# Listening to birdsong: Impression management of VW on Twitter during Dieselgate

Bouzzine, Yassin Denis; Steen, Hendrik; Trautberg, Mario

*Published in:*
Management Studies

*Publication date:*
2020

*Document Version*
Publisher's PDF, also known as Version of record

Management Studies (2020) Vol. 10, No. 3, 64 – 78

MS MANAGEMENT STUDIES

journal homepage: www.managementstudies.org

# Listening to birdsong: Impression management of VW on Twitter during Dieselgate

Yassin Denis Bouzzine
*Leuphana University Lüneburg,*
*Universitätsallee 1, 21335 Lüneburg, Germany; yassin.bouzzine@leuphana.de*

Hendrik Steen
*Leuphana University Lüneburg,*
*Universitätsallee 1, 21335 Lüneburg, Germany; hendrik.steen@stud.leuphana.de*

Mario Trautberg
*Leuphana University Lüneburg,*
*Universitätsallee 1, 21335 Lüneburg, Germany; mario.trautberg@stud.leuphana.de*

**Abstract**

In this study, we examine the impression management of Volkswagen (VW) for dealing with the diesel emissions scandal (Dieselgate) on Twitter in the context of legitimacy theory. Therefore, we identified 13 tweets from the VW US Twitter account, which are directly or indirectly meant to resolve the crisis. Thereby, respective crisis tweets followed different impression management strategies, which have been classified by us according to prevailing impression management literature. To evaluate the effectiveness of VW's crisis management strategies, we conduct frequency analysis for a first intuition and sentiment analysis, based on user replies, to evaluate different crisis management strategies upon the induced user emotions. Exemplary user responses are provided to give insights into the sentiments. Our findings illustrate that different strategies imply major differences in positivity and negativity, allowing us to derive recommendations for adequate online crisis management.

Keywords: Impression management, legitimacy, VW, Dieselgate

## 1 Introduction

VW's Dieselgate is one of the biggest on-going corporate scandals globally with far-reaching consequences. Already in 2014, excessive emissions have been found for VW diesel engines by the West Virginia University, which confirmed the suspicions of competitors in the automotive industry, which were not able to replicate the emissions (Robertson, 2017). In this examination, it has been found that nitrogen oxide ($NO_x$) emissions for a running VW Jetta 2012 and a VW Passat 2013 are much higher than the declared test values. In direct response, VW recalled and repaired numerous diesel vehicles, which however could not mitigate the excess emissions. As a consequence, the US Environment Protection Agency (EPA), as well as the California Air Resource Board (CARB), did not grant the approval for 2016 VW diesel vehicles. This led VW to admit that they have implemented a software-based defeat device in the model year 2009 to 2015 vehicles with 2.0-liter diesel engines, which detected when a vehicle is undergoing emissions testing and automatically adapted emissions to threshold values. Therefore, the EPA issued a notice of violation against VW on 18 September 2015, alleging VW to violate the rules and instructions of the US clean air act. In detail, the EPA accused VW that $NO_x$-emissions for respective diesel vehicles are 10-40 higher than legal thresholds. The potential penalty fine for this fraud amounted to around 20 billion USD (Barret et al., 2015).

Following the revelation of the scandal, academia mainly focused on health (Dey et al., 2018; Chossière et al., 2017; Holland et al., 2016; Oldenkamp et al., 2016), environmental (Dey et al., 2018; Tanaka et al., 2018) and financial (Wood et al., 2018; Nunes & Park, 2016) consequences of Dieselgate. However, research on VW's crisis

management is scarce, even though it might have important implications for crisis development and crisis consequences themselves. Therefore, we conduct an empirical examination of VW's crisis management via Twitter using sentiment analysis to derive conclusions on the usefulness of VW's online impression management strategy.

The study proceeds as follows: Section 2 provides information on the theoretical background of Dieselgate. Section 3 reviews prevailing literature for impression management, impression management strategies and derives our research questions. Section 4 includes the research methodology as well as the findings of our empirical analysis, which will be discussed and critically assessed in section 5. Finally, Section 6 concludes our study.

## 2 Theoretical Foundation

Our research approach has its theoretical foundation in legitimacy theory. According to legitimacy theory, legitimacy is defined as "[…] a generalized perception or assumption that the actions of an entity are desirable, proper or appropriate […]." (Suchman, 1995, p. 574). Thus, the stakeholders of an organization decide whether a firm is legitimate or not. Legitimized firms are able to achieve continuity, credibility as well as active and passive support by their stakeholders. Furthermore, they can receive unquestioned resources from all constituents as they are perceived as trustworthy and as taken for granted (Ashforth & Gibbs, 1990). However, a loss of legitimacy may induce serious issues for the respective firm as non-legitimate firms are subject to mistrust, which might harm their businesses substantially. Consequently, organizational legitimacy is crucial to a firm's survival and performance (Elsbach, 2003).

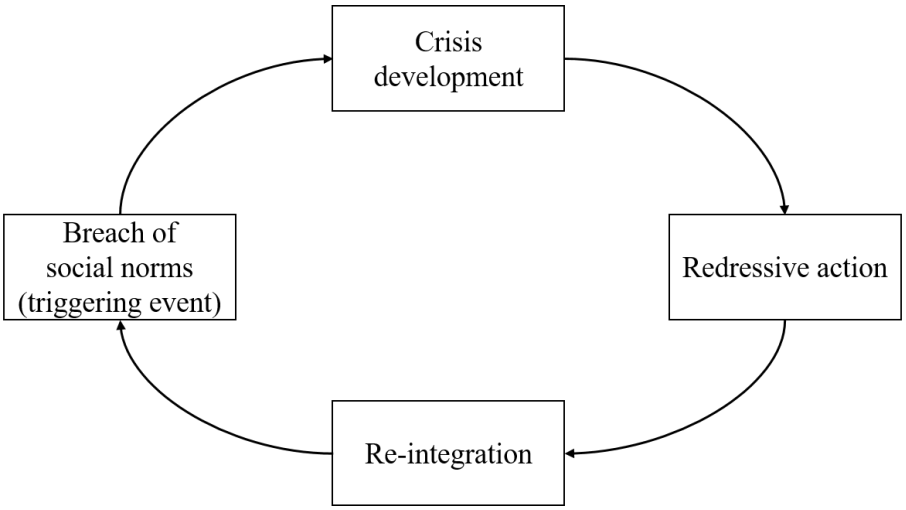
Thereby, corporate scandals such as financial scandals, human rights violations, and environmental scandals are a major source of losing corporate legitimacy. In general, firms have to constantly legitimize themselves in society. Therefore, they can actively manage their legitimacy through specific communication and justification (Palazzo & Scherer, 2006). Accordingly, organizations engage heavily in impression management in times of reputational crises to restore their legitimacy.

