3-25-2016

Impact of a Brand Crisis on Nation Branding: An Analysis of Tweets about VW's Emissions Crisis

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Impact of a Brand Crisis on Nation Branding:

An Analysis of Tweets about VW's Emissions Crisis

by

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A thesis submitted in partial fulfillment
of the requirements for the degree of
Master of Arts
The Zimmerman School of Advertising and Mass Communications
with a concentration in Strategic Communication Management
College of Arts and Sciences
University of South Florida

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Date of Approval:
March 24, 2016

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ABSTRACT

On September 18, 2015, the U.S. Environmental Standards Agency (EPA) filed a Notice of Violation of the Clean Air Act to the Volkswagen Group regarding software used to intentionally deceive the EPA's emissions tests.

Social media is an efficient way for organizations to release information and respond quickly during a crisis. Not only are organizations posting on social media sites, but consumers are increasingly turning to social media sites, such as Twitter, during crises to share information and opinions.

The VW crisis may impact Germany's nation brand, as predicted by more recent country-of-origin literature. The country-of-origin effect occurs when the reputation of a country impacts consumer perceptions of products produced by that country. When consumers had favorable perceptions of a country, Xu and Wu (2015) found the country's products were more likely to receive positive after-crisis reactions.

German products are considered to be of high quality. "So, in the case of Germany, the development of its national brand identity is an integral part of the growth and development of its exports, the 'Made in Germany' label that has a world-class reputation," (Joseph, 2014, p. 4). A content analysis was performed to examine the international conversation on Twitter through the analysis of tweets that included at least one of the following hashtags: #VWGate, #DieselGate, #VWscandal or #Volkswagenscandal.

CHAPTER 1:

INTRODUCTION

Communication during and after a crisis shapes public opinion about both the crisis and the organization (Russ, 1991). Crisis communication, a sub-section of public relations, is intended to defend an entity from reputational demotion. Strategic communication managers utilize crisis communication tactics in order to maintain and, if needed, restore relationships with the organization's publics. Public perception after a crisis has the ability to severely impact an organization financially, thus causing crisis communication to be essential in minimizing the negative impact on the organization. Effective crisis communication also has the potential increase positive perceptions of the organization (Coombs, 2007).

On September 18, 2015, the U.S. Environmental Protection Agency (EPA) filed a Notice of Violation of the Clean Air Act to the Volkswagen (VW) Group regarding software used to intentionally deceive the EPA's emissions tests (Environmental Protection Agency [EPA], 2015a). This software, referred to as a *defeat device* when used improperly, is an auxiliary emission control device (AECD). According to the Code of Federal Regulations by the EPA (2013), these devices reduce the effectiveness of the emission control system based on situational factors.

After being confronted with tests conducted by the California Air Resources Board, VW admitted to the use of this software. In essence, the device had two settings: "dyno" and "road." After detecting that emissions tests are being conducted, it adjusts accordingly. However, when

the car is not being tested, the "road" calibration dulls the effectiveness of two emission-treatment systems: nitrogen oxide traps and selective catalytic reduction (Mays, 2015). The result is the emission of nitrogen oxide levels that are up to 40 times the amount permitted by the EPA (EPA, 2015b; Linkov, 2015).

The software was found in EA 189 engines and affects approximately 11 million vehicles worldwide. Consequently, Martin Winterkorn resigned as CEO and now faces criminal prosecution in Germany for his alleged role in the fraud. Additionally, at the end of September, VW announced the recall of 1.2 million UK cars. The company also announced potential job cuts and the freezing of all unnecessary expenditures. VW has set aside $6.5 billion euros ($7.3 billion U.S.) to cover the recalls and other damage-control efforts (Thompson & Kottasova, 2015; Mays, 2015). The scandal spurred an international conversation on social media about the company's transgressions.

Currently, country-of-origin literature typically examines the relationship between country of origin and product by evaluating the impact of the country of origin on the product (i.e. in most cases, purchase intention) (Magnusson, Krishnan, Westjohn, & Zdravkovic, 2014). However, in crisis situations, country of origin is considered as a situational factor that impacts evaluation of the crisis (Xu & Wu, 2015). When consumers had favorable perceptions of a country, Xu and Wu (2015) found the country's products were more likely to receive positive after-crisis reactions. In this case, Germany has a favorable image that renders the country as an innovative leader in the motor vehicle industry. Further, country of origin can also serve as a heuristic cue that will shape attitudes when consumers are unable or unwilling to elaborate on the message. Thus, for individuals who are less impacted by the crisis (i.e. those who are not affected by the crisis), the German image will factor into the evaluation of the crisis.

As a consequence of Germany's nation brand relying heavily on its exports, the "Made in Germany" label has the potential to be undermined by the crisis. This study sought to examine the relationship between Germany's nation brand and the Volkswagen's emissions crisis through the examination of the crisis via the social media platform Twitter.

A content analysis of tweets was performed in order to give a more comprehensive understanding of the situation from the consumer's perspective. In addition, the data collected from Twitter combined with the response strategies posited by situational crisis communication theory can be used to formulate suggested messaging strategies for the Volkswagen Group. Theoretical and practical implications resulting from the research are discussed. This research contributes to the existing literature by supporting the suggestion of an upcoming and under-researched direction of product and country of origin relationships. That is, instead of examining the country of origin and brand relationship unidirectionally, the current study supports the need to examine the relationship in a bidirectional manner.

CHAPTER 2:

LITERATURE REVIEW

2.1: Country of Origin

A product's country of origin is an element that factors into product evaluation (Hong & Wyer, 1989). Further, the literature shows that a country's nation brand and reputation impact consumer perceptions of products that are produced by that country (Chang, 2004). In the event of a crisis, country-of-origin is considered in the evaluation of the crisis (Xu & Wu, 2015). When consumers had favorable perceptions of a country, Xu and Wu (2015) found they were more likely to receive more positive post-crisis reactions. Country of origin also serves as a heuristic cue that shapes attitudes when consumers are unable or unwilling to elaborate on the message (Chaiken & Maheswaran, 1994).

Germany has a reputation of producing high-quality products (Keegan & Schlegelmilch, 2001). "In the case of Germany, the development of its national brand identity is an integral part of the growth and development of its exports, the 'Made in Germany' label that has a world-class reputation" (Joseph, 2014, p. 4). Perceptions of a country can be developed through personal experience with that country, or through exposure to organized communication campaigns (Yi Chen, Mathur, & Maheswaran, 2014). Germany has executed communication campaigns that have positioned the country as a "Partner for Innovation" and "The Land of Ideas" (Joseph, 2014). The aforementioned campaigns contribute to Germany's overall nation brand. That is, the overall nation brand of Germany relies heavily on its exports. More specifically, Germany has a reputation tied to its role in the automotive industry.

The overwhelming majority of the current country-of-origin literature examines the relationship between the brand and country of origin by observing the impact of a country of origin's reputation on the brand; however, a new stream of literature suggests the need to examine the direction of the relationship (Magnusson et al., 2014).

