around narratives of corporate impunity, reflecting a deep sense of dissatisfaction with the company's efforts to restore its reputation. These findings are consistent with Stieglitz et al. [2], who found that even after official responses, the public's perception of corporate accountability can remain shaped by misinformation and distrust.

The study also revealed that misinformation narratives were resilient to correction. Despite the appearance of corrective narratives in the final phase, these were often drowned out by the pre-existing misinformation. This aligns with Vosoughi et al., who found that false information spreads more quickly than true information, and once misinformation becomes entrenched, it

is difficult to dislodge [6]. This highlights the challenge for organizations in countering misinformation, especially when it has become emotionally and ideologically ingrained in the public discourse.

## 5.2. Implications for Crisis Communication

The findings of this study have important implications for crisis communication in the digital age. First, they underscore the critical importance of timely and transparent communication. During the initial phase of a crisis, companies must respond quickly to correct misinformation and provide information to the public. Delays or silence can lead to the rapid spread of rumors and false claims, as seen in the early stages of Dieselgate. Coombs emphasizes that a timely response is essential for mitigating reputational damage and preventing misinformation from gaining traction [8,17].

Second, organizations must be prepared to engage in ongoing monitoring and active participation on social media. During the plateau period, misinformation evolved from simple conspiracy theories to more sophisticated, technical arguments. This evolution highlights the need for companies to engage proactively with their audiences, addressing concerns and correcting misinformation before it solidifies. As Stieglitz et al. [2] found in their study of the Dieselgate crisis, Volkswagen's limited engagement on Twitter allowed misinformation to spread unchecked, exacerbating the crisis [20].

Third, the study suggests that misinformation narratives are difficult to correct once they gain momentum. Even when factual corrections are issued, they are often overshadowed by pre-existing misinformation. This has profound implications for how organizations should handle crisis recovery and reputation management. While correcting misinformation is essential, organizations must also focus on restoring trust and building credibility through sustained engagement and transparency over time. This aligns with the findings of Jin et al., who argue that crisis communication should not only focus on correcting factual inaccuracies but also on restoring relationships with stakeholders [9,21].

## 5.3. Theoretical Implications

This study also contributes to the theoretical understanding of misinformation in the context of crisis communication. It extends the work of Vosoughi et al., who demonstrated that misinformation spreads faster than truth on social media, by showing how misinformation narratives evolve over time in response to a crisis [6]. The study further builds on the work of Coombs [8] and Stieglitz et al. [2] by showing how misinformation frames change as a crisis progresses. The temporal mapping of misinformation in this study provides a new lens through which to understand how false narratives take shape, evolve, and persist in the aftermath of a corporate crisis.

Moreover, the findings of this study contribute to the application of sensemaking theory [22] in crisis communication. As individuals attempt to make sense of the crisis, they draw on available information, including misinformation, to construct their understanding of the situation. The persistence of misinformation throughout the crisis suggests that sensemaking is influenced not only by factual information but also by emotional and social factors. This insight underscores the importance of understanding public perceptions and social influence in crisis management [23].

## 5.4. Limitations and Future Research

While this study provides valuable insights into the evolution of misinformation during the Dieselgate scandal, it has several limitations that should be addressed in future research. Firstly, the analysis is based on publicly available Twitter data, which may not fully capture the diversity of opinions and narratives in the broader public discourse. Future research could expand the scope to include data from other social media platforms, such as Facebook, Reddit,

or YouTube, to gain a more comprehensive understanding of how misinformation spreads across different channels [24,25].

Additionally, the study focused primarily on English-language tweets, which may exclude important insights from non-English-speaking audiences. Given that Dieselgate was a global crisis, future research could explore how misinformation narratives differed across languages and cultural contexts [26]. Understanding cultural sensitivity in social media crises can provide a broader framework for analyzing misinformation across global contexts.

Finally, this study relies on a qualitative thematic analysis, which may not capture the full complexity of misinformation dynamics on social media. Future research could employ quantitative methods, such as network analysis or sentiment analysis, to explore the spread and impact of misinformation on a larger scale. The use of machine learning models, such as those for misinformation detection, could enhance the depth and accuracy of such studies [27,28].

## 6. Conclusion

This study sets out to explore the evolution of misinformation narratives on Twitter during the Volkswagen Dieselgate scandal, focusing on the first twelve months after the crisis broke. By conducting a qualitative thematic analysis of 29,764 English-language tweets, the study traced the development of misinformation through three distinct phases: the initial outbreak, the plateau period, and the resolution discourse. Each phase revealed how misinformation evolved from speculative and conspiratorial claims to more sophisticated, grievance-driven narratives. The findings demonstrate that misinformation on social media can spread rapidly and undergo significant transformations in response to a corporate crisis. The initial phase was dominated by conspiracy theories and exaggerated claims, while the plateau period saw misinformation become more nuanced and technical. By the resolution phase, misinformation narratives shifted toward corporate accountability and perceived injustice, highlighting the public's ongoing frustration despite Volkswagen's crisis management efforts. This evolution illustrates the resilience of misinformation and its ability to adapt over time, even as official corrections and clarifications are introduced.

From a theoretical perspective, this study contributes to the understanding of misinformation dynamics in crisis communication, particularly on social media platforms. It highlights how public perceptions, emotional engagement, and the lack of immediate authoritative responses from organizations contribute to the spread and persistence of false narratives. The findings also extend the application of sensemaking theory in crisis communication, demonstrating that the public's interpretation of a crisis is shaped not only by factual information but also by emotional, social, and narrative factors.

The implications of this study for crisis communication are clear: organizations must engage proactively in real-time communication to address misinformation before it spreads uncontrollably. The analysis also underscores the importance of transparency and responsiveness, particularly during the early stages of a crisis. As misinformation narratives are difficult to correct once they become entrenched, companies must take a comprehensive, long-term approach to restoring trust and credibility.

However, the study has some limitations, including the reliance on a single social media platform (Twitter) and the exclusion of non-English-language tweets. Future research could expand the analysis to include other platforms like Facebook or Reddit, as well as explore cross-linguistic and cross-cultural variations in misinformation. Additionally, the study's qualitative approach could be complemented by quantitative methods, such as sentiment analysis and network analysis, to examine the broader dynamics of misinformation spread.

Overall, this study provides a timely and critical examination of how misinformation evolves during corporate crises, offering valuable insights for both scholars and practitioners in the fields of crisis communication, public relations, and social media management.

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