## 3 Impression management in legitimacy crises

Impression management can be defined as the attempt to control external impressions and to influence them in a way, which is favorable for the organization. This mostly refers to impressions in behavior, morality, competence as well as trustworthiness (Rosenfeld et al., 1993). This definition already clarifies that impression management directly targets organizational legitimacy. Organizational impression or perception management becomes particularly important when the firm suffers from a bad public perception. Thereby, perception management refers to all kinds of activities, which influence the public's perception of the organization. Mainly organizational image, reputation, and identity are addressed with perception management (Elsbach, 2003). When organizations are confronted with their failure, they try to justify their position and manipulate information on their behalf. Through self-justification, they aim to rationalize their behavior even though it might be highly questionable. Information manipulation refers to only partially addressing critiques by the audience and selectively provide information to it to keep the failure "under control". However, both, self-justification and information manipulation, are impression management methods, which create a path dependency in failure as an organization's rationalization of failure establishes the impression that it was the necessary evil (Caldwell & O'Reilly III, 1982).

Organizational wrongdoing can be seen as the starting point of an organizational cycle of impression management (triggering event).

**Figure 1**: Cycle of impression management (Sims, 2009)




Following the breach of social norms (e.g., through illegal activities, environmental fraud, etc.), the crisis develops with its implications of social tensions, the inclusion of several social groups, and great publicity. Redressive actions directly target the crisis itself and aim at limiting the negative impact of the crisis on the organization. Organizational impression management can be attributed to this phase. Finally, affected communities are re-integrated into the organization's sphere given crisis management was successful. The cycle restarts with the emergence of another triggering event. Noteworthy thereby is that some redressive actions may even worsen the crisis (Sims, 2009). This is particularly the case when redressive actions and the crisis impact do not fit each other and expectations, as well as wishes from affected stakeholders, have not been addressed by offered crisis management. Inadequate crisis response strategies like obfuscating or even concealing information, deception, obstruction, false denials, and lying to manipulate the community cause even greater reputational crises than the original one (e.g., AWB crisis in Australia) with even more negative consequences for the organization's legitimacy. On the other hand, organizations cannot leave crises "unmanaged" as they would be perceived as non-caring, emphasizing the dynamics and the negative impact of the crisis. Hence, there is a strong need for adequate crisis management strategies (Grebe, 2013).

Jones and Pittman (1982) provided a widely accepted taxonomy of impression management possibilities for individuals. They identified five personal impression management strategies, which individuals can use to enhance certain emotions. Ingratiation refers to all types of activities that are supposed to trigger affection at the targeted individual by self-characterization, opinion conformity, and doing favors. Intimidation is meant to cause fear through threatening and angry behavior. Respect can be achieved through self-promotion, i.e. performance claims. Individuals engage in self-denial or helping for pursuing exemplification to enhance guilt. Finally, supplication implies the use of self-depreciation to enhance obligation. These impression management strategies have been transferred to organizations and enhanced by Mohamed et al. (1999). They distinguished between assertive and defensive as well as between direct and indirect strategies.

**Figure 2**: Taxonomy of organizational impression management (Mohamed et al., 1999)

| | Direct tactics | Indirect tactics |
|---|---|---|
| Assertive tactics | Ingratiation<br>Intimidation<br>Organizational Promotion<br>Exemplification<br>Supplication | Boasting<br>Blaring<br>Burnishing<br>Blasting |
| Defensive tactics | Accounts<br>Disclaimers<br>Org. Handicapping<br>Apologies<br>Restitution<br>Prosocial Behavior | Burying<br>Blurring<br>Boosting<br>Belittling |

Thereby, Jones and Pittman's (1982) impression management tactics refer to direct and assertive tactics. They are used to generate a perception that the organization is attractive, dangerous, competent, morally worthy, and weak to selected constituents. While the latter seems contradictory at the first sight, supplication and exemplification can help to reduce the demands of certain stakeholders.

Direct and defensive strategies are used to protect the organization's image. Thus, they are used to protect the image, which has been generated by using assertive impression management. Accounts address organizational crises and pursue the aim of protecting and repairing a damaged reputation. Thereby, organizations engage in denials to show that the organization has nothing to do with the issue, in excuses to dismantle the problem from the organization, and in justifications to minimize the undesirability of the issue. Disclaiming implies the publication of embarrassing information like product flaws before repercussions to sustain an honest image. Organizational handicapping refers to an organization's behavior of prescribing task success as unlikely to have a ready-to-give explanation for the failure. With apologies, organizations (partially) admit their fault and ask for forgiveness. Restitution goes one step further and offers compensation to harmed stakeholders. Prosocial behavior is the most in-depth approach direct and defensive approach, which implies the creation of positive identity through socially desirable actions. For the sake of this paper, indirect tactics are left out as they do not find consideration in our later analysis.

More recently and due to the increasing importance of social media, social media tools are increasingly used by organizations to conduct organizational perception management following the above-mentioned strategies. Using social media for perception management can help to change negative sentiments to positive ones. Furthermore, user loyalty and the attitude towards the organization can be improved substantially (Benthaus et al., 2016). At the same time, social media is responsible that crises have a much more negative impact on organizations as it accelerates the speed of crisis distribution, amplifies the reach of the crisis, and allowed affected stakeholders to form social media groups and opinion leaders to act against the interests of the organization. Even offline crises spill over to social media, making organizations even more vulnerable. Organizations struggle to manage their perception in social media following crises adequately. They do not exploit the power of real-time social media like Twitter, which offers the possibility to engage in an open-discourse with users and to transmit an image of transparency (Gruber et al., 2015). Still, Twitter is the most frequently used social media for impression management (Jackson & Lilleker, 2011). Castelló et al. (2016) provided empirical evidence that organizations can obtain significant legitimacy advantages when they engage in online stakeholder management. Within this networked legitimacy approach, organizations obtain legitimacy through non-hierarchical communication and involvement of users (participation). Therefore, organizations should reduce control over the communication and start a two-way reciprocal approach.