Magnusson et al. (2014) concluded that a brand transgressions impact a country's micro-image in addition to impacting the perception of other brands with a shared country of origin. Specifically, since Germany has a developed and stable country image and reputation, the brand transgressions were more likely to impact other brands from that country (Magnusson et al. 2014). Further, the study conducted by Magnusson et al. (2014) suggested a gap in current country-of-origin literature by discovering that the relationship is not unidirectional.

The present will explore the conversation on Twitter in order to observe the relationship of a country of origin and a company experiencing a crisis.

2.2: Situational Crisis Communication Theory

Benson (1988) identified a set number of crisis types and response strategies to correlate to the type of crisis. Situational crisis communication theory (SCCT) furthered theory by identifying a link between the crisis type and the most effective response strategy (Coombs, 2008). The theoretical foundation for SCCT stems from attribution theory and neo-institutional theory. Attribution theory explains how the public assigns responsibility for the consequences of events. Further, neo-institutional theory posits that the public expects organizations to comply with societal norms, and a deviation from these expectations would result in conflict with stakeholders (Coombs, 2008).

2.2.1: Crisis Types

Situational crisis communication theory first categorizes crises by type based on organizational responsibility. Originally, SCCT defined crises with a grid using personal control and external control as determining factors (Coombs, Hazleton, Holladay & Chandler, 1995). Further research by Coombs and Holladay (2001) identified little variance in the variables and the SCCT moved to a continuum. The following 13 crisis types are divided into three clusters depending on the organization's level of responsibility. Level of organization responsibility is an indicator of the potential financial and reputational damage. Thus, level of responsibility serves as an indicator of which crisis response strategy should be implemented to aid with crisis management.

Crises that fall into the preventable cluster have high attributions of responsibility. This group is comprised of incidents related to human error and organizational misdeed. Within this category, crises are avoidable and damages have occurred because of the actions of members in the organization.

In the accidental cluster, organizations take a moderate level of responsibility. While the incident may have occurred because of the organization, it was unintentional and unavoidable. Organizations hold a very low level of responsibility in the victim cluster. Natural disasters, rumors, and product tampering all fall into the victim cluster of crises. In these situations, organizations are not responsible but will implement crisis communication management in order to lessen the damages (Coombs, 2008).

Since the defeat devices were intentionally programmed to bypass the emissions tests, the crisis falls into the preventable cluster.

2.2.2: Threat Intensifiers

Crisis history, relationship history, and severity of the crisis act as moderating variables that impact and have the potential to intensify the organization's reputation damage (Coombs, 2008). Crisis history has the opportunity to intensify the reputational damage because if a similar situation has occurred with the same company in the past, the public holds the organization accountable for a greater level of responsibility.

Relationship history gives stakeholders a perception that the organization will act the same as it has in the past. Thus, if an organization practices good crisis communication, stakeholders will trust that the situation will be handled fairly and responsibly. Finally, severity refers to the amount of damage the crisis causes. When there is a loss of lives, the organization takes on a greater level of responsibility (Coombs, 2008).

Any negative occurrence of the aforementioned moves a crisis into the next cluster (Coombs, 2008). That is, an accidental crisis would be treated as a preventable crisis if the crisis previously occurred with the same organization.

In the case of VW, not only does the crisis fall into the preventable category (which is designated for crises with the highest level of organizational responsibility), but the organization also has a history of being associated with Adolf Hitler (Glancey, 2014). According to the BBC, Volkswagen's iconic beetle was "developed from an idea of Adolf Hitler's," (Glancey, 2014, paragraph 4).

2.2.3: Crisis Response Strategies

The crisis response strategies are designed to give strategic communication managers a framework to refer to when dealing with a specific crisis type. The response strategies are also divided into three categories: deny, diminish, and deal.

The deny category is implemented when there is a low responsibility acceptance by the organization and little to no concern for the victim. This strategy is implemented in one of three ways: attacking the accuser, denial, and scapegoat. Attacking the accuser calls into question the credibility of the accuser. Denial refers to claiming there is no crisis. The final option is to use a scapegoat in order to separate the organization from the crisis.

The diminish category includes giving an excuse or a justification for why the crisis happened. Rather than claiming there is no crisis or that the crisis was not caused by the organization, this method recognizes the crisis but focuses on reducing the perception of the crisis.

Crisis response strategies in the deal category accept responsibility for the crisis and try to restore relationships with the involved stakeholders. This includes expressing concern and regret, giving compensation or an apology and participating in ingratiation. These response strategies focus on improving or maintaining the organizations reputation rather than altering the perception of the crisis (Coombs, 2008). Thus, due to VW's high level of responsibility in the cause of the crisis, a deal strategy is the most appropriate.

2.3: Crisis Communication and Social Media

According to Coombs (2007), the internet plays a critical role in crisis communication. Organizations embrace social media as an efficient way to release information and respond quickly during a crisis (Kim & Liu, 2012). Additionally, consumers are increasingly turning to social media sites, such as Twitter, during crises to share information and opinions (Jin, Liu & Austin, 2014). According to Sinnappan, Farrell, and Stewart (2010) there are two main reasons for the popularity of Twitter in a crisis situation. First, the platform increases the flow of information through its design which consists of sharing brief messages in rapid succession.

Second, the crowdsourcing nature of Twitter allows users to share and consume information. By following hashtags for a crisis event, a user can collect information from a wide variety of sources (e.g. the organization itself, news organizations, VW car owners, etc.).

2.4: Network Analysis on Twitter

"A network is a set of vertices linked by a set of edges," (Kumar, Morstatter & Liu, 2014, p. 35). Any number of units that comprise a network are referred to as vertices (when graphed, vertices are referred to as *nodes*. The connections between vertices are called edges (Kumar, Morstatter & Liu, 2014). In the case of Twitter analysis, users are the vertices of the network and tweets, retweets and mentions are the edges of the network. In order to determine important users within the network, *centrality* is measured. For the purposes of this paper, three degrees of centrality will be discussed: *indegree centrality*, *outdegree centrality* and *betweenness centrality*.

Indegree centrality is a measure of the amount of edges entering a node. In contrast, outdegree centrality measures the amount of edges that exit a node (Kumar, Morstatter & Liu, 2014, p. 38). In regard to network analysis on Twitter, the indegree would measure the amount of times a user was retweeted or mentioned. These users would be considered facilitators of the conversation. A Twitter user's outdegree would refer to the number of times a user tweeted or retweeted. According to Newman (2009), the centrality measures could suggest influence, access to information, and prestige.

Finally, the betweenness centrality of vertices is measured by the user's ability to bridge subnetworks within the total network. Those with a high betweenness centrality "may have considerable influence within a network by virtue of their control over information passing between others," (Newman, 2009, Ch. 7.7).

In recent literature, network analysis has been useful in the examination of conversations on Twitter post-crisis. Getchell and Sellnow (2015) used network analysis to evaluate the effectiveness of communication from official accounts on the local and national level. Preforming a network analysis showed a lack in density, which indicated a lack in communication between local and federal emergency management. Bruns and Burgess (2012) used a network analysis to evaluate the post-crisis conversation following the floods in south-east Queensland, which allowed for the identification of influencers in the dissemination of information.