As stated in section 1, VW's Dieselgate scandal represents a severe reputational crisis for the organization, which has created a comprehensive need for impression management. Thus, we want to analyze VW's online impression management via Twitter with regards to Dieselgate and the induced sentiments of the users. Our underlying research questions are:

**RQ1**: Which impression management strategies does VW pursue in Twitter?

**RQ2**: How do users react to the different impression management strategies?

## 4 Empirical analysis

### *4.1 Data collection*

Examining the effectiveness of organizational impression management and stakeholder reactions requires an adequate database. Therefore, prior academia provides various approaches for data collection by mainly considering three sources with news media (e.g., Lee & Carroll, 2011; Pollock & Rindova, 2003), accreditation bodies (e.g., Baum & Oliver, 1991) as well as surveys (e.g., Rindova et al., 2005). Although these measures can provide decisive evidence for the assessment of organizational behavior, they are, at a representative level, fundamentally lacking in capturing the plurality of norms, values as well as expectations that exist in modern society (Etter et al., 2018). For instance, news media content is subject to a series of preselection procedures and consequently indicating only accepted information, while rejected content is not published (Vergne, 2010). Further, accreditation bodies representing evaluating institutions indicate only an implied linkage with ordinary citizens, whereas survey-based approaches connect directly, but suffer from predefined responses (Etter et al., 2018; Helm, 2007). Thus, traditional data sources are limited to capture the diversity of citizens' characteristics. As a solution approach, the use of social media to analyze citizens' perceptions of organizational behavior indicate an independent data set that also allows for a broad scope of plurality, since the upcoming emergence of social media over the past decade has created a public and free space for discussion, assessing organizational behavior possible (Whelan et al., 2013). More precisely, social media platforms like Twitter or Facebook primarily overcome the gatekeeping problem of conventional media and represent a bilateral communication process between citizens and organizations that generate an open dialogue (Lee et al., 2013). However, social media sources can add to the complexity of discussions but, on the other hand, reduce institutional influence (Castelló et al., 2013; Whelan et al., 2013).

Using Twitter data is well established in recent academia because of higher user frequency as well as lower hierarchical structures (e.g., Castelló et al., 2016). Furthermore, the user content is not subject to clearing or filtering processes by higher authorities or the addressees. Consequently, we use historical Twitter data for examining our underlying research questions on VW's impression management strategies and the users' reaction. For this, VW offers several accounts for communicating with its stakeholders. Since our sentiment analysis is based on the English language, we use VW's US Twitter account (@VW) which further is characterized by the largest number of followers (569,000) as well as user activity. Twitter provides the option to collect historical data through application programming interfaces (API). However, obtaining data via the Twitter API is only possible for the last 7 days. Therefore, we collected the data using the open-source python application "GetOldTweets".

First, we collected VW Twitter data between the years 2014 and 2017 for our frequency analysis to investigate VW's social media activity, resulting in a total data set of 12,549 tweets. Second, we reviewed all tweets starting with the first VW contribution to the emission scandal on 24 September 2015 until 2017 for determining additional crisis tweets. Next, we excluded all tweets that represent direct dialogues (e.g., replies with @), since our research aims to analyze the direct reaction by recipients to VW's crisis tweets. After manually reviewing our collected VW tweets, we identified 7 contributions that directly address the emissions scandal. In the wake of the VW crisis and the general desire for greater environmental awareness in society, we have discovered various tweets that relate to electronic mobility and are subject to higher numbers of user replies. For this reason, we have added 6 tweets on electric mobility as a counterpart to topics related to fossil fuels. Thus, our analysis consists of a total of 13 chronologically coded tweets for assessing impression management strategies of VW. The next step in sampling our data is to capture all user responses to the VW US account for our predefined crisis tweets. Since "GetOldTweets" has no option to only derive the replies for VW tweets, we had to manually collect all user responses from Twitter. In total, our final sample consists of 771 user responses. Moreover, all replies were coded in line with the specific contribution of VW. Table 1 displays summary statistics on the underlying historical Twitter data regarding our crisis tweets and user replies.

**Table 1**: Summary statistics of VW's Twitter activity

| Year | Tweets | Crisis Tweets |
|---|---|---|
| 2014 | 5,441 | – |
| 2015 | 3,364 | 5 |
| 2016 | 2,419 | 6 |
| 2017 | 1,325 | 2 |
| Total | 12,549 | 13 |

## 4.2 Data collection and variable definitions

### 4.2.1 VW's crisis tweets

After identifying our relevant crisis tweets, the next step is to classify them in line with the impression management strategies mentioned in section 3. We analyzed the crisis tweets and coded the assigned strategy to allow for an aggregated analysis in a later section. In total, we have identified four strategies that VW is pursuing within its crisis tweets. An overview of the identified tweets with text and assigned strategies are presented in table 2.

According to the framework of Mohamed et al. (1999), all strategies are to be classified to the strand of direct and defensive tactics, as they are primarily used to protect VW's corporate image. In addition, we have identified 4 strategies, namely apologies, accounts, restitution, and prosocial behavior. Moreover, apologies, accounts, and restitution strategies are directly related to the emission scandal, whereas prosocial behavior represents posts about electronic mobility.

*Apologies:* The first VW tweet dealing directly with Dieselgate, took place on 24 September 2015 and contains a statement by VW North America CEO Michael Horn, who deeply apologizes to those affected by the violation of CARB and EPA emission standards. He also reiterated that the incident should be resolved to regain the trust of all stakeholders. Consequently, the first contribution is classified as an apology strategy.

*Accounts:* The next period of tweets between 27 September and 28 October 2015 will include 3 contributions that only contain information by redirecting VW stakeholders to an info homepage (www.dieselinfo.com) with updates on the affected TDI vehicles. Moreover, VW customers can check with the vehicle identification number (VIN) whether their diesel cars are affected. All the posts do not contain any concessions, but only give the impression that the recipients are mere to be held out. At least these tweets give the impression that VW has limited responsibility and only serves as a channel of information and not as the crisis causer. The primary effect suggests that VW is trying to postpone or play down the crisis. Since accounts strategies are aimed at reducing the severity, we have assigned these tweets as accounts.

*Restitution:* VW's next Twitter contribution was published on 28 October 2015 and contains another statement by CEO Michael Horn offering a goodwill package to all affected car owners to regain reputation. The package contains some benefits such as a prepaid debit card with a value of 500 USD and another 500 USD card for use at American VW dealerships. Since the goodwill package indicates compensation to the affected stakeholders, we classify this tweet as a restitution strategy. In addition, we have identified two further tweets relating to the restitution strategy, namely the contribution of 22 June 2016 and 25 October 2016. Both tweets are providing information to the audience about the proposed 2.0L TDI settlement program, while the second tweet addresses the authorization by the US court. More precisely, the settlement contains substantial payments for buybacks of affected diesel vehicles as well as the promotion of environmental projects by VW.

*Prosocial Behavior:* During the crisis, VW engaged in the development of electric vehicles and shares information about new electric cars with their audience on Twitter. Since the use of e-mobility substantially reduces emission rates and thus improves the environment and adds value to society, we consider all these posts to be prosocial. This includes, for example, information on hybrid drives or field reports on the VW e Golf. Thus, we have identified 6 prosocial behavior tweets, the first of which was published on 6 January 2016 during the crisis.