According to Bruns (2012) "the application of social network analysis to the study of interactions in online social networks can provide are detailed, site-specific, insights into the processes of communication between the users of these networking sites," (p.1329). Thus, using a network analysis to examine post-crisis conversations on Twitter allows for greater insight into who the influencers are in the conversation.

2.5: Presentation of Study

Given the aforementioned literature, the present study seeks to evaluate the conversation on Twitter regarding the crisis faced by VW through a content analysis of tweets. Concepts such as the relationship between a brand in crisis and its country of origin will be explored. Additionally, the study will examine the network to identify influential users engaged in the conversation.

2.5.1: Research Questions

RQ 1- *To what extent did Twitter users connect the VW scandal to the German reputation,*

brand, economy, or political structure?

RQ 2- *What were the most popular themes of the tweets that related to the German reputation,*

brand, economy, or political structure? Are these themes significantly different based on

location? Are these themes significantly different based on type of Twitter user (media,

journalist, corporate, professional, or regular user)?

RQ 3- *What type of Twitter users (media, journalist, corporate, professional, or regular user)*

are most likely to be the conversation starters, the most engaged, and the most central users in

the network?

CHAPTER 3:

METHOD

A content analysis was performed on tweets referencing VW's emissions crisis in order to explore the research questions posed. "Content analysis is an empirically grounded method, exploratory in process and predictive or inferential in intent," (Krippendorff, 2012, p. 1). This method is appropriate for the present study because it allows for the gathering of empirical statistics that provide information about the conversation on Twitter. Additionally, the method permits a detailed examination of not only *what* was being said regarding the crisis but also on *who* was the source of the information (e.g. journalist, company, etc.).

"As a research technique, content analysis provides new insights, increases a researcher's understanding of particular phenomena, or informs practical actions," (Krippendorff, 2012, p. 24). In the case of this study, examining the conversation on Twitter allows for the research to provide insight on public perception and reaction. The results can inform the practical actions of rebuilding the VW brand in addition to informing other brands.

Ultimately, this method of research was the most suitable and efficient in capturing a glimpse of the international reaction in the beginning stages of the crisis.

3.1: Data Collection

After the initial news of the crisis, several hashtags emerged regarding the emissions crisis including: "#vwscandal" and "#dieselgate," among others. Initially, trending hashtags related to the crisis were searched for and compiled using Twitter's advanced search function. The hashtags collected were then evaluated for volume of tweets using DiscoverText's Sifter

estimates. In the Sifter estimate process, rule texts (i.e. hashtags) were used to identify the scope of the data, and dates were narrowed down to a 10-day period. The data was limited to a 10-day period in order to apply for a data grant from Texifter.

The most relevant hashtags were determined based on the volume of results, and were subsequently selected for evaluation. The rule text that produced the highest volume of responses included: "#VW," "#VWGate," "#DieselGate," "#vwscandal," and "#volkswagenscandal." The process was repeated, running an estimate for every 10-day period from the initial filing of the EPA Notice of Violation to the current time period (i.e. September 18 to mid-December). The 10-day period that emerged as the timeframe that produced the most volume of tweets was September 22 to October 1.

The data was obtained through a grant provided by Texifter. To apply for the data grant, a Sifter estimate was created in order to determine which hashtags and 10-day period produced the most relevant results. A review of Sifter was then posted to the researcher's personal Twitter account, which included a link to the Sifter estimate website. Two winners were selected per week from October 23 to December 31 and the data regarding the VW crisis was granted on the 6th week of drawings. The data grant from Texifter provided access to 207,723 tweets and access to an enterprise account with DiscoverText, which was used for analytics. The entire data set included a total of 207,723 tweets that were drawn from the 10-day period using Texifter's software.

3.2: Filtering

The data was filtered to eliminate tweets that utilized a language other than English. Additionally, 2,995 spam tweets that were irrelevant to the topic were eliminated. The final sample included tweets selected based on the criteria of inclusion of the hashtags #VW,

#VWGate, #DieselGate, #VWscandal or #Volkswagenscandal and use of the English language during the period of September 22-October 1, 2015. The final sample contained 110,882 tweets.

Within DiscoverText's dashboard where the data was housed, the tweets were filtered to narrow the data down to tweets that only referenced the VW scandal in conjunction with Germany's reputation, brand, economy, or political structure. Based on the inclusion criteria at this initial stage of filtering, only tweets containing "German" or "Germany" continued to the next round.

During the second round of filtering, two coders manually filtered to exclude any use of "German" or "Germany" in a manner which didn't connect the scandal to the company's country of origin. For example, if "German" was used as an adjective (e.g. German media outlets reported…), the tweet would be excluded from the sample. This filtering resulted in 1,711 tweets for inclusion in the study.

3.3: Coding

After filtering the data set based on the inclusion criteria, two coders manually coded the data set into the following categories: Germany's reputation, the Made in Germany/German Engineering brands, Germany's economy, the German government's role, German automakers and the auto industry, German values and characteristics, Germany's history, and other. Coder 1 (the author) determined the categories based on a preliminary examination of the sample.

While many of the operational definitions for the categories were straightforward, it is important to note the variance in the operational definitions of Germany's reputation and German values and characteristics. The operational definition of Germany's reputation for this study included general references to the impact on Germany's overall reputation in addition to more specific references to what Germany's reputation is as a country. On the other hand, the

German values and characteristics was operationally defined as any reference to more specific

values and characteristics on an individual level. For example, being an eco-friendly country

would be coded as Germany's reputation and having integrity would fall under German values

and characteristics. Coder 1 coded the entire data set and after discussing the operational

definitions, Coder 2 coded the entire data set. The intercoder reliability was then calculated using

Krippendorff's alpha (α). See Appendix B for coding examples.

CHAPTER 4:

RESULTS

4.1: Intercoder Reliability

According to Neuendorf (2002), achieving an intercoder reliability level that is acceptable is important for two reasons. First, an acceptable level of intercoder reliability validates the coding scheme. In other words, the results become meaningful when they are not limited to the observations of one individual. Second, having multiple coders gives a practical advantage of splitting the data. However, in this study, the entire data set was coded for themes by both coders. In any case, intercoder reliability is "a necessary criterion for valid and useful research when human coding is employed," (Neuendorf, 2002, p.142). A widely-used reliability measure is Krippendorff's alpha (α). Krippendorff's alpha (α) "is a reliability coefficient developed to measure the agreement among observers, coders, judges, raters, or measuring instruments drawing distinctions among typically unstructured phenomena or assign computable values to them," (Krippendorff, 2007, p.1).

Krippendorff's alpha (α) equation: $\alpha = 1 - \dfrac{D_o}{D_e}$

In the above equation, D_o signifies the observed disagreement and D_e signifies the expected disagreement based on the probability. According to Krippendorff (2012), researchers should achieve $\alpha \geq .800$ in order to draw conclusions. However, in cases where tentative conclusions are acceptable, researchers may "consider variables with reliabilities between $\alpha =$

.667 and α =.800," (Krippendorff, 2012, p. 325). Table 1 shows the Krippendorff's alpha for each category. Only two of the categories ("Other" and "German values/characteristics) received lower than .80 alphas. In the case of German values/characteristics, disagreements between coders most often stemmed from the overlapping concepts of values/characteristics and reputation. That is, values and characteristics are two components that factor into the formation of a reputation. Despite the less than optimal alphas for those two categories, the remaining were above .80, with four even breeching .90. The overall Krippendorff's alpha was .889 among the two coders.

Code	Coder 1	Coder 2	Total Count	Alpha Value
German automakers/auto industry	131	136	267	0.874
German economy	343	340	683	0.936
German government's role	181	161	342	0.922
German history	87	87	174	0.952
German values/characteristics	108	104	212	0.779
Germany's reputation	443	490	933	0.833
Made in Germany, German Engineering brands	390	371	761	0.951
Other	28	22	50	0.472
Totals:	1711	1711	3422	0.889

Table 1: Krippendorff's alpha Intercoder Reliability

4.2: Crisis and Nation Brand Connection

The first research question sought to identify to what extent users connected the VW scandal to the German reputation, brand, economy, or political structure. Of the 110,882 English tweets from the September 22-October 1, 2015 time period that used the hashtags #VW, #DieselGate, #VWGate, #volkswagenscandal, and #VWscandal, 5,065 included the words "Germany" or "German" within the text of the tweet. These tweets were reviewed to

filter tweets for analysis that referenced the impact of the scandal on reputation of Germany or the German auto industry as well as tweets that referenced the impact on the German economy or political involvement. This filtering resulted in 1,711 tweets (i.e. 1.54% of the total sample).

Tweets containing the keywords "German" or "Germany" were removed from the sample usually utilized the keywords "German" or "Germany" as adjectives for media, ministers, etc. For example, tweets using the phrase "German media outlets reported" would be excluded from the sample. Although 1.54% represents a small proportion of the total sample of VW tweets, some of the tweets in the sample may have not referenced the scandal directly (i.e. using #vw to discuss their car).

4.3: Themes and Geographical Information

The second research question sought to identify the most popular themes of the tweets related to the German reputation, brand, economy, or political structure. Additionally, the second research question examines whether the themes significantly differ based on location of the user. Finally, the research question searched for a relationship between types of users (i.e. media, journalist, corporate, professional, or regular user) and theme.

Examining hashtags with the highest occurrence provides some insight into the themes of the tweets. Although many of the most used hashtags reflect the criteria for inclusion (i.e. VW, VWgate, dieselgate, VolkswagenScandal, and vwscandal) other relevant hashtags such as Volkswagen, German, and Germany also appeared. The remaining hashtags revealed that Volkswagen's scandal was linked to other brands, such as Siemens and BMW, and countries, such as Greece, the UK, and France. See Table 2 for the most used hashtags from the sample. Overall, the most popular tweet in terms of retweets compared Volkswagen to Donald Trump (See Figure 1).

Hashtag	Total
VW	868
VWGate	354
dieselgate	351
Germany	296
VolkswagenScandal	269
Volkswagen	237
German	184
Siemens	75
Greece	43
emissions	41
UK	26
vwscandal	25
BMW	23
France	23
economy	21
Merkel	21
scandal	21

Figure 1: Tweet with the Highest Number of Retweets

Table 2: Most Frequently Occurring Hashtags

The sample of 1,711 tweets were coded into the following categories: Made in Germany/German Engineering brands, references to Germany's history, German values and characteristics, Germany's reputation, German automakers/auto industry, the impact on the German economy, the role of German government and other. The highest percentages of tweets fall into the categories of Germany's reputation ($n = 446$; 26%) and Made in Germany/German Engineering brands ($n = 388$; 22%). The occurrence of the remainder of the categories is as follows: German economy ($n = 338$; 20%), German government's role ($n = 185$; 11%), German automakers/auto industry ($n = 131$; 8%), German values and characteristics ($n = 108$; 6%), Germany's history ($n = 87$; 5%) and other ($n = 36$; 2%) (See Figure 2). See Appendix B for coding examples.
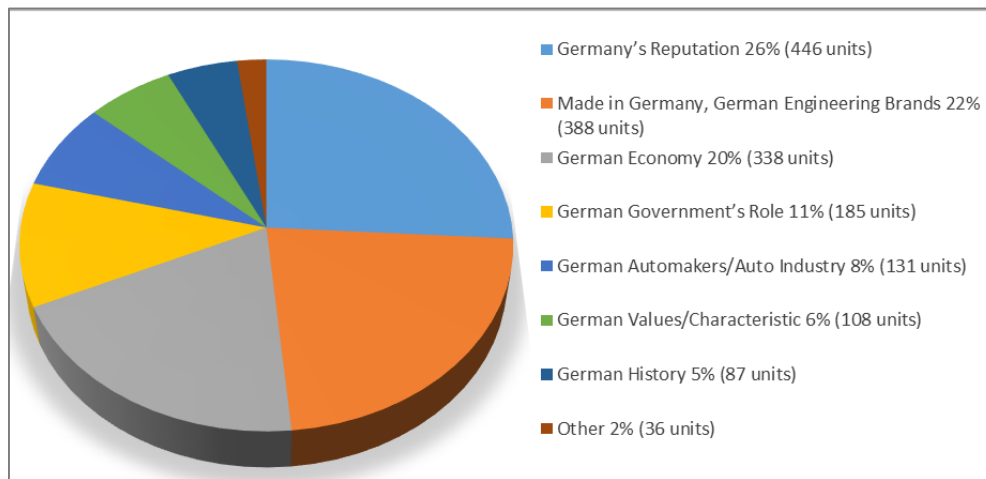
Figure 2: Themes

In order to determine if there was a relationship between location and theme, the tweets were classified based on the user's geographical location. Of the 1,711 tweets analyzed, all but 642 (37.5%) could be classified geographically. Tweets with geographical information were coded as either being from Germany or from a user outside of Germany. A total of 127 were identified as being from Germany (7.4%) and 942 came from outside the country (55.0%). (See Table 3).

Unknown	642
Outside	942
Germany	127
Total	**1711**

Table 3: User's Geographical Location

Finally, a Chi-square test of the variables content of the tweet (i.e. the theme) and location (i.e. Germany, outside Germany, or unknown) found a significant relationship between content and location (p<.05, p= 0.009504). Comparing actual values to expected values found higher than expected amount of tweets about the German auto industry for users in both Germany and outside Germany as well as higher than expected amount of tweets about the Made

20

in Germany or German Engineering brands among German users. Furthermore, there were fewer tweets among those outside Germany about German history and German values/characteristics and more tweets in these same two categories among those from an unknown location.

Location	German Automakers/Auto Industry	German Economy	German Government's Role	German History	German Values/ Characteristic	Germany's Reputation	Made in Germany, German Engineering Brands	Other	Grand Total
Germany	11%	4%	6%	7%	9%	7%	10%	3%	127
Outside	61%	57%	57%	46%	44%	57%	52%	69%	942
Unknown	27%	39%	36%	47%	46%	36%	38%	28%	642
Total	**131**	**338**	**185**	**87**	**108**	**445**	**388**	**29**	**1711**

Location	German Automakers/Auto Industry	German Economy	German Government's Role	German History	German Values/ Characteristic	Germany's Reputation	Made in Germany, German Engineering Brands	Other	Total
Germany	15	13	12	6	10	32	38	1	**127**
Outside	80	193	106	40	48	254	201	20	**942**
Unknown	36	132	67	41	50	159	149	8	**642**
Total	**131**	**338**	**185**	**87**	**108**	**445**	**388**	**29**	**1711**

Table 4: Chi-square Test of Variables Theme and Location

4.4: Network Analysis

The third research question sought to identify which type of Twitter users (i.e. media, journalist, corporate, professional, or regular user) were the most likely to be the conversation starters, the most engaged, and the most central users in the network.