**Table 2**: Crisis tweets with assigned strategy and user replies

| Date | Strategy | Text | Link | Replies |
|---|---|---|---|---|
| 2015-09-24 | | Volkswagen would like to offer our deepest apologies to those affected by our violation of CARB and EPA emissions standards. We will remedy the issue, and we will make things right to win back the trust of you, our customers, our dealers, the government, the public, and our employees. We kindly ask for your patience as we work very hard to address this complex issue, and we will share more information as soon as we can.-Michael Horn, President and CEO Volkswagen Group of America | https://twitter.com/VW/status/647190698223992832 | 203 |
| 2015-09-27 | Accounts | We've launched VWDieselInfo.com to keep our community updated with information regarding affected TDI vehicles. Thank you for your patience as we work to remedy this issue and regain your trust. | https://twitter.com/VW/status/648165227574374402 | 169 |
| 2015-10-16 | Accounts | We updated our VIN lookup tool to help you determine if your 2.0L TDI is affected by the emissions issue. Please consult your Owner's Manual for information on locating your vehicle's VIN. We appreciate your ongoing patience and support. | https://twitter.com/VW/status/655095904911904768 | 42 |
| 2015-10-28 | Accounts | To help keep our customers informed with the latest information, we encourage owners of affected 2.0L TDI vehicles to sign up to receive communications and updates. Visit vwdieselinfo.com to sign up. | https://twitter.com/VW/status/659450530591318016 | 56 |
| 2015-11-17 | Restitution | We are providing a Goodwill Package as a first step toward regaining our customers' trust. We continue working tirelessly to develop an approved remedy for affected vehicles. -Michael Horn, President and CEO, Volkswagen Group of America | https://twitter.com/VW/status/666664617607852032 | 47 |
| 2016-01-06 | Prosocial Behavior | The all-electric, concept BUDD-e, bringing our past to your future. See its reveal at #CES2016 in Las Vegas. #VW | https://twitter.com/VW/status/684867114075852800 | 18 |
| 2016-01-12 | Prosocial Behavior | Introducing the Tiguan GTE Active concept SUV: just add adventure. http://media.vw.com/release/1128/ #NAIAS #VW | https://twitter.com/VW/status/686684691026456576/ | 10 |
| 2016-01-22 | Prosocial Behavior | A plug-in hybrid system & turbocharged engine makes the Tiguan GTE Active Concept a great adventure partner. #NAIAS | https://twitter.com/VW/status/690595474680610816 | 5 |
| 2016-06-28 | Restitution | 2.0L TDI owners & lessees: Please visit http://www.VWCourtSettlement.com for important information about our proposed 2.0L TDI settlement program. | https://twitter.com/VW/status/747803994244980738 | 15 |
| 2016-10-25 | Restitution | The Court has approved the settlement for 2.0L TDI vehicles. Eligible owners and lessees may submit a claim now at http://VWCourtSettlement.com . | https://twitter.com/VW/status/791007153226190849 | 25 |
| 2016-12-06 | Prosocial Behavior | America's first e-Golf owner talks about two years of driving electric. #VWGolf http://bit.ly/2gGNjue | https://twitter.com/VW/status/806136131905470465 | 6 |
| 2017-08-19 | Prosocial Behavior | A new electric #VWBus is coming to a road near you. 🚐 #TheBusIsBack | https://twitter.com/VW/status/898983000154677248 | 96 |
| 2017-09-01 | Prosocial Behavior | #DidYouKnow that #VW built its first electric bus in the 70s? Learn how the #IDBuzz evokes the original Elektro-Bus: | https://twitter.com/VW/status/903648648051003394 | 79 |
| | | | Total | 771 |

#### 4.2.2 Frequency and sentiment analysis

To derive initial inferences from VW's impression management, we first analyze VW's Tweets record between 2014 and 2017. Therefore, we summarize all tweets by year and month to show changes in tweet frequency over the years, especially in the course of the emissions scandal. After conducting frequency analysis, we continue to examine the reactions of Twitter users to our predefined crisis tweets by using sentiments as an effective indicator.

Sentiment analysis is a machine-based approach that detects positive and negative language formulations by processing the natural and computer languages (Thelwall et al., 2010). In particular, the technique evaluates the degree of subjectivity and emotions with labels for positive, negative, or neutral sentiments concerning the underlying object resulting in an aggregated measure. In terms of mixed feelings, the algorithm then calculates the emotion outcome based on the predominant emotion. Since our analysis is based on Twitter data containing only short sentences, mixed emotions are mostly non-existent (Etter et al., 2018).

There are several ways to conduct sentiment analysis. One approach involves complex linguistic analysis, which allows for conclusions to be drawn about the semantic and syntactic structure of the sentence to determine its sentiment value (Cambria et al., 2013). Furthermore, this approach evaluates the connection, structure, and morphology between words to identify superlatives, context, and idioms (Thelwall et al., 2010). This method is also suitable for social media, where communication often takes place using abbreviations and informal language. Another approach widely used in academia for performing sentiment analyses is machine learning. Hereby, researchers compute algorithms for automatic detection allowing for a continuous assessment of new information in data patterns. Moreover, the set of words that are evaluated as positive or negative is not confined to predefined lexicon-based words but emerges from the ongoing discourses (Etter et al., 2018). Finally, another approach to classifying sentiment in texts is lexicon-based. With pre-coded word lists (negative, positive, neutral), the occurrence of words within texts is computed to detect the polarity of a sentence (Castelló et al., 2016; Etter et al., 2018). Furthermore, an overall sentiment score represents the sum of all the evaluative expressions of individuals.

We use the Python open-source API from "text-proxessing.com" to conduct our sentiment analysis for responses to our preidentified crisis tweets. Thereby, the algorithm is based on a machine learning approach, which is trained by predefined twitter sentiments and film reviews provided by the developers. The methodology is classified hierarchically, whereby first the probability of neutrality is generated and in a second step, the probability of a positive or negative outcome is computed. If the probability of neutrality prevails in the first step, the tweet is evaluated as neutral. In the case of subjectivity, the emotion is then reproduced with the highest probability. After manually checking the scores for the user's replies, we noticed some incorrect scores. For this reason, we manually corrected all wrongly specified sentiment scores. Hereby, a total of 278 of 771 sentiment scores had to be adjusted manually. Finally, we aggregate all scores and calculate the average mean of positive, neutral as well as negative numbers of sentiments with respect to the underlying crisis tweet. Besides, we will provide selected user replies to illustrate the respective reactions.

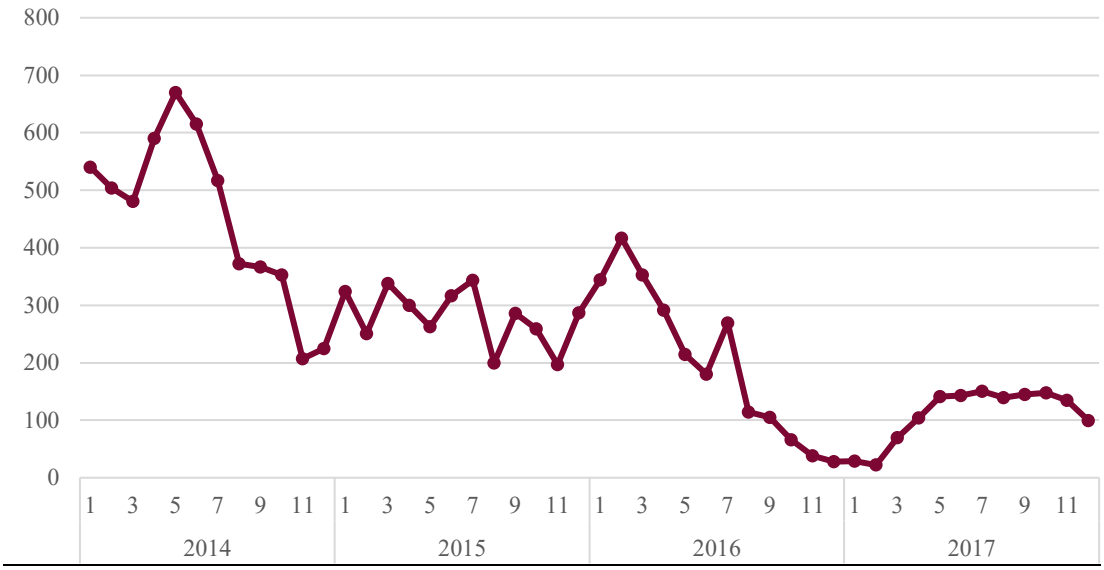
### 4.3 Empirical findings

#### 4.3.1 Frequency analysis

With the collected data of 12,549 tweets from the Twitter account of VW, we first perform the frequency analysis. Also, the data represents VW's replies to the community. Figure 3 depicts a graph of fluctuations in VW postings for the period 2014 to 2017, with aggregated data per month.

Looking at the chronological course of time, it can be seen that VW's activity is steadily declining over the years. While in 2014 there were 5,441 tweets, in 2015, when the revelation of Dieselgate happened, the number dropped by around 60% to 3,364 tweets. However, we observe a higher activity between September 2015 and April 2016, which can be attributed to the emergence of the scandal. This increased activity also coincides with our defined crisis tweets, which are thematically directly related to the emissions scandal. Further, it is worth noting that the majority of VW Tweets include responses to user issues regarding the VW scandal. All these tweets, however, contain ready-made answers with excuses or redirects to information homepages regarding the scandal. During the crisis process, we see that Twitter activity will continue to decline in 2016 with a total of 2,419 (-40%). Finally, we document a moderate Twitter activity VW in 2017 with 1,325 tweets.

**Figure 3**: Frequency analysis of VW's Twitter activity




### *4.3.2 Sentiment analysis*

The following section provides sentiment results for the previously assigned impression management strategies. Therefore, figure 4 displays sentiment results chronologically for the underlying period between 2015 and 2017 regarding the average mean of negative, neutral, and positive user replies. We have also integrated a trend line for the number of positive and negative replies to better illustrate changes over time. The examination of the period under review reveals that VW's posts are generally subject to negative feedback. It also becomes clear that the negative sentiment is declining on average over time, while positive reactions are increasing. Moreover, it also becomes apparent that the positive replies will not exceed the negative sentiments until 2017.

The first VW tweet is classified as an apology strategy and is the first contribution to directly address the diesel scandal. As for community sentiments, 50.25% of all responses were negative, 30.54% neutral and only 19.21% positive. Thus, it has to be said that the strategy for VW's impression management was not successful. However, this is not surprising due to the precarious situation as VW had publicly admitted the fraud and manipulating their diesel cars in the last few days before the tweet. It is also worth mentioning that the tweets received the highest response rate with 203 replies. Looking at the replies, it becomes clear that the community is first and foremost very angry and disappointed about the scandal. For instance, one user writes *"@VW Don't tell me you're sorry, cause you're not. Baby, when I know you're only sorry you got caught!"* [31], which in turn indicates that the community doesn't take the apology seriously in the first place. Furthermore, there are also insulting texts as well as the accusations that VW endangers the health of many people through its emissions scandal. In terms of positive sentiments, many user responses come from consumers with a high brand and product loyalty. For instance, one user writes *"@VW Hang in there guys. You all make a great product, and I'd the other brands weren't cheating too, they'd have blown the whistle.*" [11], while another replies "*@VW I enjoy my jetta TDI every day. Not worried, i know its cleaner than the lifted GMC with trucknutz rolling coal i saw this morning."* [165]. Furthermore, neutral tweets generally imply questions or objective statements that do not reveal any emotions, such as "*@VW A buyback is the minimum that will suffice."* [36].