The conversation starters in the network were determined based on the users' indegree centralities. Those with the highest indegree centrality were users who received the most mentions about and retweets of their post about the crisis. Users who received 10 or more mentions and/or retweets were evaluated to determine which type of user they were. Of the total

29 users with the highest indegree centrality, 35% were professionals, 19% were journalists, 19% were media organizations, 15% were companies and 12% were other (See Table 5). Those that fell into the other category either could not be defined. The user with the highest indgree centrality was a journalist with a total of 128 mentions or retweets. See Appendix A for user's classification.

Professional	35%
Journalist	19%
Media	19%
Company	15%
Other	12%

Table 5: Users by Indegree Centrality

In order to identify which type of users were the most engaged in the network, the users' outdegree centralities were calculated. The outdegree centrality reflects how many tweets each user had in the sample (including retweets). Users who had 4 or more tweets in the sample were evaluated to determine what type of user they were. Of the users with the highest outdegree centrality, 54% were regular users, 23% were professionals, 8% were journalists, 8% were media organizations and 7% were other. See Table 6 and Figure 2. See Appendix A for user's outdegree centrality scores.

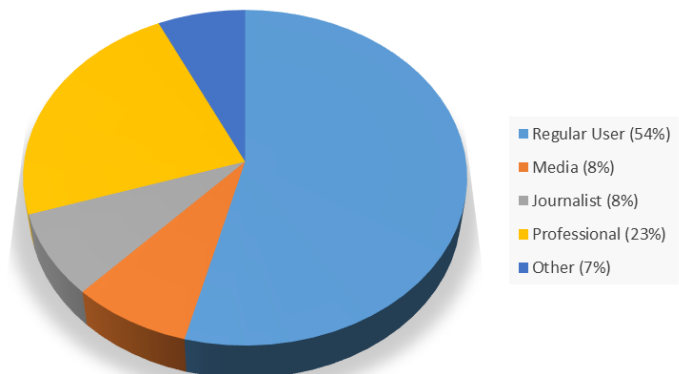|	
Regular User	54%
Professional	23%
Journalist	8%
Media	8%
Other	7%

Table 6: Users by Outdegree Centrality

Figure 3: Users by Outdegree Centrality

Finally, users' betweenness centrality was evaluated in order to determine which users were the most central to the network. That is, users with the highest betweenness centrality have the ability to bridge various subnetworks within the overall network. Of the top ten users, who had a betweenness centrality of 8.5 or higher, 30% were journalists, 20% were professionals, 20% were regular users, 20% were other and 10% were media organizations. The user with the highest betweenness centrality had a centrality of 84. See Table 7. See Appendix A for user's betweenness centrality scores.

Journalist	30%
Professional	20%
Regular User	20%
Other	20%
Media	10%

Table 7: Users by Betweeness Centrality

Gephi, a tool used for the graphing and visualization of large networks, was used to graph both the total network and the giant component. In essence, the giant component is the most connected subnetwork of the total network (Bollobás, 2001). According to Bastian, Heymann & Jacomy (2009) "visualizations are useful to leverage the perceptual abilities of humans to find features in network structure and data," (p. 1). See Figure 3 for the total network and Figure 4 for the giant component. Note, the larger the node, the higher the centrality measures the user will have. This gives insight into the influential members of the network. Through the visualization, the users who bridge subnetworks can also be identified. See Appendix A for full-sized network graphs.
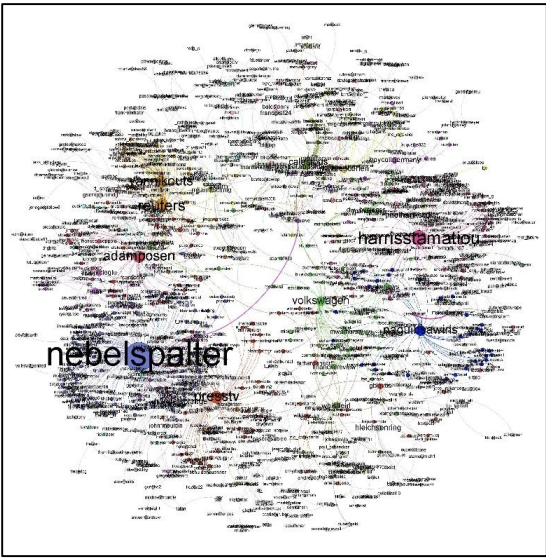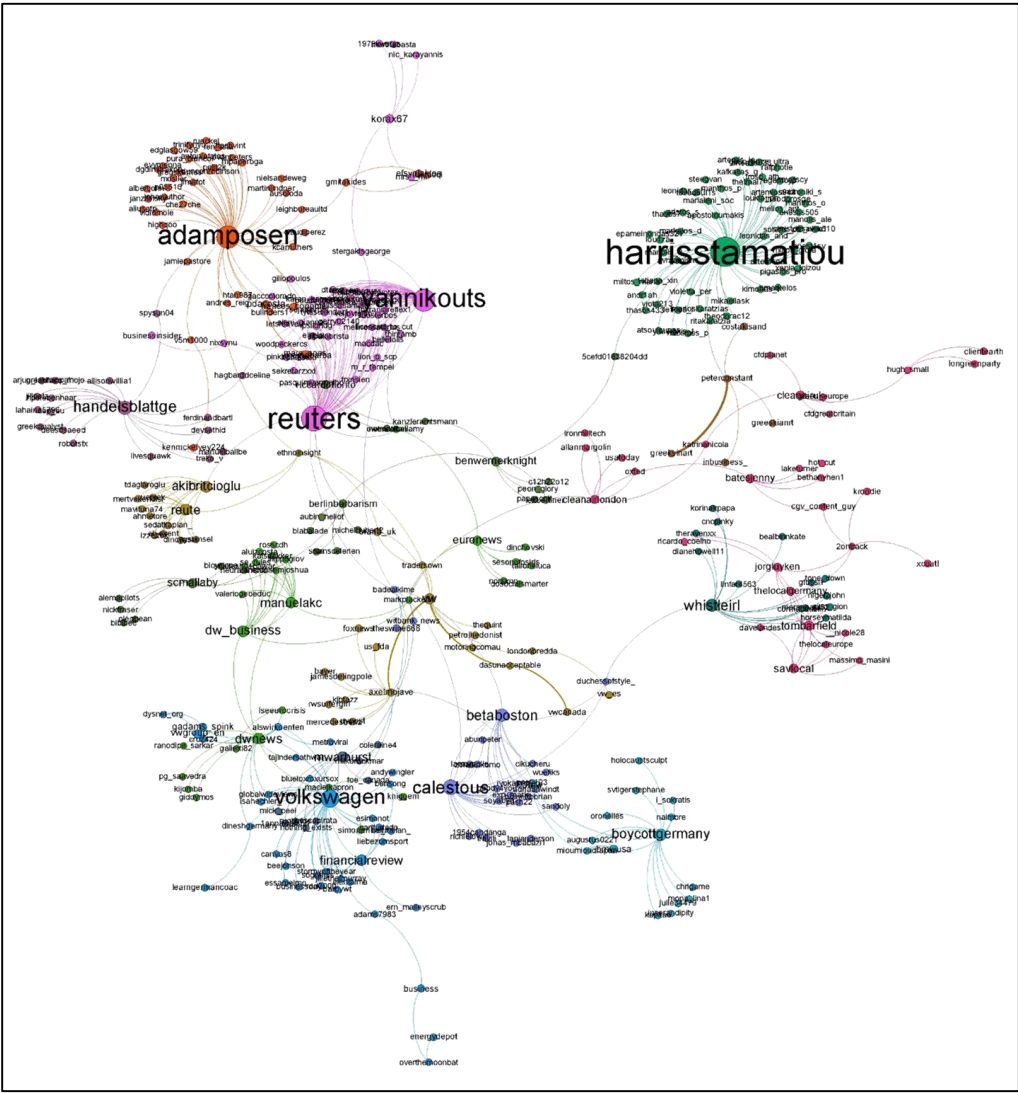
Figure 4: Total Network