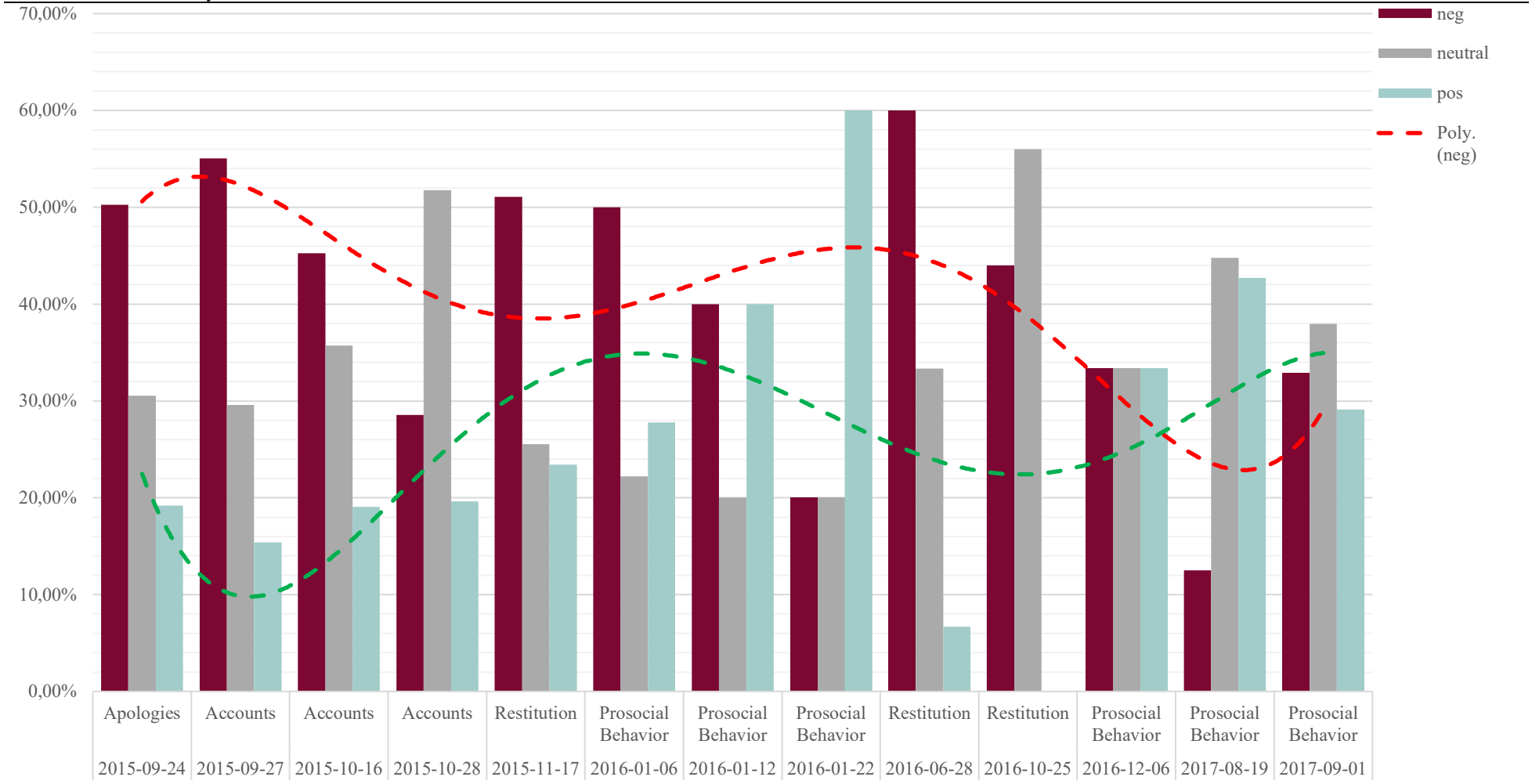
The next tweet phase is classified as accounts strategies since VW's tweets are only redirecting to their new info homepage regarding the affected diesel vehicles. In summary, all replies predominantly generate a negative sentiment score between 55.03% and 28.57%, with the score decreasing over time. The positive tweets show a slight increase (15.38% to 19.64%), while it is noteworthy that the neutral replies per account tweets increase (29.59% to 51.79%). It becomes abundantly clear that the general sentiment pattern is marked by considerable negativity and that the shock about the fraud is still persistent in the community (e.g., *"Shut up and get ready for jail, bitches. And corporate bankruptcy. #VWDeathPenalty"* [367]). In addition, the audience reacts with incomprehension, because all three contributions convey the same content, as one user writes "*@VW Why do you keep pushing this out with no new information on it? Just makes me more angry.*" [458]. As a reason for the decrease in negative

tweets throughout the accounts period, we assume that the general mood regarding the scandal may have become a little more sensitive.

The following strategy is restitution, in which VW offered the goodwill package as compensation. Although one could assume that the provision of compensation payments would have a positive effect, however, the reaction shows a high negative sentiment score (51.06%). By considering the content of user responses, we determine that the compensation did not meet the expectations of the audience. Consequently, one user writes *"far far (a)way from our expectations"* [510]. Rather, users are demanding a consistent buyback of the affected cars from VW [508]. Interesting here are the negative responses from consumers, whose cars are not affected by the scandal, but affirm that the compensation should apply to all benefits, as VW has damaged the entire brand [509]. Consumers loyal to the brand, however, continue to be present in the dialogue and appreciate VW's move [479; 484]. In addition, we also report high negative sentiment levels for the other restitution strategies related to the settlement program, while the first post in 2016 represents the highest negative average mean (60%) of all contributions. Similar to previous reactions, we find a predominant dissatisfaction with the content of the program [556]. In addition, consumers who have a 3.0 TDI do not appreciate the program because they are not included [560]. Further, we also find similar reactions to the announcement that the program has now been finally approved by the court [580]. With respect to the high average mean of neutral tweets, the community is mostly asking for more information.

Our last assigned strategy represents prosocial behavior. Therefore, we collected Twitter data considering the topic of sustainable electromobility. Although prosocial behavior should suggest a positive user reaction, however, we find highly negative sentiments (50%) for the first contribution on 6 January 2016. By reviewing the content of the underlying replies, the audience is still biased by the fraud. Thus, one user writes "*@VW fix your #dieselgate fiasco first*" [524]. However, the negativity for prosocial tweets decreases over time, suggesting that VW's strategy is successful in reducing negative reactions and traffic to its Twitter account. In the course of the restitution tweets as well as the slow end of the crisis a clear decrease of the negative tweets can be recognized, and the prosocial classified contributions increase in positive reactions. For example, VW's tweet, which focuses on the introduction of an electronic remake of the famous Bully, is enjoying a great positive response from the community, which is also due to a strong brand and product loyalty [636].

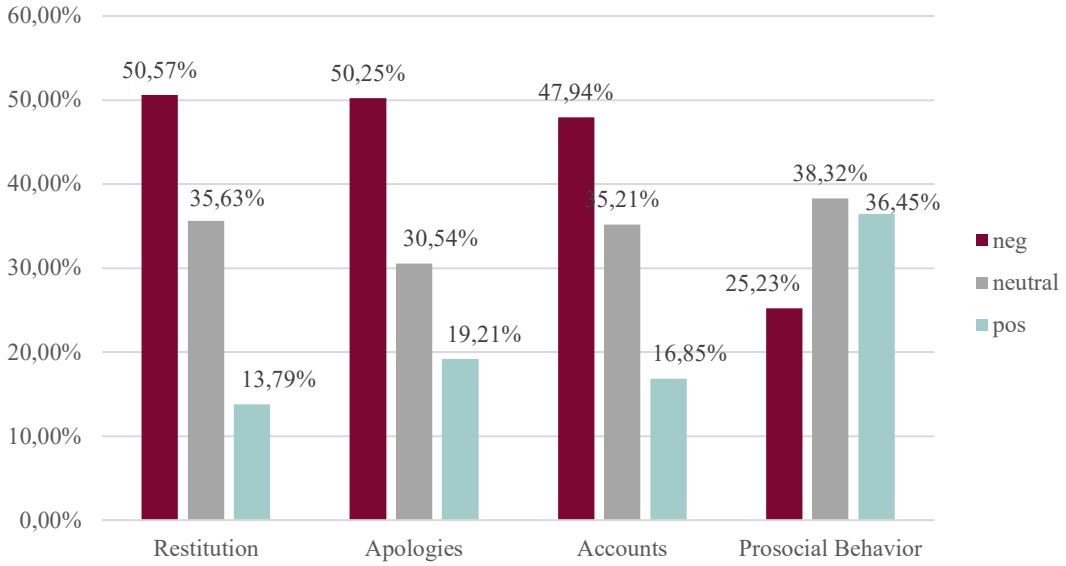
**Table 4**: Sentiment analysis of VW's crisis tweets



## 5 Discussion

Our empirical analysis provides meaningful insights from a practical perspective. They allow us to infer recommendations for practitioners on how to deal with legitimacy crises.

**Figure 5**: Cumulative sentiments for VW's impression management strategies




The illustration of cumulative sentiments for each impression management strategy (Figure 5) demonstrates that there are major differences in user reaction sentiments to VW's crisis tweets. Crisis tweets, which can be associated with prosocial behavior, have received the lowest negativity and the highest positivity at the same time. All other impression management strategies nearly induced similar emotions. Against our prediction and common sense, tweets, promoting restitution, have received the lowest score percentage score for positivity and nearly the highest negativity score. Analyzing user tweets highlighted that customers were not satisfied with offered goodwill packages and settlement offers. Demands on vehicle "buybacks" were not considered by VW, which caused major negative sentiments. Regarding prosocial behavior, analysis of every single tweet is worthwhile as there are severe differences in sentiments for prosocial tweets. Most interestingly, VW's first prosocial tweet on 6 January 2016 caused users to react with strong negativity as they had the intuition that VW tries to greenwash itself in the middle of an environmental crisis. Tweets like *"@VW fix your #dieselgate fiasco first"* [524] confirm this circumstance. However, the overall picture of prosocial tweets is much more positive and prosocial behavior seems like the most effective strategy in dealing with legitimacy crises. Regarding restitution, the approach of informing the community on settlement offerings seems like a feasible strategy if done right. However, VW's negligence of customers' wishes in settlement offerings undermines the effectiveness of this strategy. Thus, the potential of restitution impression management strategies in dealing with customer emotions is far greater than VW's realization when customer needs and wishes are considered in offered settlement packages. Attempts to apologize and to push the crisis away from the organization (accounts) have not been well perceived by the community. The apology in the climax of the crisis did not end up as planned and the community did not accept it. This might lie in the enormous impact of the betrayal and reach it has obtained, which have made a simple apology insufficient to deal with the consequences. The same counts for strategies belonging to accounts. They did not provide any solutions to customers, who are already impatient for a pragmatic solution to deal with their losses. Summing up, our sentiment analysis provided evidence that prosocial behavior is the most adequate strategy to pursue when an organization suffers under questioned legitimacy as the consequence of a reputational crisis. Restitution can be a highly feasible approach when the wishes and needs of affected customers are considered in settlement offerings. Finally, apologies and accounts proved to be rather inadequate strategies in major crises since they even heat negative emotions due to insufficient crisis management.

Even though our empirical findings allow us to derive clear results on how to conduct impression management in crises, our research approach is subject to methodological limitations. First of all, we critically acknowledge that some crisis tweets received an insufficient number of replies. This mainly counts for prosocial tweets starting from 2016, which partially only received five replies. As we evaluate sentiments relative to the overall number of replies on a crisis tweet, a low number of positive replies can bias the overall sentiments for an impression management strategy enormously. To deal with the issue of low user reactions, we recommend

sourcing data from more active social media platforms like Facebook. Facebook brings the advantages that posts are not limited to 140 characters, allowing for better expression of emotions, a greater number of comments, which can be used for the analysis, and the possibility to evaluate emotional reactions (likes, anger, funny, etc.). However, Facebook should only be considered when it is warranted that the organization did not delete user postings as this would bias the sentiment analysis. Moreover, we critically assess simply determining that a user reply is positive, negative, or neutral without implementing a numeric and objective score for the respective sentiments. As the provided sentiment probability scores of our sentiment software (text-processing) and conclusive sentiment determination was subject to flaws, we had to conduct a manual recheck of the sentiments and adapt if necessary. Therefore, we only interpreted the outcome (positive, negative, and neutral) and not the scores. To come up with an objective and numeric sentiment score, we recommend a machine learning algorithm, which allows to define objective evaluation patterns and, by that, an objective sentiment score. Finally, we take into account that there is strong overall negativity when it comes to Dieselgate as the scandal enjoyed great and overwhelmingly negative publicity worldwide. This general negative atmosphere towards VW might have affected user tweets as they may simply follow the hype to bash VW for their wrongdoing instead of expressing their real emotions towards the organization. If so, our sentiment analysis might be biased as well. This limitation finds support in the fact that negativity declines with the years whereas positivity increases.

For upcoming research, we recommend employing a quantitative research approach to analyze whether there is a statistically significant relationship between the different impression management strategies and the negativity score. Therefore, binary dummy variables can be defined for each impression management strategy, which are equal to one when the respective strategy has been used by VW. Thereby, a quantitative research approach can perfectly complement qualitative analysis. Furthermore, the conduct of experiments and focus groups can allow evaluating the effectiveness of VW's impression management strategies (or strategies in general) free from methodological biases. Thereby, groups will be confronted with the scandal as well as with the different impression management strategies. By that, conclusions on the usefulness of each impression management strategy in the context of Dieselgate can be derived, which allows for inferences on overall crisis management.

## 6 Conclusion

The purpose of this paper is to analyze VW's impression on Twitter, which was meant to deal with the Dieselgate crisis. The Dieselgate scandal enjoyed mainly negative and far-reaching publicity, which caused a reputational crisis for VW and a questioned legitimacy. Therefore, VW engaged in impression management via Twitter to improve the public perception as well as the sentiments towards the organization. As the crisis has put VW in a defensive position, several direct and defensive impression management strategies have been employed. Thereby, our sentiment analysis served to answer our research questions. VW pursued several direct and defensive impression management strategies in Twitter to deal with the negative sentiments towards the organization. Namely, VW's crisis tweets can be associated with the impression management strategies of accounts (pushing away the crisis from the organization), apologies, restitution (settlement offerings), and prosocial behavior. These four impression management approaches implied widely different user reactions. Sentiment analysis provided empirical evidence that prosocial behavior is the most effective strategy in dealing with negative customer sentiments. Crisis tweets belonging to prosocial behavior received the lowest negativity and the highest positivity score. However, our empirical research approach is subject to methodological flaws, which limit the transferability of our findings. Still, we strongly recommend emphasizing prosocial behavior in reputational crises as it the most promising approach to restore corporate legitimacy.

**References**

Ashforth, B.E., & Gibbs, B.W. (1990). The Double-Edge of Organizational Legitimation, *Organization Science,* 1, 177–194.