Figure 5: Giant Component of the Network

CHAPTER 5:

DISCUSSION & CONCLUSION

The purpose of this study was to elicit a more thorough understanding of the relationship between a brand experiencing a crisis and its country of origin. Though the percentage is low, the results indicate a presence of Germany's nation brand in the discussion of the VW crisis. Additionally, the themes identified include: Germany's reputation, the Made in Germany/German Engineering brands, Germany's economy, the German government's role, German automakers and the auto industry, German values and characteristics, and Germany's history (with some being categorized as "other"). The findings also indicated a significant relationship between theme and location. Finally, the study showed that professionals had the highest indegree, regular users had the highest outdegree, and journalists had the highest betweenness centrality.

5.1: Limitations and Suggestions for Future Research

While the research did produce valuable results, the study has several limitations. First, the data was restricted to a 10-day period in order to apply for a data grant (i.e. for financial efficiency). The ramification of choosing to research a crisis as it is unfolding is that the data has the potential to change as more information becomes available to the public. That is, if the same research study was conducted *after* VW started implementing crisis communication strategies, the study could potentially produce different results. Additionally, limiting the data to a 10-day

period narrowed the sample size significantly. Thus, if the initial sample covered a greater time period, the final sample would have been larger (after filtering for inclusion criteria).

Another limitation is the use of one social media platform. Although conducting a cross-platform study was outside the scope of an unexperienced researcher, comparing data across platforms would lead to a greater understanding of the entire conversation.

Finally, the most impactful limitation was the use of negative rule text for inclusion criteria. That is, using the rule text: "#VWGate," "#DieselGate," "#vwscandal," and "#volkswagenscandal" limited the data to only individuals who were discussing the scandal in a negative manner. In an attempt to be inclusive of both positive and negative comments, the rule text "#VW" was included. However, this opened up the initial data pool to individuals who used the hashtag in a context unrelated to the scandal, which ultimately led to the exclusion of those tweets.

Future research evaluating crisis communication on Twitter should consider gathering data from multiple time periods in order to compare results. This would be particularly useful as a campaign evaluation tool. In this instance, the researcher would gather data for an organization within the immediate time following the crisis. After implementing crisis communication tactics in order to minimize the damage and rebuild the brand's image, new data should be collected in order to monitor if the overall themes change.

5.2: Practical and Theoretical Implications

Though the research has its limitations, practical and theoretical implications can be derived from the results. First, strategic communication managers could utilize the results in order to inform campaigns aimed at rebuilding the brand. For instance, strategic communication managers for Volkswagen could use the themes to tailor messages to address the concerns of

various publics. Additionally, since the themes varied based on location, marketers could use this insight to understand how the rebuilding strategy should vary from domestic to international campaigns. Finally, the results regarding the network analysis give insight into the influential publics. Strategic communication managers should take this information into account when developing campaigns to rebuild the brand. Based on the literature reviewed and the results of the study, the crisis falls into the preventable cluster, a deal strategy should be implemented, and the campaign targeting Germans should address the German auto industry and the Made in Germany/German Engineering brands. Additionally, professionals should be considered a primary target audience for the rebuilding strategy because since they are the conversation starters, they should be treated as influencers in the network.

In addition to the aforementioned practical implications, the theoretical implications stem from the results regarding the first research question. Although the percentage was low, the mere presence of Germany's nation brand in the conversation about VW's emissions crisis suggests support for the need to continue the more recent nation branding literature. That is, instead of examining the relationship between a country of origin and a brand as unidirectional from country to brand, the relationship should be examined bidirectionally. More specifically, in cases where the brand is: a) prominently linked to its country of origin and b) is experiencing a crisis, research should be conducted to assess the brand-to-country direction of the relationship.

5.3: Conclusion

The overarching goal of this study was to gain a more thorough comprehension of the conversation about the VW emissions scandal on Twitter. Through an analysis of 1,711 tweets, the themes that emerged provide insight for both practical and theoretical purposes. While the study did have various limitations, it certainly suggests the need for further research.

Further research examining the post-crisis conversation on Twitter in cases where the brand is uniquely linked to its country of origin has the unique ability to provide valuable insight for practical applications in addition to contributing to the ever-growing body of knowledge in academia.

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APPENDIX A:
Network Analysis Centrality Values and Network Graphs

Users with the highest indegree centrality

Nebelspalter	Journalist
HarrisStamatiou	Professional
Reuters	Media
PressTV	Media
AdamPosen	Professional
YanniKouts	Journalist
Frances_Coppola	Professional
MerliAless	Journalist
NaguibSawiris	Professional
Volkswagen	Company
Dwnews	Media
Calestous	Professional
HandelsblattGE	Company
NoThanksEU	Other
NYTimesCohen	Journalist
HLeichsenring	Professional
PaulHenriCadier	Professional
AXAIM	Company
BetaBoston	Media
WhistleIRL	Professional
boycottgermany	Other
VW	Comapany
akibritcioglu	Professional
dw_business	Media
scmallaby	Professional
FinancialReview	Media
FT	Media
ManuelaKC	Journalist
rafraffac	Other

Users with the highest outdegree centrality

axelmojave	18	Regular User
anraspop	16	Regular User
PeterConstant	9	Regular User
worldmeetsus	8	Media
JoeThorpe1963	7	Journalist
badealkime	6	Regular User
BcnFox	6	Professional
2ontrack	5	Regular User
berlinbarbarism	4	Regular User
boycottgermany	4	Other
Hoeferle	4	Professional
JacobAlam	4	Regular User
MarkPlackett1	4	Professional