Barret, S R.H., Speth, R.L., Eastham, S.D., Dedoussi, I. C., Ashok, A. Malina, R., & Keith, D.W. (2015). Impact of the Volkswagen emissions control defeat device on US public health. *Environmental Research Letters*, 10, 1–10.

Baum, J.A.C., & Oliver, C. (1991). Institutional Linkages and Organizational Mortality. *Administrative Science Quarterly*, 36, 187–218.

Benthaus, J., Risius, M., & Beck, R. (2016). Social Media Management Strategies for Organizational Impression Management and their Effect on Public Perception. *Journal of Strategic Information Systems*, 25, 127–139.

Caldwell, D.F., & O'Reilly III, C.A. (1982). Responses to Failures. The Effects of Choice and Responsibility on Impression Management. *Academy of Management Journal,* 25, 121–136.

Cambria, E., Mazzocco, T., & Hussain, A. (2013). Application of multi-dimensional scalin and artificial neural networks for biologically inspired opinion mining. *Biologically Inspired Cognitive Architectures*, 4, 41–53.

Castelló, I., Etter, M., & Nielsen, F.A. (2016). Strategies of legitimacy through social media. The networked strategy. *Journal of Management Studies*, 53, 402–432.

Castelló, I., Morsing, M., & Schultz, F. (2013). Communicative Dynamics and the Polyphony of Corporate Social Responsibility in the Network Society. *Journal of Business Ethics*, 118, 683–694.

Chossière, G.P., Malina, R., Ashok, A., Dedoussi, I.C., Eastham, S.D., Speth, R.L., & Barret, S.R.H. (2017). Public health impacts of excess NOx emissions from Volkswagen diesel passenger vehicles in Germany. *Environmental Research Letters*, 12, 1–14.

Dey, S., Caulfield, B., & Ghosh, B. (2018). The potential health, financial and environmental impacts of dieselgate in Ireland. *Transportation Planning and Technology,* 41, 17–36.

Elsbach, K.D. (2003). Organizational Perception Management. *Research in Organizational Behavior*, 25, 297–332.

Etter, M., Colleoni, E., Illia, L., Meggiorin, K., & D'Eugenio, A. (2018). Measuring Organizational Legitimacy in Social Media: Assessing Citizens' Judgments With Sentiment Analysis. *Business & Society*, 57, 60–97.

Grebe, K. (2013). Things can get worse: How mismanagement of a crisis response strategy can cause a secondary or a double crisis. The example of the AWB corporate scandal. *Corporate Communications: An International Journal*, 18, 70–86.

Gruber, D.A., Smerek, R.E., Thomas-Hunt, M.C., & James, E. H. (2015). The real-time power of Twitter. Crisis management and leadership in an age of social media. *Business Horizons*, 58, 163–172.

Helm, S. (2007). One reputation or many?: Comparing stakeholders' perceptions of corporate reputation. *Corporate Communications: An International Journal*, 12, 238–254.

Holland, S.P., Mansur, E.T., Muller, N.Z., & Yates, A.J. (2016). Damages and deaths due to excess NOx emissions from 2009 to 2015 Volkswagen diesel vehicles. *Environmental Science & Technology*, 50, 1111–1117.

Jackson, N., & Lilleker, D. (2011). Microblogging, Constituency Service and Impression Management. UK MPs and the Use of Twitter. *Journal of Legislative Studies*, 17, 86–105.

Jones, E.E., & Pittman, T.S. (1982). *Toward a general theory of strategic self-presentation*. Hillsdale: IEA.

Lee, K., Oh, W.Y., & Kim, N. (2013). Social Media for Socially Responsible Firms: Analysis of Fortune 500's Twitter Profiles and their CSR/CSIR Ratings. *Journal of Business Ethics*, 118, 791–806.

Lee, S.Y., & Carroll, C.E. (2011). The Emergence, Variation, and Evolution of Corporate Social Responsibility in the Public Sphere, 1980–2004: The Exposure of Firms to Public Debate. *Journal of Business Ethics,* 104, 115–131.

Mohamed, A.A., Gardner, W.L., & Paolillo, J.G.P. (1999). A taxonomy of organizational impression management tactics. *Advances in Competitiveness Research*, 7, 108–130.

Nunes, M.F., & Park, C.L. (2016). Caught red-handed. The cost of the VW Dieselgate. *Journal of Global Responsibility*, 7, 288–302.

Oldenkamp, R., van Zelm, R., & Huijbregts, M.A.J. (2016). Valuing the human health damage caused by the fraud of Volkswagen. *Environmental Pollution*, 212, 121–127.

Palazzo, G., & Scherer, A.G. (2006). Corporate Legitimacy as Deliberation. A Communicative Framework. *Journal of Business Ethics*, 66, 71–88.

Pollock, T.G., & Rindova, V.P. (2003). Media legitimation effects in the market for initial public offerings. *Academy of Management Journal,* 46, 631–642.

Rindova, V.P., Williamson, I.O., Petkova, A.P., & Sever, J.M. (2005). Being good or being known: An empirical examination of the dimensions, antecedents, and consequences of organizational reputation. *Academy of Management Journal*, 48, 1033–1049.

Robertson, J.A. (2017). The danger of Dieselgate. How Volkswagen's diesel scandal critically damaged the wider market. *Annals in Social Responsibility*, 3, 69.

Rosenfeld, P., Edwards, J.E., & Thomas, M.D. (1993). *Improving Organizational Surveys. New Directions, Methods, and Applications*. Thousand Oaks: Sage Publications.

Sims, R. (2009). Toward a better understanding of organizational efforts to rebuild reputation following an ethical scandal. *Journal of Business Ethics*, 90, 453–472.

Suchman, M.C. (1995). Managing Legitimacy. Strategic and Institutional Approaches. *Academy of Management Review*, 20, 571–610.

Tanaka, K., Lund, M.T., Aamaas, B., & Berntsen, T. (2018). Climate effects of non-compliant Volkswagen diesel cars. *Environmental Research Letters*, 13, 1–11.

Thelwall, M., Buckley, K., Paltoglou, G., Di Cai, & Kappas, A. (2010). Sentiment strength detection in short informal text. *Journal of the American Society for Information Science and Technology*, 61, 2544–2558.

Vergne, J.P. (2010). Toward a new measure of organizational legitimacy: Method, validation, and illustration. *Organizational Research Methods*, 14, 484–502.

Whelan, G., Moon, J., & Grant, B. (2013). Corporations and Citizenship Arenas in the Age of Social Media. *Journal of Business Ethics,* 118, 777–790.

Wood, L.C., Wang, J.X., Duong, L.N.K., Reiners, T., & Smith, R. (2018). Stock market reaction to auto manufacturer's environmental failures. *Journal of Macromarketing*, 38, 364–382.