Users with the highest betweeness centrality

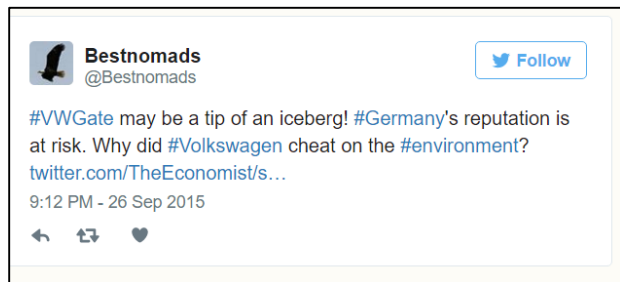|		
adamposen	84	Professional
dwnews	29	Media
berlinbarbarism	20	Regular User
boycottgermany	20	Other
axelmojave	19	Regular User
cleanairlondon	12	Other
akibritcioglu	11	Professional
benwernerknight	10	Journalist
mkarnitschnig	9	Journalist
tombarfield	8.5	Journalist

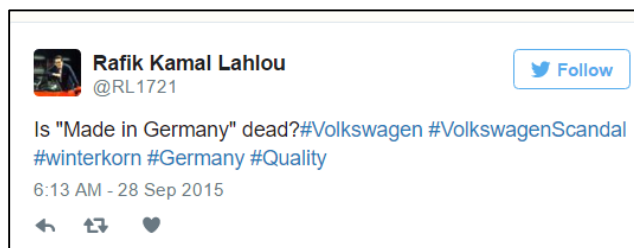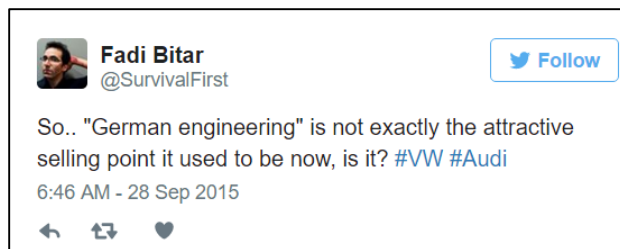Graph of the entire network
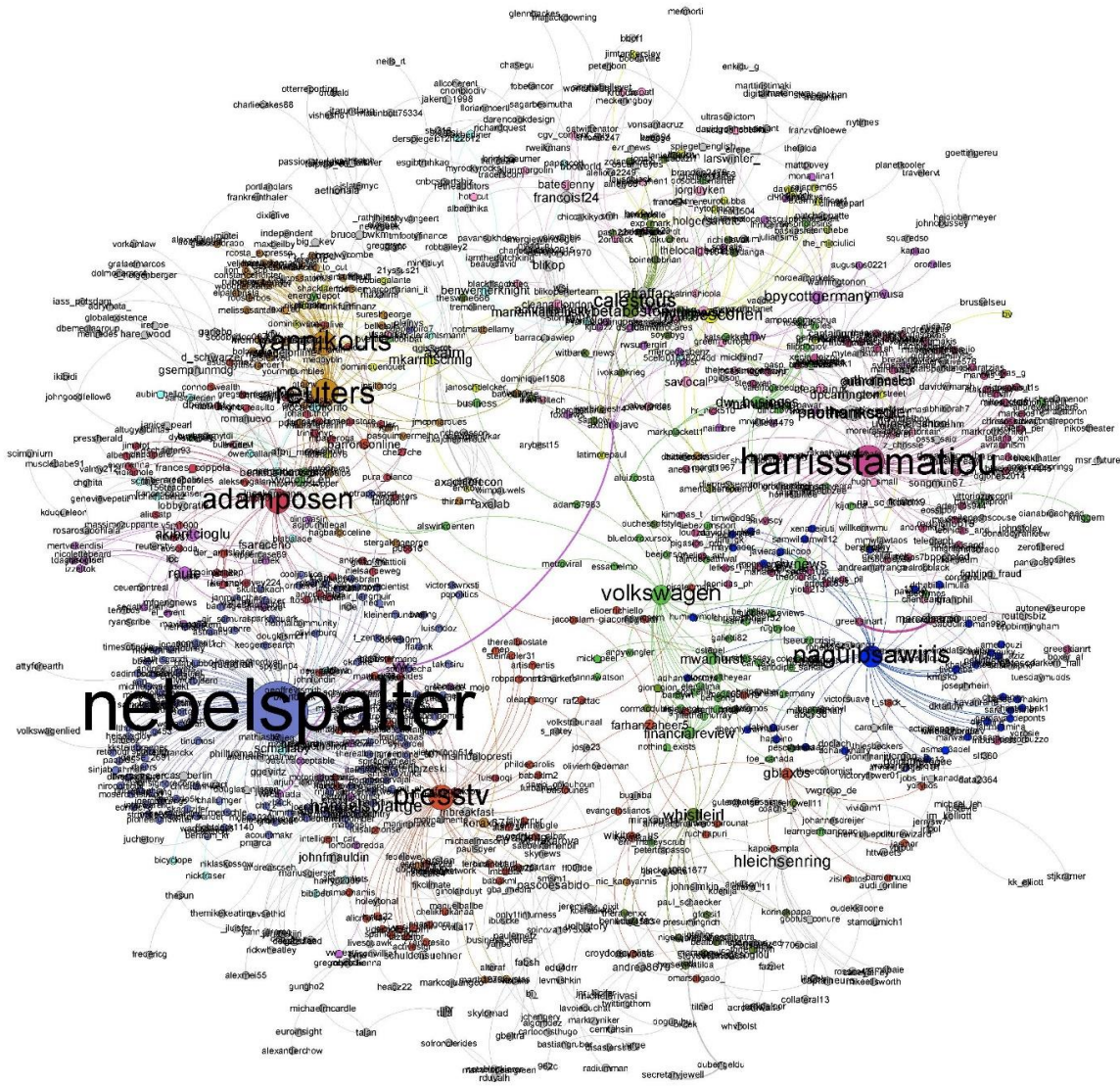
Giant Component graph of the network
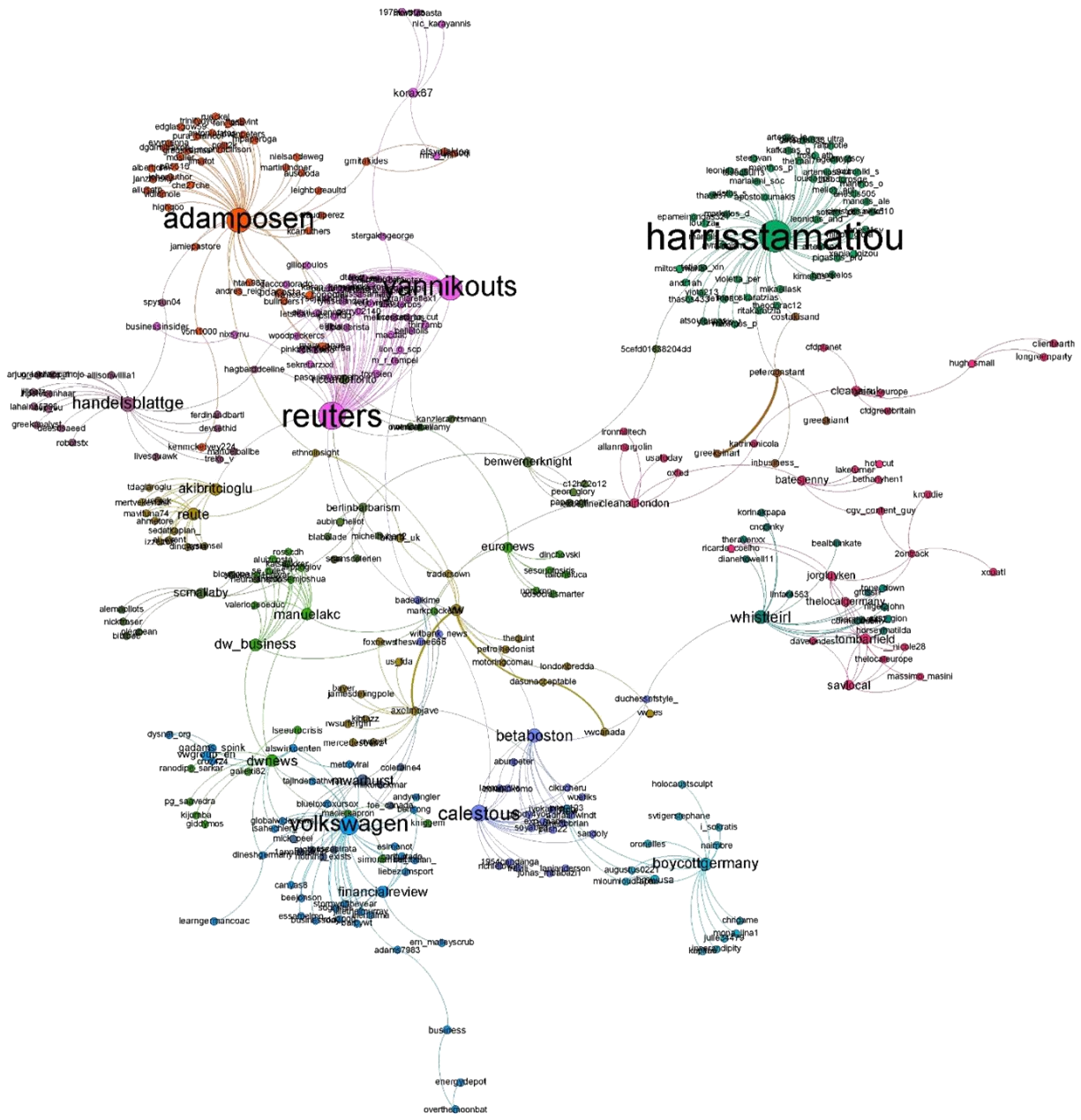
APPENDIX B:
Coding Samples

Examples of tweets coded "Germany's reputation"

Kevin Walker
@boardwalkla
Follow

Brand Finance - #VW Risks its $31 billion Brand and Germany's National Reputation #Volkswagen buff.ly/1MyXngc
2:30 PM - 28 Sep 2015

Bestnomads
@Bestnomads
Follow

#VWGate may be a tip of an iceberg! #Germany's reputation is at risk. Why did #Volkswagen cheat on the #environment? twitter.com/TheEconomist/s...
9:12 PM - 26 Sep 2015

Handelsblatt Global
@HandelsblattGE
Follow

Germany's über-green reputation has been undermined by U.S. vigilance in #dieselgate #VW hbge.net/naesy
10:00 AM - 26 Sep 2015

VW Scandal: A U.S.-German Role Reversal
Über-green Germans are embarrassed that they let the Volkswagen scandal happen under their nose, and that gas-guzzling Americans
global.handelsblatt.com

Examples of tweets coded "Made in Germany/German Engineering brands"

Fadi Bitar
@SurvivalFirst
Follow

So.. "German engineering" is not exactly the attractive selling point it used to be now, is it? #VW #Audi
6:46 AM - 28 Sep 2015

Rafik Kamal Lahlou
@RL1721
Follow

Is "Made in Germany" dead?#Volkswagen #VolkswagenScandal #winterkorn #Germany #Quality
6:13 AM - 28 Sep 2015

Bad Milk
@badealkime
Follow

#VWGate How VW's scandal threatens the reputation of 'German engineering' wpo.st/0i4d0
3:35 PM - 28 Sep 2015

Examples of tweets coded "Germany's economy"

Examples of tweets coded "German government's role"

Examples of tweets coded "German automakers/auto industry"

Farhan Zaheer
@farhanzaheer5

As expected, #VolkswagenScandal is now hitting other #German car makers. Unfortunate for the German auto industry twitter.com/WSJ/status/647…

7:30 AM - 24 Sep 2015

Jane Arapawe
@Janearapawe

This scandal is now hitting other German car makers, Unfortunate for the auto industry. #VolkswagenScandal
10:11 PM - 24 Sep 2015 · San Diego, CA, United States

Dave Upton
@Dmu3000

Is the #vwscandal the end of the German car industry? #VW #diselgate #fraud
6:32 PM - 25 Sep 2015

Examples of tweets coded "German values/characteristics"

jordidelcor
@jordidelcor

#dieselgate WW has disappointed everybody.The traditional German values at stake not just shares. Business ethics? A joke.€$£¥ are the kings
4:20 AM - 24 Sep 2015 · L'Ametlla del Vallès, España, España

Worldmeets.US
@worldmeetsus

#volkswagen Dieselgate: VW Scandal Explodes 'Myth' of German Integrity, Reliability (La Repubblica, Italy) ln.is/worldmeets.us/…
9:43 AM - 25 Sep 2015

Ewald Engelen
@ewaldeng

VW's #dieselgate ascribed to provincial German corporate culture;
in my view it's universal #shareholderism
ft.com/intl/cms/s/0/6…
1:55 AM - 28 Sep 2015

Examples of tweets coded "Germany's history"

lawrence serewicz
@lldzne

What is it with Germany toxic fumes and ethical lapses? I thought this was resolved at Nuremberg? #VWGate

3:36 AM - 30 Sep 2015

#Volkswagen is a modern german gas chamber manufacturer. #VolkswagenScandal http://t.co/NDp21YU3Fg

— Twitter API (@twitterapi) 29 Sep 15

Antonius
@AnthonyKafka

Hmm.
German cars emitting noxious gas that can kill people. Can't beat the original plan. #VWGate

1:35 PM - 29 Sep 2015

Examples of tweets coded "Other"

Amanda Gläser-Bligh
@GlaeserBligh

#Dieselgate makes my husband look like a genius. If ever there was a doubt about the German who doesn't like VW. twitter.com/autocar/status…

11:28 AM - 22 Sep 2015

Lac Von Bayern
@LacVonBayern

Breathing Is deadliest in these countries - Germany is the 2nd of developped countries. #VW scandal won't change it bloom.bg/1FN5aC8

5:29 AM - 1 Oct 2015

Breathing Is Deadliest in These 15 Co...
The rate of air pollution deaths is headed in the wrong direction.
bloomberg.com

Board of PacSanc
@psancBoard

#vwgate the education in Germany OUTSIDE bavaria has to be revamped.

6:29 AM - 24 Sep 2015